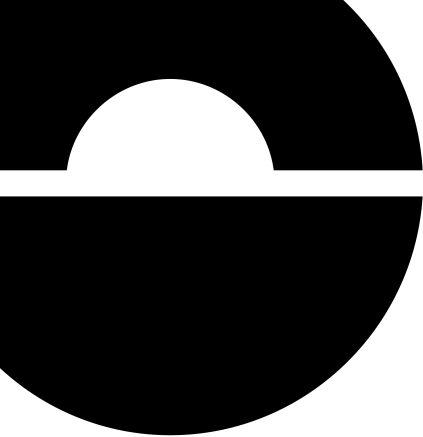




HUMAN IN THE LOOP

AI AND THE FILM VALUE CHAIN

DR ANGUS FINNEY



**PROOF OF
CONCEPT**

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HUMAN IN THE LOOP: AI AND THE FILM VALUE CHAIN

Foreword

The AI revolution in filmmaking is happening – whether you're ready or not. The rapid advancements in AI are revolutionizing the cinematic landscape, and we are many who are on a steep learning curve. We are therefore thrilled to share with you ***HUMAN IN THE LOOP – AI and the Film Value Chain*** addressing the rapid introduction and adoption of AI across the sector's entire value chain. With this key publication Dr. Finney guides us through the many wonders and challenges that AI is bringing to the film sector and helps us navigate the uncharted waters with practical advice, use cases, industry insights, and some humor to lighten the load.

Of course, it's not all sunshine. As filmmakers and the film industry across Europe increasingly embrace AI tools, important questions surrounding creativity, copyright, authorship, job displacement and ethical consideration are becoming increasingly urgent.

To be proactive in the conversation – both on its opportunities and challenges - we must deepen our understanding of AI and actively engage with its development. CineRegio – the European network of 52 regional film funds – recognize our need to familiarize ourselves with AI's role across various facets of the film value chain. We must invest time learning and understanding new AI-powered tools and workflows, many of which are disruptive to established processes. As AI continues to evolve, its integration into the film industry requires a careful balance between innovation and responsibility. Collaboration is needed to ensure that its development respects cultural diversity and economic fairness.

We would like to express our sincere gratitude to Dr. Finney for his dedication in writing and producing this comprehensive publication and for bringing its full potential to life. Furthermore, sincere gratitude goes to the financial supporters who made this publication possible: ALCA Nouvelle-Aquitaine, Ffilm Cymry Wales, Film i Väst, Flanders Audiovisual Fund, Pictanovo and MOIN Film Fund Hamburg Schleswig-Holstein.

The road ahead is not without its challenges, and it begins with our need to upskill.

Charlotte Appelgren
General-Secretary
CineRegio AISBL
Brussels, May 2025

Proof of Concept, a forward-thinking edtech and community growth platform dedicated to addressing the evolving challenges of the film and creative industries, is responsible for the editorial for this publication. Co-founded by Dr Finney and Amrish Shah, Proof of Concept offers training and professional development that combines critical analysis across the entertainment value chain with network opportunities.

Through its partnership with Cine Regio, Proof of Concept's debut publication, *Human in the Loop: AI Across the Value Chain*, exemplifies the company's mission to connect human creativity with technological innovation.

For more information, please contact us at access@proofofconcept.ai

Amrish Shah
Chief Executive Officer
Proof of Concept Ltd.
United Kingdom, May 2025

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Author's introduction

Human in the Loop is a publication that is aimed at managers, decision makers, creatives and funders – both public and private – and the wider screen entertainment industry at large. I have consciously avoided writing an academic styled text; instead opting for a lighter touch that traverses AI and its impact on the film and TV value chain without exhaustive referencing and heavy footnotes¹. That said, the work is deeply grounded and brings together my research and MBA-level teaching over the past three years at Cambridge University; and my training and mentoring responsibilities with the British Film Institute, the Danish National Film School, Screen Ireland, Cine Regio, and Film i Väst.

Human in the Loop also marks the first formal partnership with a new e-learning EdTech platform Proof of Concept Ltd. that my partner and co-founder/CEO Amrish Shah has generously engaged to support the research and production of this title. So too has our creative director Kanan Capshaw – notably on animation and post-production. Proof of Concept takes a clear editorial stance on AI and its growing impact on the industry: Listen, learn, adapt and adopt where appropriate, but keep a critical eye on all that is shifting around us.

Why *Human in the Loop*? The phrase neatly captures the *collaborative* approach in artificial intelligence and machine learning where human intentions, sensibility and expertise are integrated into the development, training, and operation of AI systems and tools. This *sharing* concept is founded on the belief that human judgment and agency is vital to enhance the accuracy, reliability, and ethical application of AI technologies.

This publication's position is clear: by enshrining the importance of human beings at the centre of the creative process, we promote a continuous feedback loop where we provide directions, corrections or refinements to AI's inputs and outputs. This iterative process is both about advancement and protection. After all, we're the creators and narrators. AI tools and suites are the supportive assistants. Not the other way round.

Making film and TV high productions throws up a complex set of scenarios. Oversight and agency help to ensure that AI recommendations, outputs and (unconscious) decisions align with ethical standards and concerns that this publication raises repeatedly. *Human in the Loop* is designed to help to bridge the gap between human intelligence and machine efficiency, creating a positive relationship that enhances AI's capabilities while maintaining ethical and practical standards. And humans need to set those standards which are still very elastic and unevenly defined at the time of writing.

When explaining to cohorts and fellow filmmakers that I was writing a publication about AI, many tried to warn me off: "The information will date and be useless before it's even published. AI is moving far too fast..." In fact, the opportunity to take a metaphorical "photograph" at this intriguing moment of "AI time" is instructive, as some of the industry and much of the wider media commentary has responded and reported at best unevenly, and at worst, with hype-fueled hallucinations. The offer of context and critical analysis is where *Human in the Loop* hopes to differ from much of the existing texts and tropes to date.

¹ Footnotes in the text are for reports and simple referencing. Numbered [X] boxes correlate to the numbered books and texts in the bibliography and reference pages at the end of the publication.

In homage to the subject matter and exploration of AI's utility, a range of AI tools were used, experimented with, and sometimes abandoned along the way. Chat GPT4, Perplexity Pro and Claude stand out as the most helpful and supportive at times, but all too often despite deep prompting, they remain limited and often frustratingly self-serving! (For those looking for deeper insights, see the Appendix on the art of prompting and the bibliography). While many chapters offer selected examples of AI tools at various stages across the value chain, it does not pretend to be exhaustive or push certain types or brands. But what is clear is that the main leaders in the Gen AI toolbox are likely to dominate, augment fast, and lead from the front in the high velocity near-future.

Human in the Loop comes with regular health warnings interspersed within and towards the end of nearly every section. Words like 'homogenized', "flat", "echo chamber", "bias," "derivative" and "automated" abound. Forgive me for repeating myself: I just know that some readers will dip in and out, sampling links in the value chain of most interest to them. If the critical analysis is merely front loaded and not spread across all this publications' content, you might just miss the important stuff. However, as you navigate this world of AI, it's also important to experiment, play around and build some prompt-muscle. Take a dive into some of the tool examples outside your comfort zone, and you may be pleasantly surprised by the results. But only if you are patient and persistent.

Many thanks to Cine Regio and the supporters of this publication – and in particular Charlotte Appelgren and Tomas Eskilsson - for having the presence of mind and matter to support and publish *Human in the Loop*. And to all those filmmakers, experts and humans in the AI loop that shared their views and experience with me (see Acknowledgements). Meanwhile, us humans will continue to be busy figuring out how AI works, will work better tomorrow, and what it all means.

Dr Angus Finney
Dorset, United Kingdom

ACKNOWLEDGEMENTS

When reviewing existing and fast updating literature (see Bibliography) and researching and exploring AI while teaching at MBA level at Judge Business School, Cambridge University, and delivering academic research papers at Edinburgh University's Business School (June 2024) and at the Mallen Conference at Cambridge University (September 2024), the work behind Human in the Loop evolved at a pace. The research has also been supported and informed through training/mentoring at various institutions, including the Danish National Film School, the British Film Institute, the British Council, Creative UK, the National Film and Video Foundation South Africa, Screen Malta, Screen Ireland, USC and Yale in the US, the UK's National Film and TV School, the Gothenburg Film Festival, Film i Väst and Cine Regio.

My position at a contributor to three of the Focus Groups for Film i Väst's Public Film Funding at a Crossroads III (in particular the digital technology group) and as moderator on the UK and Ireland sessions during 2024 were invaluable, while my work with the international consultancy MediaXchange, CogX AI, where I am an ambassador, and my own company Proof of Concept Ltd also contributed to the research.

This text first originated through discussions with Tomas Eskilsson and Charlotte Appelgren in their senior roles at Cine Regio, and a fast thumbs up from Mikael Fellenius, CEO, Film i Väst. My gratitude also goes out to a host of generous creatives, practitioners, academics and students who have supported, aided and taught me much – often through engaging and enlightening interviews, Q&A's; practitioner workshops, academic classrooms and teaching/training sessions, but also through actual productions, helpful communication and professional exchanges. They all deserve thanks for their contribution to this publication: Helge Albers, public funder (Ger), Graham Broadbent, producer (UK), Matthew Blakemore, creative technologist (UK), Kanan Capshaw, editor/director (US), Anna Croneman, Public Funder (Sweden), David Collins, producer (Ire), Matthew Deboysere, public funder (Bel); Julian Friedmann, literary agent (UK), Sandford Galden-Stone, editor/writer (US), John Giwa-Amu, producer (UK), Martin Goffman, writer/producer (US), Ruth Greenberg, writer (UK), Tony Grisoni, writer (UK), Allegré Hadida, academic (Fr/UK), Simeon Halligan, director, (UK), Avi Hakhamanesh (US), Phil Hunt (UK), Anna Huth (Pol), Rachael Richardson Jones, producer (UK), Adam Jeffcoat, animator (UK), Niels Juul, producer (US/DK), David Kosse, producer (UK), Justin Lanchbury, post production supervisor (UK), Monica Landers, AI entrepreneur (US), Nick Marston, agent (UK), Yolanda Ncokotwana, government officer (South Africa), Simon Perry (UK/Fr), Shireen Peermohamed, lawyer (UK), Ashley Pharoah writer, Executive Producer (UK), Juliette Prissard, Déléguée générale, EURO CINEMA, Steven Saltzman, lawyer, Fieldfisher (UK/US), Carl Schoenfeld (Ger), James Schamus (US), Amrish Shah, producer/CEO (UK), Jack Tarling, producer (UK), Brian Tarran, BFI executive and creative technologist (UK), Andrew Taylor (UK), Martin Thau (Ger), Tom Tucker, producer (UK), Christopher Tuffin, producer, (US), James K. Wight, author/consultant (UK), Katrina Wood, MediaXchange (UK/Kenya), Lee Walters, public funder (Wales), Adrian Wootton, Public Funder (UK), Jason Yates, writer/producer/technologist (UK), Zixi Zhang, producer (China), David Zitzlsperger, technologist/entrepreneur (Ger).

However, AI is a highly charged subject. There are numerous people who I interviewed or corresponded with who choose not to be quoted and reserved their right to privacy. They know who they are, and they too have my thanks.

AUTHOR'S BIOGRAPHY

Dr ANGUS FINNEY is a global film and entertainment business specialist, author, and an executive producer. His current executive producing credits include the South African feature *Mrs Plum* (2025), Malta's *The Theft of the Caravaggio* (2025), Dancing Fox's UK comedy *Blueberry Inn* (2025) and the Chinese hit TV series *The Princess Royal* (2024). Finney is the co-screenwriter and producer of *How To Make a Billion Dollars in 24 Hours*, based on James K. Wight's novel. He is the co-founder and Executive Chair of PROOF OF CONCEPT, an e-learning platform serving the Screen Entertainment industries.

Finney is an ambassador for CogX AI, a British Film Institute and Film i Vast AI consultant, and a public speaker and mentor on artificial intelligence. He is co-authoring a paper with Dr Allegra Hadida, Cambridge University, on the creative economy and AI in the light of the Hollywood strikes. His third edition of *The International Film Business: A Market Guide Beyond Hollywood* (Routledge, 2022) is now an industry bible. His next book following *Human in the Loop* (2025) is *AI and the Entertainment Industries* (Routledge, 2026).

Finney teaches at Judge Business School, Cambridge University, where he is a Fellow and Coach on the MBA programme. He is currently a visiting professor to the Beijing Film Academy, and a Course Director at the UK's National Film & Television School, the Danish National Film School, Screen Malta, Screen Ireland and the British Film Institute.

Finney managed Europe's Film London Production Finance Market for 10 years and is the former managing director of Renaissance Films in the 2000s. He was appointed by HMRC as an expert witness in the £1 billion film finance tax litigation case re Ingenious Media among various expert appointments over the past decade. He has a PhD in management and strategy from Bayes Business School, City University London, a MA from New York University in documentary filmmaking and journalism, and a BA Hons from Sussex University in International Relations.

PREFACE

“Before us sat the ultimate plaything, the dream of ages, the triumph of humanism – or its angel of death. Exciting beyond measure, but frustrating too.”

Ian McEwan, *Machines Like Me* (2019)

Since 2022, AI has evolved at a breakneck pace, transforming from a futuristic and mostly unharnessed concept into an emerging and often supportive set of tools across various sectors, including filmmaking and the wider industry’s entire value chain. The rapid advancements in machine learning and data analytics have enabled AI to start to redefine traditional film production, distribution and marketing processes, offering new efficiencies and possibilities.

And remember as you delve further into this publication, *AI offers a set of tools. The choice about how they are deployed is entirely up to us.*

Along with the excitement and opportunities, a dizzying wall of distraction, noise, ethical and societal issues and creative challenges have also abounded. AI's fast-moving development is both exhilarating and daunting. While some embrace its potential with eager and open arms, others are understandably hesitant, wary of the unknowns and perplexing disruption. *Human in the Loop* is designed to help address some of these concerns, acknowledging fears of change and unintended consequences while exploring where AI can support rather than replace human ingenuity and creativity.

At its core, AI is a tool that utilizes applied statistics and advanced algorithms to perform tasks hyper-quickly. AI's dual nature as both a powerful ally and a potential disruptor requires careful navigation. Much like the rise of digital literacy in the 1990s with tools like email, the internet and the cloud, we believe it would greatly benefit film professionals to embrace AI as a co-pilot, harnessing its capabilities to enhance and augment human creativity." This requires a critical grasp of the ethical implications, ensuring data is used responsibly, and maintaining the integrity of creative processes. The rapid adoption of AI brings with it significant challenges. The Writers Guild of America (WGA) agreement, for instance, regulates AI usage to protect writers' credits and rights, ensuring AI cannot be credited for writing or rewriting literary and screenplay material [15]. It's crucial for filmmakers to be vigilant about data sources and committed to protecting the originality and integrity of their work, points made repeatedly in the following chapters.

What are we dealing with?

In very basic terms, leaving to one side the intricate neural networks and intensive training inputs, AI is not sentient and has no common sense [3, 20, 32]. AI machines and their outputs are not 100 per cent reliable, and while they sometimes hallucinate and make things up, they do not have the human’s ability to imagine. To that point, they are not independently ‘creative’ but when directed by us, the human beings, they can support, augment and help creative tasks and goals very effectively. AI machine tools offer the ability to expertly mimic, which is part

of their seductive powers, but they cannot apply taste, judgement and struggle to grasp nuance. Some objectors argue that they depersonalize the creative process: limiting opportunities for serendipity, ‘eureka’ moments [18] or simply random choices that somehow work out rather well. And it’s clear (so far) that the machines are not cognitively aware in a human sense and do not have consciousness (or a conscience for that matter).

However, if we think of artificial intelligence as a ‘brain’ rather than a ‘mind’, countless opportunities arise. When humans interact with AI effectively, we can see new levels of supportive outputs, efficiencies and speedy results, and a host of utilities at our fingertips. But those fingers that prompt and guide the AI tools are vital - just as our minds are critical to achieving desired and intended outputs from an AI-type brain. *Directing* and *collaborating* with this suite of tools are important words to describe best practice and approaches. The art of the prompt and the embracing of co-piloting are key. I speak from experience: the better we become at prompting and directing an AI tool, the better the results. AI tools are highly reflexive, and they literally can ‘learn on the job’ and bring those learnings to the next prompt, stage or related task and more.

The world of AI is far from limited to the US, EU and the UK. The arrival of highly competitive Chinese developed AI systems such as DeepSeek R1 (see Chapter 4) – launched *and shared with full transparency* with the world at the start of 2025 – has broken the mystique of the five horsemen’s opaque business models. The China-inspired disruption has further democratized everyone’s ability to access and build upon powerful AI systems. And DeepSeek’s arrival on the AI stage is just one move in a myriad of volatile developments in the coming months, let alone years.

The demographic dynamic

To understand where we are now with AI, we need to understand what has gone before, and the anthropological impulses that invariably act as breaks on change, whatever form(s) that may take. The generational process of ageing populations (and certain governments) deciding what’s good for their offspring (and citizens) is timeless, and is normally driven by a combination of ignorance, protectiveness and fear. The process of declining acceptance of all things new as we grow older was enshrined by the writer Douglas Adams [14], when he came up with a set of humorous rules in his novel *The Salmon of Doubt*, that pinpoints our changing reactions to technologies.

Adams’ three rules are:

1. Anything that is in the world when you’re born is normal and ordinary and just a natural part of the way the world works.
2. Anything that’s invented between when you’re 15 and 35 is new and exciting and revolutionary and you can probably get a career in it.
3. Anything invented after you are 35 is against the natural order of things.

Demographics, management seniority and subsequent decision making around AI are clearly interlinked. Adoption is faster the younger we are. Clearly what we all feel and how we act on AI depends in part on how old we are.

The democratic debate

There now exist, as this publication explores, many and various AI tools, suites and programs that offer varying utilities for a huge range of tasks across the film value chain. The point has been well made that AI tools cannot be easily divided up into “good” or “evil” camps — while also being capable of democratizing creative work even as they threaten to disrupt swathes of human labour. As my research progressed it became clear that adoption of AI is being driven by individuals on the one hand, and by companies on the other. While the heart of this publication focuses on Gen AI tools and production, what comes before and after the actual physical *production* process is also being impacted heavily by the new technology, hence this research being framed around the entire film value chain, rather than a narrow focus on pre-production, production and post. The pressing concern is that business, project and creative management skills and context around AI are acutely needed, yet appear ad hoc and, to be frank, something of a jungle right now. We hope that this publication helps change that less than satisfactory skills status.

As training and up-skilling is clearly essential, credit should go to those who are delivering the goods, including the admirable and highly practical training on offer from Curious Refuge — where many filmmakers I work with and teach have learned their AI “A to Zeds.” And initiatives such as the Danish National Film School’s in-depth AI Masterclasses — spearheaded by Sten-Kristian Saluveer and Ene Katrine Rasmussen, is a further case in point of rolling up the sleeves and engaging with the hard things about hard things.

Who really gets AI?

Some of the finest writing on AI has been penned by Erik Barmack, a former senior Netflix executive and now producer (Wild Sheep) and founder of newsletter *AI In Hollywood*. His ongoing series of articles for *The Ankler* has covered a range of tools and wider challenges with deep critical analysis. See his stance on the storyboard: “How many writers among us had access to storyboards for our scripts before the birth of [Gen AI] products like this? Maybe a few hundred? Now every writer will have some tool to further conceive the world that they’re trying to create. That is both profound and moving.”²

And some of the finest thinking on AI has been framed by Mo Gawdat, former Chief Business Officer of Google [X] and one of the great thinkers about technology and society of our age [16]. At the time of writing, Gawdat shared a key post on LinkedIn to remind all of us how we should be thinking about AI. Titled: The Three Essential Skills for Thriving in the Age of AI, Gawdat explained that “as we navigate this era of rapid change, there are three critical skills that EVERYONE, organizations, individuals, and yes, even our kids, must master:

² The Ankler: <https://theankler.com/p/ai-storyboarding-changes-screenplays-pitch-scripts>

1. Learn the Tools

“AI isn’t a “future” technology, it’s already here. Don’t stay stuck in the fax machine era. Start experimenting today. Whether you’re in retail, marketing, or any other industry, explore top AI tools like ChatGPT or Gemini. Here’s how:

- Ask them what tools are relevant to your field or interests.
- Start experimenting, no tutor needed. Just dive in.

Think about it: no one taught you PowerPoint; you figured it out by using it. The same applies to AI.”

2. Find the Truth

“We live in an era where misinformation spreads faster than ever. Don’t accept everything at face value. Be curious, dig deeper, and verify information yourself.

The difference between tools like Google Search and AI models like ChatGPT highlights this challenge.

- Google gives you a variety of sources to explore.
- ChatGPT can present answers with unwarranted confidence, even when it’s wrong.

The key skill here is discernment: don’t just ask for answers; seek the truth.”

3. Foster Human Connection

“AI is powerful, but it can’t replicate the warmth of a handshake, a hug, or a shared moment. As automation takes over tasks, our ability to connect as humans becomes more valuable than ever.”

Project management

I have not repeated in detail in this publication my previous doctoral work on project management and the film value chain and textbook analysis. (See [13], [14] for further reading). However, while carefully considering AI’s impact on the value chain, one insight has loomed large. While corporations and companies mull over what to do with AI and how to integrate it across workplaces (and many are struggling), the film industry is organized around projects, and therefore managers of those projects have a big say over AI and its impact on filmmaking. The producer is essentially the lead project manager and has tremendous agency over if, when and how AI tools are to be utilized. *Human in the Loop* is aimed at shining a lens on the good, the bad and the ugly with producers firmly in mind.

After all, as WB Yeats wrote so eloquently in 1914, all producers should stamp into their hard drives the following words: “In dreams begins responsibilities.”

Human in the Loop is part of an essential process of engagement and discourse around AI and the creative industries. Corporations, managers, decision makers and indeed public funders and agencies, need to become much more open, and embrace a transparent, less defensive level of debate and discourse if the creative community at the centre of the industry is to retain

its beating heart. Bridge building is in order. Or what we'll make is going to increasingly result in more of the synthetic same.

Hence, we should all heed the words of the writer Michael Lewis: ***“It’s what you fail to imagine that kills you...”***

CHAPTER ONE:

AI MANAGEMENT CHALLENGES: THE TWENTY THESIS POINTS

“Over the last decade, the growing accessibility of tools, publishing channels, and communities of knowledge has allowed more people to get involved, shape formats, and create new categories of digital entertainment. This shift has been empowering to anyone who has the access, know-how, and ability to use a computer.

But describing the appearance of democratised creativity would be tone deaf without addressing the alienation many people feel as a participant or witness to the creative industries’ movements, progressively aligning with the tech sector’s thought patterns.”

CoStar’s Foresight Lab study *Moments*, on the creative industries, December 2024

Now read the above statement again, carefully. As it will help frame my deliberately provocative yet practical thesis points at the start of this publication. Below are twenty challenges that film and TV managers of organisations, decision makers and project managers will typically face when integrating AI into their business model, organisation and production pipelines and inputs/outputs. The points addressed here are to help raise awareness, critical thinking and develop a growth mindset towards AI integration and the challenges around “Responsible AI” before diving into the details.

1. Data Privacy and Security:

This action point is about taking responsibility. Management and leaders need to ensure the protection of sensitive, private and personal data used in all AI processes. Briefing and reassuring teams about the appropriate and correct guard rails being in place (and why), while being transparent and mindful about their limitations is essential. Trust is the key factor here.

2. Ethical Concerns:

This book raises the importance of “Responsible AI” including a range of ethical issues like a stuck record. But they are not the same. Ethics and a company’s ‘ethical code of conduct’ for example, can be broadly claimed and vaguely adopted. “Responsible AI” points to a framework that is transparent, binding and is potentially bridge building. Addressing both ethical dilemmas and key responsibilities in AI content generation, information sharing and decision-making needs to be embedded into all media, creative and information-driven organisations. Mistakes and missteps will be costly and hard to rectify. And they have barely started.

3. Talent Transition and Training of Humans:

Whilst this book is more than a manifesto for fresh training, it is clear the industry at large needs to adapt and upskill right across the entertainment value chain. Each and any manager should ensure that their workforce is fit and primed to understand and oversee new AI-driven and supported roles and responsibilities, including upskilling for prompting and co-piloting skills.

But most managers have barely started.

Training creatives to work effectively with AI tools, and ensuring resources, time and effective delivery needs commitment. Managers will need to overcome job loss, replacement and re-allocation fears and a healthy dose of cognitive bias in the face of a new industrial revolution. They also need to reconcile the inherent flight risk that works reflexively: train well and people may well leave for a better role elsewhere!

4. Integration Costs:

Budgeting for the initial (and ongoing) investment in AI infrastructure and tools is important allocation work. Fear of being wrong, or tools being replaced and upgraded, is not an answer. Being prepared to start again, and reimaging existing tech driven and internet tools from websites to public interfaces will be important as historical sunk costs will most likely need to be written off. Training and up-skilling investment (often ignored or cut back) in favour of over-paid, under-performing consulting fees need to be a priority.

5. Intellectual Property Rights:

Navigating ownership and licensing issues related to AI-generated content is a key requirement (see Chapters 13 and 14). This is critical for inhouse generation, commissioning and licensing of IP and company generated information and creative goods. Negotiated settlements may not be protection for individuals and your organisation. What is the status and expertise of your legal advice? Are they working on your behalf in a constructive framework with a clear strategy, or are they just driven by a desire for more billable work...

6. Quality Control and the danger of derivative outputs:

Monitoring, maintaining (and constantly improving) the artistic and creative quality of AI-assisted content requires vigilance. It has been surprising to see Studio-streamers such as Disney's Marvel let things get past the quality control system, while Gen Z and Gen Alpha audiences are increasingly suspicious of materials that smack of "looking like AI..." Gaming communities are even more ruthless in their rejection of identifiable Gen AI outputs³. Above all, there is a danger of unchecked AI tools assisting an ominous drift towards derivative and flattening results. The 'uncanny valley' [27] could become a dull desert if we're not vigilant about outputs.

7. Fair Representation:

Ensuring diversity is fully integrated rather than paying lip-service and ticking off checklists is a key challenge. Understanding and implementing strategies that help to avoid bias in AI-generated information, media, characters, images and stories require time, resources and training. If Google can launch an entire new tool that clearly suffered from significant bias⁴, so can we all fall at the bias hurdle.

8. Creative Autonomy:

True talent is a flight risk. Highly creative humans have tacit and transferable skills. So do curators and arbiters of quality and taste. The need to balance AI recommendations and data-driven implementation with the vision of filmmakers, storytellers, creative project managers, acquisition executives, commissioning teams, etc, is going to be a defining strategy for many creative industry organisations in the near-future.

³ Interview with Charles Cecil, Revolution, 10.02.25

⁴ Google's Big Mistake with AI: https://www.youtube.com/watch?v=Fh-5F3h_JxM

9. Audience Acceptance:

The ‘uncanny valley’ [27] – the point when a viewer is taken out of the moment due to a subconscious or very alive suspicion that something is not right - is now a pressing concern for Gen AI outputs. Gauging viewer acceptance of AI-generated content is delicate, especially considering the increasing levels of AI-generated ‘slope’ across social media sites at the time of writing. Managers need to be overseeing the design and application of watermarking when appropriate, collecting feedback and data on reception, and engaging with logged responses to AI generated materials. Just because AI is here and can be used, does not mean it’s going to always generate the desired results with the recipient. Outputs should always depend on us.

10. Regulatory Compliance:

Adhering to current AI and content-related regulations is only one part of the challenge for management, as it’s a moving target and will be shifting over the coming months and years as legal cases, precedence and laws continue to evolve, refined and rewritten. Business affairs and external counsel will need to be highly vigilant whilst not throttling their organisations with red tape torpor.

11. Overcoming AI Hype:

Dominant, large tech organisations and their billionaire leaders, from Google to Apple, Musk to Zuckerberg, are shaping the media frenzy and hype cycle around AI. Managing expectations regarding the capabilities of AI, while not stifling its clear opportunities and advantages, requires calibration and critical analysis – qualities clearly lacking in the providers of the systems judging by the ‘sellers-speak’ and hype cycle we are experiencing at the time of writing.

12. Data Bias:

The tracking, mitigation and removal of bias in training data that can affect AI outcomes is a challenge for both open and closed systems. As the saying goes: “Garbage in, garbage out.”

13. Predictive and return on investment (ROI) measurements:

This publication casts a wary eye over the promises of ROI on film and TV investments. AI is not a reliable fortune teller, but an emerging source of scenario planning and outcome analysis. Determining the return on investment for AI implementations on the other hand, is going to be a watching brief as adoption takes many forms. Sales companies and distributors take full responsibility for their estimates and ultimate projections, while an algorithm has no such duty of care.

14. Content originality and creative management:

AI and its propagators promise a lot. And AI tools are typically self-referential when asked for self-analysis or assessment of their attributions. But Oscar winning screenwriters the bots are not. Decision makers, commissioners and creatives will collectively need to be mindful about overcoming formulaic, tired, trope-laden AI storytelling materials. Script editing notes and feedback will still need to go through humans, (not machines) [15]. Managers and producers will need to be wary of removing the creative agency of talent and teams. Implementing effective testing for AI-generated or assisted scripts and creative materials and avoiding unintentional plagiarism in AI-generated content will be essential. Incorporating viewer and customer feedback into AI-driven decision-making will also need acting upon.

15. Story and IP Licensing:

Handling copyright and licensing for AI-driven or supported content, and being clear about which jurisdiction you are operating in but where your IP may be exploited wider from a global and territorial perspective is key. All management and business affairs executives will need to keep checking on latest WGA and SAG settlements and current, up to date rules, negotiations, etc.

16. AI Model and tool selection:

Choosing the right AI models and algorithms for specific tasks requires dual expertise: meaning deep understanding of the AI tools on offer and the business, commercial and creative tasks at hand, Integrating AI with existing studio-steamer pipelines, and ensuring footprints are not erased in the process is part of that larger management challenge.

17. Overdependency:

Mitigating the risk of being overly dependent on AI systems and experts, while recruiting and retaining AI specialists is a delicate balance. How consultants and experts are hired, best utilized and made most effective is a challenge. Right now, vast sums of money have been wasted on major consulting firms that are often less expert than the bespoke, insider who can harness both creative industry knowledge and act as a compelling AI creative technologist. Knowing (or researching) who to ask is going to become critical for organisations to flourish rather than flounder.

18. Data Management and dirty data:

Many companies and organizations fail to collect structured data properly, if at all. Those that do collect data often suffer from what is referred to as 'dirty data.' Furthermore, security and data storage systems need to be fit for purpose when tasked with managing the vast amount of data generated and used by AI. Ensuring that safety storage issues are considered is a must.

19. Brand Identity and aggregation:

Maintaining a distinctive studio or organisational brand in an AI-augmented industry is proving increasingly difficult for major players. Content distribution is heavily aggregated by streaming platforms in a manner that shifts the subscriber/viewers' awareness of the originator or producer's brand. The BBC, for example, is suffering from a loss of brand awareness and loyalty among younger demographics while their shows often remain popular when licensed and available on Netflix and other major platforms. The catch is the viewers have no idea or care that the BBC made the content they are watching.

20. Common Sense:

Humans have an extraordinary capacity – much of the time – to exercise common sense. AI has no common sense. All managers and leaders across the industry would do well to remember this fact of life and apply common sense to all and any AI decisions, implementations and inputs and outputs as much as humanly possible.

CHAPTER TWO:

AI and the ENTERTAINMENT VALUE CHAIN

“The essence of strategy is choosing what not to do.”

Professor Michael Porter, Harvard Business School

The value chain model: An introduction

Every MBA graduate will know the term ‘value chain’, but many of us in the entertainment industries may need a little prompting. The ‘value chain’ is a model designed by Harvard academic Professor Michael Porter in 1985 [30] that describes a series of value-adding activities connecting a company’s or business sector’s typical supply side (e.g. materials, logistics, production processes), with its demand side (e.g. marketing, distribution and sales), by examining the different stages and links of a sector’s value chain.

Managers, consultants and strategists have attempted to use the model over the past 40 years to refine and/or redesign their internal and external processes to improve efficiency and effectiveness – i.e. become more competitive. While considerable academic research and study has focused on value chain analysis, far less attention has been concentrated on AI’s impact on value chains and the use of various tools (e.g., generative, algorithmic etc.,) across the stages of each link in the chain.

Given AI’s rising ubiquity, and the speed of change apparent across all creative sectors and their specific value chains (including film, TV, video gaming and music, to name a few), it is important for all stakeholders to take a step back, and consider what is on offer, and gauge AI’s wider impact across the film industry rather than just analyse specific stages. But to understand the overall effects, it’s necessary to delve deeply into each phase of a film’s journey, from cradle to screen.

What do these changes mean for the international film business?

Before we address AI, the production and distribution of audio-visual content has been affected in the past decade [14] by:

- Technological change, including a considerable increase in bandwidth, has impacted regions across the globe. This change was initially most pronounced in Western Europe and North America but has since spread to other major economies and developing nations worldwide. Now India, various African countries, and China (operating in its own "walled garden" with major regulatory restrictions) are also key players in the social media information mass market, whether global or territorially oriented.
- Audience fragmentation and migration: Territories, communities and a growth of expats and diaspora who are keen to see their own lives and communities, values and issues reflected on the screens they watch are significant audiences.

- An increase in multi-tasking skills and multi-absorption of varying media simultaneously has taken place in viewers/customers/audiences. These viewing/clicking trends are particularly borne out by the rise of online gaming, YouTubing, Instagram, Fortnite, TikTok et al.
- A rise in social networking and associated user-generated content and collaboration. See Gen-Z and now some of the backlash from Gen-Alpha (aka the ‘screen generation,) who are far more sensitive about authenticity and social values rather than self-promotion and gimmicks.
- A rise in multi-channel, interactive broadcasting, placing increasing pressure on traditional broadcasters and their licensing model or advertising supported model, given that such models are no longer “a license to print money” [2].
- An increase in populist, interactive programming involving the public as lead players and contestants. And now, social influencers, supplanted more recently by virtual influencers, have arrived.
- A change in payment/billing mechanisms. This, in turn, has had a considerable impact on subscription and advertising-supported online models moving beyond physical and digital piracy (to an extent as piracy remains an industry-wide issue).
- A rise in the public’s ability to produce and distribute (often cost-free) their own creative endeavours, including music, words, photographs and video.
- Interchangeability between mediums, with decreasing and less clear boundaries between online networks, short films, recorded music, photos, podcasts, virtual and augmented reality etc.
- Transferability of intellectual property, franchises, story universes and talent from one component to another or a number: For example, a TikTok star on a show shifting to Netflix or Amazon; or a YouTube short being picked up adapted to a long-form scripted show etc.

None of the above developments directly mention AI. But now the industry and all sectors are grappling with the fast-moving ubiquity of AI, not just in the way that it’s been used for algorithms, audience analysis and post-production over the past decade or more, but specifically through the adoption of Gen AI in swathes of applications across the entire value chain.

THE AI FILM VALUE CHAIN

DEVELOPMENT

CURRENT: Utility across images, decks, copywriting, mood reels, lookbooks, bibles, + sizzle reels + storyboarding

FUTURE: Directing own materials using AI-generated sizzle reels and proof of concept materials, rise of Large Action Models (LAMs)

CHALLENGES: Co-piloting w/ AI, maintaining intentions + focus

CURRENT: Ideation, genre and audience data, script editing inputs
FUTURE: Assisted script writing with AI tools
CHALLENGES: Copyright, authorship, issues with AI-generated content. Imagination and craft!

PACKAGING

CURRENT: Historical data mapping and analysis (performance, genre, package elements), predictive algorithms.
FUTURE: More data processing with tools like Canva for social media insights.
CHALLENGES: Dependency on old and historical data and over confidence on performance projections

SALES & MARKETING

CURRENT: Scheduling, storyboarding, budget costing inputs, location scouting and research

FUTURE: Cost savings via schedule testing, exploring tasks that can be seamlessly automated

CHALLENGES: TRAINING: Upskilling line producers and HODs to work with AI.

PRE - PRODUCTION

PRODUCTION

CURRENT: Ubiquitous use right now across editing, music, sound, vfx, dubbing and vubbing
FUTURE: Advanced AI in grading (DaVinci Resolve) & sound design (Skywalker Sounds AI)
CHALLENGES: Over dependence on AI in creative processes

CURRENT: Across all HODs – Planning + accounting tasks, SFX planning, costing, shot listing.
FUTURE: Virtual production tools, real time rendering, Large Action Models (LAMs)
CHALLENGES: Consistency, homogenization, reliability, cost + power usage implications

POST PRODUCTION

CURRENT: Algorithms: audience targeting + content recommendations. Historical data driven systems.
FUTURE: More of the same with predictive analytics
CHALLENGES: Risk of losing fresh, imaginative content due to algorithm-driven marketing. Homogenization. Risk adversity.

AUDIENCES & DISTRIBUTION

CURRENT: Data and buzz metrics, demographics, real use analysis, marketing tweaks and adjustments, playability metrics, post-mortem analysis opportunities.

RELEASE

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Figure 1: AI Film Value Chain

Figure 1 demonstrates the increasing weight and impact AI tools, suites and programs are having across the entire value chain. The heart of the following chapters and this publication's journey through the film and TV value chain is the aim to examine the different stages and links (while adding context), before exploring animation, promotion, public funding and the legal, regulatory and ethical issues arising as the entertainment industry's landscape starts to adapt to the wider adoption of AI across the entire value chain. Before moving to the detailed sections of the value chain, it's helpful to look at a simplified overview of the three core Gen AI utilities - Fig 2: AI Modular Utility.

Fig 2: AI utility overview

MODULAR UTILITY

TEXT

Text driven AI programmes help generate, alter, edit, summarise information using text-to-text- to speech prompts

AUDIO

Audio Gen AI programs, platforms and technologies facilitate the manipulation of existing sounds and the development of new ones

VISUAL

Visual based Gen AI programs allow users to generate/modify images. Outputs can be 'new' works generated from existing assets (text-to-image) or enhancements (image-to-image, or image-to-video)

SAMPLE TECHNOLOGY

Chat GPT
Perplexity
Claude AI
Bing
Mistral
DeepSeek
Cinelytic

Stable Diffusion
Jukebox
Audio Translation
Deep Composer
Dance Diffusion
Sondraw

Midjourney
Leonardo
DALL-E 3
Synthesia
Sora
Runway
Canva
HeyGen
Veo 2
Kling AI

PROMPT TYPES

Text- to- Text
Text- to - Speech
Speech -to - Text

Text-to- Audio
Audio -to - Audio
Speech - to- Audio

Text-to- Image
Image -to - Image
Image - to- Text

Source: Adapated from CVL Economics Survey 2024

CHAPTER THREE:

AI and DEVELOPMENT

“Maybe the life of a nation – its health, its spiritual strength – can be deduced from the stories the nation tells, the stories it suppresses, the stories it sanctions...Nations that tell themselves stories of how great they are may suffer from a pathology.”

Novelist Ben Okri

Having examined the film value chain, and how AI can be seen akin to a layer of ‘skin’ that wraps around each link in the chain, this chapter delves more deeply into the fundamental starting point of all film and TV projects: creative development. As emphasized in the preface to this book, rather than assuming a siege mentality to the advancement of technology, it is key for the industry at large to be critically analytical around Gen AI’s utility and precise functions. Detached and precise assessments of where AI’s tools can be supportive, and where they threaten the creative process and outputs are imperative. And judging by the lava-like flow of AI tools - with new releases emerging daily - there is a lot coming our way.

Introduction to film development

Development is the chronological starting point for all producers, writers, writer/ directors and many directors who do not actually ‘write’ screenplays when embarking on the initial film and TV drama creative process. Above all, this phase of the value chain is about storytelling. It is the place that ideas, concepts, stories and projects start their lives: it comprises the core “material” from which all other matters pertaining to a production flow from. From here, early-stage conceptions need to be stimulated and nourished, and driven forwards through a range of different steps – alike to a creative ‘scaffolding’ process.

As such, the development stage of a film project is the bedrock to subsequent film activities, including packaging, pitching, financing, pre-production, principal photography, post-production, sales, marketing, distribution and the subsequent film exploitation process to audiences [14].

Reading, reacting and then responding to material is a fundamental part of the process. Unfortunately, post the COVID pandemic and the Hollywood strikes – and most recently the disruption and tragedy of the LA wildfires at the start of 2025 - the metaphorical ‘shelves’ of unmade screenplays has risen while the energy and commitment to read, review and revert has dropped. Some senior players bemoan the endemic laziness or disinterest that has cast a spell across the commissioning and acquisitions sectors of the industry. It’s as if vast numbers of people at the development and commissioning stage of the industry now share in a collective illiteracy – keen on the one pager, visual deck and increasingly insisting on existing and embedded IP along with proof-of-concept materials, but somehow less minded to read the actual script or pilot promptly.

In a perfect and well-functioning world, development executives, producers, and sometimes third party ‘readers,’ should undertake the workload of reading and reviewing material. However, as this chapter explores, AI is now being positioned and utilized by some early adopters to undertake (or at least ‘share’)

the initial ‘reading’ and report stage and then some - meaning a range of further data-driven machine ‘opinion’ and outputs that increasingly drives decision making (See Chapters 4-6 for further analysis). Whether it’s coverage of a potential book or other form of underlying IP, or analysis of an existing treatment, synopsis, deck, bible or early screenplay draft, AI-driven tools are now encroaching on what was for more than 100 years a fundamental part of the development process: written by humans...read by humans. Now no longer just humans in the development loop as AI joins the ranks of the ‘readers.’

We need to remind ourselves that AI tools don’t apply emotionally driven responses or even common sense to the process of assessing the value of creative material. They don’t laugh, cry or shudder in response to the written word. Gen AI is task driven, and results orientated. Depending on what the inputs are that we provide through our instructions, the AI machine-learning tools can be prompted to provide summaries, break downs, bullet points and within its LLM limitations answer to the best of its programming abilities the human’s questions and instructions. These are predominantly task driven exercises that can save time but at best still only form only part of the ‘value’ assessment process. Indeed, “language without meaning and emotional context is not speaking...interaction with humans is entirely different to next token prediction...” warns science fiction writer Ted Chiang [15].

The idea

The key starting point for every feature film is the ‘idea’, or what more recently commentators influenced by Silicon Valley-speak, have more generically called the ‘ideation’ process. The creative concept of what will make a potential film or TV show lies at the heart of development. That may well be based on, for example, an existing book, play, published story or life rights (not to mention the plethora of prequels, sequels, remakes and franchises), to name some of the typical IP sources of material and core ideas for a film or show. Or, *astonishingly*, it may mean a genuinely original idea – in the true sense of that much misused and overused word by the Studio-streamers today – that has originated in the imagination of the creative team, whether by a writer, producer or director or even a third party close to that team.

If we take a step to the side, and cross reference what AI can offer re idea generation, it’s tempting to be seduced. According to a Cornell University AI study in 2023, one human generates on average five ideas every 15 minutes. A person working with a well prompted AI can generate more than 200 ideas every 15 minutes [15]. This kind of analysis assumes that more is best, and that speed of generation equals higher efficiency levels. But the creative challenge is rarely about *more* ideas. The heart of the matter is the selection and ‘weight’ we place on the strength and meaning of an idea. Once again, human intentions, inputs and judgement are essential to the potential quality of the process and the ultimate outputs.

Or as a top writer reminded me: ‘garbage in, garbage out.’

A resonant example of a leading author and screenwriter “playing” with AI and sharing his experiences in the public domain, was triggered when a father started co-writing with his son following a severe injury impaired Hanif Kureishi (*The Buddha of Suburbia*, *The Mother*). Taking co-piloting to a two-tier level, Kureishi and his son Sachin initially used ChatGPT4 to help develop ideas for stories. The initial result was a stream of cliches, stereotypes and sentimental Hollywood endings. “It was like interacting with an intelligent child; it impressed me how much they knew for its age, but it couldn’t *really* help me.” Or could it.

“Then I started treating it like an adult. I began giving it more precise instructions, challenged it if I didn’t like what it was giving me, asked it to be critical of my ideas, to appraise them like an editor. It learns as you teach it, responding to the specificity of the input.” Much of the experimentation didn’t necessarily flesh out, but lots of ideas are what Kureishi states “we need in the beginning, world-building stage. In this dark wood, the chatbot is like a little torch, pointing us in various directions to go and explore.”

But for all the prompts and co-piloting in the world, Kureishi is clear that for now, and possibly for a very long time to come, AI is just a guide: “Exercises like this remind us of how important the writer’s voice is. Authenticity is subjectivity, and no matter how hard the industry tries to create the formula for good television and film, originality is the only thing that endures.” [15].

Other leading writers that are engaged with AI tools also enjoy the plethora of ideas that the various AI assistants can throw up. “I have played around with a bunch of AI programmes and input tons of ideas. It’s most interesting when you are planting seeds, letting ideas sit, and then come back and see which are taking form, explains showrunner Mark Goffman (*The Umbrella Academy*). “It can be fun to play with themes. I might play a dozen and then pick one, collaborate, co-pilot and have some fun. I see AI as an additional tool that adds to the writer’s kit but does not replace us. [15]

Writers point to the importance of flavour, tone and nuances when it comes to the heart of the screenwriting process. “Much of the craft of writing is around making choices and understanding how to achieve your intentions,” explains Sandford Golden-Stone, an experienced writer and editor. The craft is also about providing and creating an emotional feeling and response in the reader or the audience. “The problem comes when humans are not coming from an authentic creative place – they are just task driven. And that is a serious issue for LLM machines which are writing and selecting words on pre-set formulas to basically deliver an answer or result.” [15].

That calibrated analysis is shared by leading script editors in Europe. “AI can significantly aid screenwriters by providing tools for inspiration, optimization and efficiency,” explains Martin Thau, a German writer and script editor, who teaches at the Munich Film School. “But the tools should be used as complementary aides, rather than a replacement for human creativity. It’s humans who offer the nuanced understanding of emotions and storytelling depth, not machines.” [15].

Chapters Four and Five explore some of the tools now being utilized in the development and packaging stages of the value chain.

CHAPTER FOUR:

IDEATION, WRITING AND EDITING

"It's very difficult to write science fiction when you're living in a science fiction world."

Writer, director, producer James Cameron

The integration of Artificial Intelligence across the high risk and challenging film development process, particularly in areas such as ideation, writing and editing, represents a potential paradigm shift in the early stages of the entertainment value chain. This chapter examines the current landscape of AI tools available at this stage of a film's journey, their potential impacts, and the challenges (and problems) that they present to filmmakers.

While the AI 'industrial revolution' offers fresh opportunities for alleged 'efficiency' and creative exploration, it also raises significant questions about the fundamental nature of creativity. Core, unique attributes present in human-specific sentience and lived experience – including emotions, imagination, instinct, and intuition – are key to place upfront when considering the power and impact of ideas, storytelling and our understanding of the world through the power of film and video. A larger tool kit may be useful, but notions (and hype-driven claims) that machines can or will soon match the highest levels of storytelling and writing craft is both unlikely and seriously unhelpful. As the great Nigerian writer Ben Okri reminds us: "Stories are the highest prototype of being". [28].

There are also a range of practical and legal issues amounting at the time of writing: not least, the intellectual property and copyright concerns across the creative community (See Chapter 14). What's at stake is how creatives can remain at the centre of the development process, as narrators and curators, or the future of human agency in the development process could become disastrously compromised.

The Evolving Landscape of Creative Ideation

AI tools such as ChatGPT, Perplexity AI, Claude.ai and Character.ai (and most recently DeepSeek R1 and Mistral's Le Chat) are clearly having an impact on the creative process, offering filmmakers a level of support and options in generating ideas, refining scripts, and enhancing storytelling techniques.

AI-powered tools are being used increasingly by writers and producers at the brainstorming or 'blue sky' early stages, offering filmmakers the ability to rapidly generate diverse story concepts, plot outlines, and character ideas. This capability can spark creativity and sometimes help overcome writer's block. And it can also be completely distracting, encouraging writers to go down the rabbit hole and get lost in endless prompting, idea-overload, dead ends and minutiae. There's a reason more than two decades ago the masterful American novelist Jonathan Franzen would unplug his computer from the internet before writing: distraction avoidance.

And the arrival of AI large language models (LLMs) this decade also raises profound questions about the nature of originality and imagination in storytelling. To those more critically minded, the use of Gen AI in scriptwriting presents a paradox. On one hand, it offers a vast pool of ideas and can help writers explore narrative possibilities they might not have considered. On the other, there's a serious risk of homogenization, where AI-generated content leads to formulaic storytelling. The challenge for filmmakers is to harness AI's generative capabilities while maintaining their unique creative voice and focusing on the story they want to tell.

Research and Development

AI's role in research and development for film projects is supportive when used effectively and ethically. Tools can process and analyse vast amounts of information, providing filmmakers with comprehensive summaries on, for example, historical events, scientific concepts, or cultural practices. This capability streamlines and can speed up the research process, potentially leading to more informed starting points.

However, this speedy assistant, with fast reactions and seeming efficiency, raises a more pressing caveat. There's a genuine risk that filmmakers might *over-rely* on AI-generated research, potentially missing the nuanced understanding that comes from personal exploration and human experience. Nor should any users rely on AI's absolutist and striking self-confidence without a common sense and fact check. There lies the trap of bias, selective information and the inherent dangerous assumptions we ourselves have sown across the entire internet 'superhighway.' The depth of insight that informs great storytelling originates from a filmmaker's unique perspective and lived experiences, and who have something to communicate – creative bedrocks that AI cannot replicate.

Character Development

AI tools offer potential capabilities for developing multidimensional characters. Gen AI tools can generate detailed character profiles, suggest backstories, and simulate dialogue. While various tools can help explore character development, motivations and ensuring consistent character voices, usage also poses a risk to the organic, intuitive process of character creation. The danger lies in depending on Gen AI tools too heavily and creating characters that feel artificial or are lacking in the subtle complexities, motivations and emotional conflicts that make fictional personas compelling and engaging. Filmmakers must be cautious not to let AI-generated character profiles replace the deep, empathetic understanding of human nature that forms the cornerstone of character writing.

What would an AI tool make of PIXAR's maximum that "Character is action"?

Well, I asked Perplexity Pro (07.01.25) what it made of this statement, and here's what it came back with at first pass:

Pixar's position that "character is action" reflects a foundational principle in storytelling and character design, emphasizing that a character's essence is revealed through their actions rather than static traits or dialogue. This approach aligns with the idea that a character's choices and behaviours are the most authentic expressions of their personality, motivations, and conflicts.

Implications for AI-Driven Character Tools

In the context of AI-driven character tools, this philosophy could have profound implications:

- 1. Behaviour-Driven Design:** AI tools could focus on generating dynamic, behaviour-based characterizations, where actions stem from programmed motivations and goals. For example, an AI-driven character might display consistent decision-making patterns based on predefined traits like ambition or empathy, aligning with the idea that “actions speak louder than words”
- 2. Real-Time Interaction:** AI technologies could simulate characters whose actions evolve in real-time based on environmental stimuli or user interactions. This would make characters feel more lifelike and engaging, as their actions would directly reflect their internal logic and external circumstances
- 3. Empathy Building:** By focusing on action as a storytelling device, AI tools could enhance audience empathy. Viewers often connect with characters by observing their struggles and choices in pursuit of tangible goals, which could be dynamically modelled using AI.
- 4. Conflict Generation:** The principle that dramatic conflict arises from competing goals could guide AI systems to create richer narratives. For instance, multiple AI-driven characters with clashing objectives could generate organic storylines and tension

Pixar’s emphasis on “character is action” aligns well with the potential of AI to craft nuanced, behaviourally driven characters. By leveraging this principle, AI tools can create characters that are not only believable but also resonate emotionally with audiences.

What the above demonstrates more than anything else (and I have extensive evidence of this trait), is the way AI never misses an opportunity for self-promotion and up selling! Not until you re-prompt and push for critical analysis will it give you considered and less self-serving answers.

Copyright and Ethical Considerations

The integration of AI in creative processes raises complex legal and ethical questions, particularly regarding copyright and the definition of original work. As AI systems are trained on literally millions of existing works, there's a potential for unintentional plagiarism or the creation of derivative works without proper attribution (See Chapter 14).

Furthermore, the use of AI in film development raises questions about transparency and authenticity. Should audiences be informed about the extent of AI involvement in a film's creation? For example, a high-profile row broke out over the use of Gen AI tools to improve Hungarian pronunciations in the dialogue and help create architectural designs in the 2025 Oscar-nominated *The Brutalist*. Gen AI use was not initially acknowledged by the filmmakers, but should it have been? Did the film really deserve a severe online backlash? And did AI really alter the outputs of the film in question in a sensitive or manipulative manner? The evidence is that the AI inputs were no more than any current filmmaker would utilize from existing supportive tech tools to help with nuances and creative images. How we balance the perceived value of human creativity next to humans using Gen AI creatively has fast become a divisive area as we lurch forwards in this new world.

AI Tools for Film Development: A Comprehensive Analysis

ChatGPT

ChatGPT is a versatile AI chatbot that serves as a potential brainstorming partner for filmmakers. It can rapidly produce diverse concepts for plots, characters, and settings based on minimal input. While it offers tremendous potential for idea generation, filmmakers must be cautious about over-reliance on its suggestions and ensure they maintain their unique creative vision. Heavy use of ChatGPT and increasingly complex prompts also tend to result in the AI tool prompting the user to upgrade their subscription level.

Name: ChatGPT

Link: <https://chatgpt.com/>

Utility: Brainstorming, script development, research

Application: Thought partner for scriptwriting, character development, plot ideation

Sample prompt: "Generate five unique plot twists for a sci-fi thriller about time travel"

Position in value chain: Early development, scriptwriting

Perplexity

Perplexity bills itself as the world's first interactive search engine and search companion. Its ability to retrieve and synthesize information from multiple open sources makes it a powerful tool for research and fact-checking. However, filmmakers should be aware that the information and citations provided may not always be completely accurate or up-to-date and should verify critical details through traditional research methods.

Name: Perplexity

Link: <https://www.perplexity.ai/>

Utility: Research, fact-checking

Application: Gathering information from multiple sources for script research, authenticity

Sample prompt: "What was daily life like for a medieval blacksmith?"

Position in value chain: Research phase, script development

Story Prism

Story Prism is an AI-based app designed specifically for screenwriters. It helps writers develop their story ideas by generating loglines, creating multiple premises from a single logline, and offering an interactive AI chatbot to answer questions about the story and help flesh out details.

Name: Story Prism

Link: <https://www.storyprism.io/>

Utility: Story development, premise generation

Application: Creating loglines, exploring story variations, interactive story development

Sample prompt: "Generate five different premises based on this logline: A time traveler accidentally changes a pivotal moment in history"

Position in value chain: Early concept development, story outlining

Character.ai

Character.ai allows users to create and interact with AI-powered character personas. This tool is used by writers to explore, for example, character motivations and testing dialogue. However, filmmakers should be cautious about relying too heavily on AI-generated characters, as they will often lack the depth and nuance that comes from human insight, imagination and experience. Building character profiles that you can then converse with has become a popular aspect of this tool, as the character becomes more evolved as the discussion and exploration goes deeper.

Name: Character.ai

Link: <https://character.ai/>

Utility: Character development, dialogue exploration

Application: Creating and interacting with AI-powered character personas

Sample prompt: "Create a profile for a cynical detective in his 50s and let me have a conversation with him"

Position in value chain: Character development, dialogue writing

Sudowrite

Sudowrite is an AI-powered writing assistant tailored specifically for fiction authors. It offers a comprehensive suite of tools designed to enhance the creative writing process, from ideation to final drafts.

Name: Sudowrite

Link: <https://www.sudowrite.com/>

Utility: AI-assisted fiction writing and story development

Application: Story outlining, scene generation, character creation, descriptive enhancement, plot expansion

Sample prompt: "Describe the protagonist's first encounter with a mysterious artifact, focusing on its otherworldly appearance and the character's emotional reaction"

Position in value chain: Script development, dialogue writing

Sudowrite's key features include Story Bible for world-building and character development, Write for generating contextually appropriate text, and Describe for enhancing sensory details. The tool also offers Brainstorm for idea generation, Expand for scene development, and Canvas for visual story organization. While it aims to boost creativity and productivity, mastering its features may involve a learning curve[2].

Storywork

Name: Storywork

Link: <https://www.storywork.io/>

Utility: AI-assisted screenwriting and story development platform with table read functionality

Application: Interactive story development, script formatting, pitch deck generation, AI grammar check, and AI read-aloud for table reads

Sample prompt: "Guide me through the 18-step process to develop a compelling story arc for a sci-fi thriller"

Position in value chain: Screenwriting, ideation, pitch preparation.

Midjourney

Midjourney is a powerful text-to-image generator that can be used to create various types of visuals. It's particularly useful for mocking up promotional materials, creating bespoke creative references, and generating items for mood boards and storyboarding. Updates have integrated the ability to in-paint and out-paint images, giving users more control over the generated visuals.

Name: Midjourney

Link: <https://www.Midjourney.com>

Utility: Visual concept creation, mood boards

Application: Generating visual references for settings, characters, and scenes

Sample prompt: "Cyberpunk cityscape at night with neon signs and flying cars"

Position in value chain: Visual development, storyboarding (see Stable Diffusion below), prep, pre-production

Stable Diffusion

Stable Diffusion is an open-source text-to-image generator that offers more control than Midjourney but requires more technical knowledge and training. With the ControlNet extension, users can create characters and maintain a level of consistency that allows for a more effective approach to storyboarding.

Name: Stable Diffusion

Link: <https://www.stability.ai/>

Utility: Storyboarding, character visualization

Application: Creating consistent character visuals and rough storyboards

Sample prompt: "Generate a series of 6 storyboard panels showing a car chase through a busy city"

Position in value chain: Packaging, prep. pre-production, storyboarding

Mistral

Name: Mistral

Link: <https://mistral.ai>

Utility: At the time of writing Mistral had launched Le Chat, offering a range of multilingual tools across the board, supported by a conversational assistant, le Chat. Mistral is French owned and designed but offers international usage and reach.

Application: Various models that Le Chat uses: Mistral Large or Mistral Small under the hood, or a prototype model called Mistral Next, designed to be brief and concise.

Business application: Chat Enterprise offers self-deployment capacities etc.

Position in the value chain: across the 7 key stages.

DeepSeek

DeepSeek is an emerging AI chatbot from China that has rapidly gained attention at the time of writing, both in the tech world and the global media sector. DeepSeek offers capabilities that rival established players like ChatGPT and was built and costs vastly lower levels of investment.⁵ For film and media professionals, DeepSeek presents an intriguing new option in the AI toolset, particularly for those working on projects with international scope or Chinese-language content, or are seeking to build out their own bespoke tool kit.

Name: DeepSeek

Link: <https://www.Deepseek.com>

Utility: Multilingual content generation, research, creative ideation

Application: Scriptwriting assistance, character development, cross-cultural storytelling

Sample prompt: "Create a character profile for a bilingual protagonist in a modern Shanghai-set drama"

Position in value chain: Early development, scriptwriting, cultural consultation

Key Features and Capabilities

Bilingual Proficiency: DeepSeek stands out with its ability to understand and generate responses in both Chinese and English. This makes it an invaluable tool for filmmakers working on projects that bridge Eastern and Western cultures or require authentic Chinese language content.

Competitive Performance: DeepSeek's R1 model has surpassed several other AI models, including those from Google, Anthropic, Meta, and even OpenAI's GPT-4o, according to the Artificial Analysis Quality Index. This suggests that it can handle complex creative tasks and nuanced language use required in film development.

Cost-Effective Solution: DeepSeek claims to offer performance comparable to leading US models at a significantly lower cost. This could be particularly appealing for independent filmmakers or production companies looking to leverage AI capabilities without breaking the budget.

Efficient Processing: The AI uses a 'mixture-of-experts' architecture, which allows it to operate effectively with fewer resources. This could translate to faster response times and more iterations during

⁵ The Economist, Briefing: Chinese AI – “Uncomfortably close” 01.15.2025

brainstorming sessions.

Considerations for Film Professionals

Cultural Sensitivity: While DeepSeek's bilingual capabilities are a strength, it's important to note that the AI model self-censors on topics prohibited in China. This could limit its utility for projects dealing with certain historical or political themes.

Creative Limitations: Like other AI tools, DeepSeek may have limitations in generating highly original, unique content. It tends to provide lengthy, neutral responses and avoids personal opinions. Filmmakers may decide to use it as a springboard for ideas rather than a replacement for human creativity and ingenuity.

Evolving Capabilities: DeepSeek is rapidly developing, with new features like the Janus-Pro image generator being released. This could expand its utility for visual conceptualization in pre-production phases.

Data Privacy Concerns: Given DeepSeek's Chinese-based founding ownership, some security experts have expressed concerns about data privacy. Filmmakers working with sensitive or proprietary information should carefully consider these implications.

Potential Applications in Film Development

1. **Cross-cultural storytelling:** Leverage DeepSeek's bilingual capabilities to develop authentic characters and dialogues for international co-productions.
2. **Research assistance:** Utilize its efficient processing to quickly gather information on specific cultural, historical, or scientific topics relevant to your script.
3. **Dialogue polishing:** Refine dialogue in both English and Chinese, ensuring cultural nuances are accurately captured.
4. **Market analysis:** Generate insights on audience preferences and trends in both Western and Chinese markets to inform project development.
5. **Visual conceptualization:** As DeepSeek expands its capabilities (like with Janus-Pro), it could assist in creating mood boards or concept art for pre-production.

In conclusion, DeepSeek represents a powerful new entrant in the AI landscape in 2025, offering unique bilingual capabilities and competitive performance. While it comes with certain limitations and considerations, it has the potential to be a valuable tool for film and media professionals, particularly those working on projects with an international or Chinese focus. Building out from its shared tech information to create bespoke models is one of the most interesting aspects and opportunities since its arrival on the AI scene. No doubt there will be many more new models outside the Western tech hegemony that throw up interesting possibilities as the sector races forwards.

The Practical Application of AI in the Development Process

To leverage AI effectively in screenplay development, *filmmakers should consider a workflow that integrates AI tools at various stages*. This process would normally start with a clear concept or theme, as AI is most effective when guided by a filmmaker's creative intentions and vision. Filmmakers can then choose to explore, using AI for initial brainstorming, employing tools to generate multiple plot variations and character ideas based on their initial concept.

AI-powered mind mapping tools can help visualize story structure and character relationships. In the refinement stage, specialized scriptwriting AI like Storyworks can be used to refine dialogue and scene descriptions. AI analysis tools can check for consistency in tone, pacing, and character development.

This all sounds helpful. But making sure that the human is always in the loop is essential. Any sharing of materials such as treatments, outlines, and every draft with third parties needs to be very carefully controlled and checked by the author(s). AI bots like to tell us that ‘the final polish should always involve human review and refinement of AI-generated content’ (ChatGPT4). That’s far too late in the process.

Script editing

The producer will often engage a story or script editor during the process. This area of development has become populated with an array of AI-driven tools that we examine below.

Producers rarely write or heavily re-write screenplays, and in such a position see AI’s strengths and weaknesses from a very different perspective. Ideas, and in certain cases, editing or restructuring is one task; fully-fledged creative writing in the form of script or episode drafting is quite another. One of the key jobs of a producer is to work out how to make his/her writer write better. Glibly leaning into AI without a full appreciation of the strengths and weaknesses of the tools on the one hand, and the writer’s position, views on, and use of AI on the other, will quickly result in a dead project more likely than not.

Trust remains central to a successful development process.

The feedback loop

As someone who has worked on more than 200 hours of scripted television series, Mark Goffman is no stranger to receiving “feedback”. So when the top writer-producer (*The Umbrella Academy*, *Bull*, *Limitless*) downed tools in the early days of the WGA strike, he reached out to a new AI script tool **StoryFit**, in a mission “to learn everything I could. I did an early test and wondered what the feedback would look like.” [15].

StoryFit is a company that uses AI to mine and collate data on a wide range of storytelling elements within feature and TV scripts. According to founder and CEO Monica Landers, some writers are initially fearful and find it hard to accept, let alone digest and act on, but Goffman found himself “pleasantly surprised” in the way the feedback was presented. “This is not traditional script coverage. **StoryFit** is systemized, consistent and data-point driven. It gave me specific analysis on, for example, what

characters cared about most, their key dilemmas, and emotional styles. The relationship page was particularly helpful – providing a check on how often they appear with other characters, and for how long. There were no prescriptive suggestions, it just showed me what it found.

“You need to consider that analysis and data, and work out what now? What do I change?” My experience is that *StoryFit* is quite objective if used properly, but the key is that the evaluation model is helpful if we all get to share in that knowledge. And that’s the rub. There is an understandable fear around when information is not shared, and creative writers and talent may find themselves operating in the dark.” Goffman feels strongly that core understandings around what he calls “fair dealing” are going to be needed to move us all forward in this new age of AI.

"StoryFit is systemized, consistent and data-point driven" - which is an enormous improvement on much feedback I get from development executives, whose notes can be vague, self-serving, prescriptive and incorporating the latest half-assed screenwriting workshop they did."

Tony Grisoni, BAFTA winning screenwriter

On the one hand, (and I quote an award-winning writer who requested anonymity here) the “creative business corporations”, from Studio-streamers to mini-majors through to their commissioning editors, could “feed script material into AI data machines, to throw up the analysis, budget and predictive numbers, and lazy accountants decide on a pass, hold or a greenlight.” On the other hand, much of the existing fear among creative writers “exists before they have actually fully explored the opportunities.” [15].

One of the interesting companies that has long been helping writers and producers explore the opportunities is a Swiss-based operation founded and led by Sami Arpa, called **Largo.ai**. According to Arpa, Largo began with a strong focus on predictive script analysis, categorizing scripts into distinct cinematic DNAs for genre, pacing, character dynamics, casting implications, and anticipated audience reactions. However, as the film industry's openness to AI has grown, so has his company’s approach. In the past year, Largo has shifted from merely categorizing content to delivering actionable insights, moving beyond neutrality to provide evaluations that speak to the quality of content with a broader range of analytical voices.

The analysis starts with the raw materials of creation: treatments, screenplays, and even completed videos. When it comes to financial or cast predictions, Largo also factors in production parameters like budget, director, and producer profiles. The AI programme has been trained on an extensive library of over 400,000 pieces of content, encompassing films, series, and other audio-visual works. This vast dataset educates its system on genres, audience engagement, and the unique cinematographic DNA of actors, enabling a nuanced understanding of potential market performance.

Arpa is candid that not all writers and creative producers have positive reactions to AI script analysis. “Some embrace the technology as a tool for enhancing their work, using AI feedback to refine their scripts before pitching them to studios. Others may be sceptical or feel that creativity should not be constrained by algorithms. While some leverage our AI as a vital enhancement tool, fine-tuning their scripts to better resonate with the audience, others are concerned that creativity could be stifled by

algorithmic influence.

“Resistance often arises from fears of diluting originality and undermining artistic integrity. But we advocate for using AI as a collaborative, not prescriptive, tool,” explains Arpa. Largo's philosophy is that AI should serve as a complement to human creativity, not a replacement. This stance has helped maintain our early adopters, who benefit from improved narrative crafting, streamlined editing, and more successful pitching, all leading to sustained engagement with our tools. [15].

Which makes the insight I heard back in March 2024 in LA (pre the Writers Guild Association (WGA) settlement guard rails – see extract on this page), from a leading Hollywood genre-driven producer, even more alarming. We were bouncing around ideas about the levels of utility that might be on the march with AI across the film industry, when he blithely stated: “But what’s so great is we can commission AI to do the first draft, and then the writers can do the polishing. Just think of the time and money we’ll save...”

On Artificial Intelligence and industrial relations:

The 2023 screenwriter strike posed significant challenges for content production across Hollywood. In response, several studios turned to AI-driven scriptwriting tools to bridge the gap and sustain productivity. These AI systems were employed to develop plot ideas and address script inconsistencies temporarily. While these tools proved instrumental in maintaining workflow during the strike, their use raised significant concerns and sparked a heated debate regarding ethical labor practices and AI's evolving role in the creative industries. The discussion highlighted the delicate balance between leveraging innovative technology and respecting the creative input and rights of human writers.

Excerpt from the summary of 2023 Writers Guild of America (WGA) Theatrical and Television Basic Agreement

Here are the established regulations for the use of artificial intelligence (“AI”) on MBA-covered projects in the following ways:

1. AI can't write or rewrite literary material, and AI-generated material will not be considered source material under the MBA, meaning that AI-generated material can't be used to undermine a writer's credit or separated rights.
2. A writer can choose to use AI when performing writing services, if the company consents and provided that the writer follows applicable company policies, but the company can't require the writer to use AI software (e.g., ChatGPT) when performing writing services.
3. The Company must disclose to the writer if any materials given to the writer have been generated by AI or incorporate AI-generated material.
4. The WGA reserves the right to assert that exploitation of writers' material to train AI is prohibited by MBA or other law.

Not so fast. Not only has the WGA agreement placed a marker on any such move by the Studio-Streamers, but script editors, teachers and dramaturgists remain both intrigued but wary of

over-hyped claims that AI-driven Large Language Models (LLMs) can generate outstanding filmable screenplay material. What the majority do agree on is the importance of writers and creative producers accepting and learning how to co-pilot and prompt AI language models. But even with a mastery over the 'art of the prompt,' there are numerous pitfalls awaiting.

And not all are convinced that writers will always be 'good' around the WGA settlement and its rules that writers need to be open about their relationship to and direct use of AI. "The rule that writers need to be transparent about if and when they use GPT (or any AI for that matter) was stupid", states one of Germany's leading dramaturgists Martin Thau. "They will use it and won't tell anyone, as it simply devalues their work, and they won't be taken as seriously."

"The wider creative writer's phobia is that they won't be needed anymore. In fact, it's probably the other way round. Those who think they can produce a full film within a computer will quickly fail. It's the writer's ability to choose that is defining," explains Thau. "There is always more behind our subconscious that writers have the ability (or at least potential) to explore. Violence, sexuality, humour...all the way to tragedies. Indeed, can a language model even grasp the concept of tragedy? Building those scenes, with a sense of danger and enrapturement at the same time? You need a writer for that!" [15].

Ethical Considerations and Best Practices

While AI tools offer exciting possibilities for scriptwriting and development, it's crucial to approach their use ethically and mindfully. Filmmakers should use AI as a tool for inspiration and refinement, not as a replacement for original creative thought. The core ideas and vision should always come from the filmmaker.

There's a need for awareness of potential copyright issues, as AI models are trained on existing works. Always verify that generated content is original. Human review and editing of AI-generated content is essential, with the filmmaker's judgment and creative instincts guiding the final decisions.

Transparency is also important. If using AI deeply and extensively in the development process, filmmakers should consider being transparent about its use, especially when working with collaborators or pitching to producers. Finally, AI should be used as one tool among many in the creative process, combined with traditional research, personal experiences, and collaborative brainstorming for a well-rounded approach.

AI tools have clearly unleashed new possibilities in script development and the writing process, offering filmmakers potentially useful assistants for ideation, research, and refinement. By integrating these tools thoughtfully into the creative process, filmmakers can enhance their storytelling capabilities, streamline their workflow, and potentially discover new narrative possibilities they might not have considered otherwise. But no one size or approach fits all.

No writer should ever be forced to use AI, nor should AI dominate and drive the process.

When talking to writers, directors, producers and creative technologists, they typically share one common view: "AI is a tool to support our creative work, not replace it".

CHAPTER FIVE:

GENRE AND PACKAGING

“I never wanted to stay in one genre; I never wanted to be pigeon-holed or defined as the actor who only worked in one genre. I want to be able to work in all different genres.”

A-list actor Dwayne Johnson

The integration of Artificial Intelligence (AI) into the film industry's packaging and green lighting stages [14] is now playing a role in how filmmakers approach genre analysis, market segmentation, and the promise of predictive performance tools. This chapter explores the potential and the pitfalls of relevant AI tools in these areas, offering a critical examination of their benefits, limitations, and implications for the future of filmmaking.

As the film and wider entertainment industry grapples with evolving viewer habits and an increasingly disrupted and competitive landscape, the strategic application of AI-driven analytics has been seen (and sold) as a potential route to increased efficiency and commercial success. The hype-driven sales speech propagated by the major AI corporate providers (mirrored by the oft self-serving speak by the Bots themselves about AI's countless abilities) casts a hazy cloud over where the real value of the new tools lie and where the hype runs out of road.

With that health warning in mind, it remains correct to state that AI is being used to identify emerging trends, analyse global, niche and underserved markets, perform complex audience breakdowns, segmentation and territorial analysis. But can we truly rely on AI's confident predictions of future performance (aka: 'return on investment' (ROI)) based on historical genre performance and other data inputs? How might this reshape the landscape of film production, distribution support and creative risk-taking?

That last holy grail is one that has eluded the global film industry for 120 years. The notion that AI is going to provide a huge step towards de-risking feature film investment and TV commissioning is fanciful at best. Dangerous at worst. Unintended consequences and unreliable results from ‘chasing the algorithm’ is a point that numerous experienced market practitioners and analysts have already warned against. “By the time you’ve chased and caught up with the algorithm, it’s changed,” explains XYZ’s Todd Brown, one of the most respected sales, financing and market experts in the indie sector.[14].

The Evolution of Market Data Analysis in Film

Traditionally, just as story taste was based on taste and gut instinct, genre analysis and market segmentation in the film industry has relied heavily on human intuition, experience, and limited data sets. The earlier down the value chain, and the less financially resourced, the less data has been readily available - placing smaller independent producers at a distinct disadvantage. However, the advent of AI and machine learning has ushered in a new era of data-driven decision-making *all round*. This shift

promises more accurate predictions and nuanced understanding of market trends, but also raises questions about the role of human decision making, agency and responsibility in the green lighting process.

Outstanding film projects have always come about through a strange and unrepeatable alchemy of art and commerce, with successful films striking a delicate balance between creative vision and market appeal – often without knowing precisely how the mix of ingredients worked. In the past, industry veterans relied on their gut feelings, past experiences, and rudimentary market research to gauge potential audience reception and commercial potential. While this approach has led to notable triumphs, it has also resulted in numerous costly failures, highlighting the inherent unpredictability of the entertainment market, and particularly the film business.

AI-driven market analysis processes vast amounts of data from diverse sources – including box office numbers, social media sentiment, viewing habits on streaming platforms, talent track records and script (and thereby genre) content. From such data mining, AI has the capacity to identify patterns and trends that would be impossible for human analysts working alone to scope, organise and discern. “The machine capability allows filmmakers and studios to make more informed decisions at every stage of the development process, from initial concept to final marketing strategy.” Or so says ChatGPT4.

The Promise and Peril of AI-Driven Insights

AI's ability to process vast amounts of data and identify patterns imperceptible to human analysts offers fresh opportunities for filmmakers to tailor their projects to market demands. However, this data-centric approach risks homogenizing creative output if not balanced with artistic vision, innovation and risk taking. There lies an inherent challenge around past performance accurately mirroring future behaviour and performance – both in terms of audience taste and actual metrics. There's also a risk that executives from Studio-streamers to independent sales and distribution outfits might become overly (and some *totally*) dependent on data-driven decisions and greenlighting processes, leading to dull, formulaic ideas, flat storytelling and packages that all prioritize predictability over creative risk-taking.⁶ What the market will receive is more of the same – an AI-assisted echo chamber - and a criticism that has gathered considerable momentum over the past decade as the tyranny of the algorithm has taken hold over an increasing percentage of the streaming platforms' output.

Oh, and the Studio-streamers won't be sharing your film or show's *detailed* performance data in detail after the event.[14]. That reluctance to truly share results with the creators leaves filmmakers with at least one hand tied behind their backs when it comes to understanding what really worked and what failed, and how to best harness that data knowledge into their next projects!

The point to enshrine is that all AI models are trained on historical data, which may not always accurately forecast future trends, especially in an industry known for its ability to surprise and innovate, and an audience that is eternally fickle. As leading film industry consultant Mike Gubbins puts it: “The audience does not know what it wants until they see it.” [14].

⁶ At the time of writing, Netflix is on record that around 70% of its commissioning decisions are algorithmically driven, and 30% reliant predominantly on human gut, although research indicates that is shifting to an 80/20 balance.

AI Tools for Genre and Market Data Analysis

Largo.ai

Largo.ai is a mature player that has made steady progress in AI-powered film analysis and prediction. This comprehensive platform and network offer a range of tools designed to assist filmmakers throughout the development and packaging process.

Name: Largo.ai

Link: <https://home.largo.ai/>

Utility: Comprehensive film project analysis

Application: Script analysis, audience prediction, financial forecasting

Sample use case: Analysing a screenplay to predict target demographics and potential box office performance

Position in value chain: Development, packaging, financing, greenlighting

Pros:

- Offers data-driven insights based on a vast database of films and TV shows
- Provides detailed audience segmentation and financial projections
- Can assist in optimizing casting decisions for maximum market impact

Cons:

- May oversimplify the complex factors contributing to a film's success
- Risk of over-reliance on historical data, potentially stifling innovation
- Ethical concerns regarding data privacy and algorithmic bias
- Doesn't have to live or die by its predictions – unlike sales and distribution companies

Largo.ai's capabilities extend beyond simple market analysis. Its script analysis feature can break down a screenplay scene by scene, identifying key themes, emotional beats, and potential audience engagement points. This granular analysis can help writers refine their scripts to maximize impact and appeal. The platform's audience prediction tool is particularly noteworthy. By analysing the content of a script or film, Largo.ai can generate detailed demographic profiles of the likely audience, including age ranges, gender distribution, and even psychographic characteristics. This information can be helpful for tailoring marketing strategies and identifying potential distribution channels.

However, the use of Largo.ai and similar tools raises important questions about the nature of creativity in filmmaking. While data-driven insights can certainly inform decision-making, there's a risk that over-reliance on these tools could lead to a homogenization of content, with filmmakers prioritizing what the algorithm predicts will be successful over bold, innovative storytelling.

Cinelytic

Cinelytic's platform focuses on predictive analytics for the film industry, offering a range of tools for producers and investors.

Name: Cinelytic

<https://www.cinelytic.com/>

Utility: Predictive analytics and risk assessment

Application: Financial modelling, talent valuation, release strategy optimization

Sample use case: Evaluating the potential ROI of a film project with different cast combinations

Position in value chain: Development, packaging, distribution planning

Pros:

- Sophisticated financial modelling capabilities
- Helps quantify the value of talent in different markets
- Assists in optimizing release strategies

Cons:

- May undervalue intangible factors like artistic merit or cultural significance
- Potential for creating a feedback loop that favours "safe" projects over innovative ones
- Limited ability to predict breakout hits or cultural phenomena

Cinelytic's strength lies in its ability to model complex financial scenarios quickly and accurately. By inputting various parameters such as budget, cast, genre, and release strategy, producers can generate detailed financial projections and risk assessments. This capability is particularly valuable in the packaging stage, where key decisions about budget and talent can make or break a project's financial viability.

One of Cinelytic's most intriguing features is its talent valuation tool. By analysing an actor's past performance across different genres and markets, the platform can estimate their potential impact on a project's success. This data-driven approach to casting decisions could lead to more strategic choices, potentially maximizing a film's appeal in target markets. Breakout hits often defy conventional wisdom, and there's a risk that over-reliance on tools like Cinelytic could lead to risk-averse decision-making, potentially stifling innovative or unconventional projects.

ScriptBook

ScriptBook is an AI-powered script analysis tool that provides insights into a screenplay's potential performance and audience appeal.

Name: ScriptBook

Link: <https://www.scriptbook.io/#/>

Utility: Script analysis and performance prediction

Application: Analyzing screenplays for potential box office performance and audience reception

Sample use case: Evaluate a script's commercial potential and target audience demographics

Position in value chain: Script development, project evaluation

Pros:

- Offers objective analysis of script elements and potential audience appeal
- Can help identify strengths and weaknesses in storytelling structure
- Provides data-driven insights for script improvement

Cons:

- May not fully capture the nuanced emotional impact of a well-crafted script
- Risk of encouraging formulaic writing to fit perceived successful patterns
- Cannot account for external factors that influence a film's success

ScriptBook's AI algorithms analyse script content to predict various aspects of a film's potential performance, including box office revenue, audience demographics, and critical reception. This tool can be useful in the early stages of development, helping filmmakers and studios assess the commercial viability of a project before significant resources are invested.

However, the use of ScriptBook and similar AI-driven script analysis tools raises questions about the nature of creativity and the potential for algorithmic bias in storytelling. While these tools can provide valuable insights, there's a risk that they might encourage writers to conform to formulaic structures or themes that have performed well in the past, potentially stifling innovation and unique voices in the industry.

Movio

Movio is an AI-powered audience analytics platform that helps filmmakers understand and target specific audience groups.

Name: Movio

Link: <https://www.movio.co/>

Utility: Advanced audience profiling and segmentation

Application: Creating detailed audience profiles for targeted marketing strategies

Sample use case: Generate a detailed audience profile for an upcoming sci-fi thriller

Position in value chain: Marketing, distribution planning

Pros:

- Provides granular audience segmentation based on viewing habits and preferences
- Enables highly targeted marketing campaigns
- Can help identify underserved audience niches

Cons:

- Potential privacy concerns regarding data collection and use
- May lead to over-reliance on data at the expense of creative intuition
- Risk of reinforcing existing audience biases rather than expanding appeal

Movio's AI algorithms analyse vast amounts of moviegoer data to create detailed audience profiles and predict viewing preferences. This level of granular segmentation allows for highly targeted marketing campaigns and can help distributors optimize their release strategies.

However, the use of such detailed audience data raises important ethical considerations regarding privacy and the potential for manipulation. There's also a risk that over-reliance on these tools could lead to a narrowing of creative vision, with filmmakers and marketers focusing solely on proven audience segments rather than taking risks to expand their appeal.

Identifying Emerging Trends and Underserved Markets

AI's role in identifying emerging trends and underserved markets is starting to revise how filmmakers approach project development and audience targeting. By analysing vast amounts of data from social media, streaming platforms, box office reports, and critical reviews, AI tools can detect subtle shifts in audience preferences, narrow casting, communities and specialist/avid viewing habits that might escape human observation.

For example, an AI system might identify a growing interest in eco-thriller films among urban millennials, a trend that might not be immediately apparent through traditional market research. This insight could guide filmmakers in developing projects that cater to this underserved niche, potentially leading to higher engagement and profitability.

However, it's crucial to note that while AI can provide valuable insights, the interpretation and application of these insights still require human judgment. The creative vision of filmmakers should work in tandem with AI-driven data, rather than being dictated by it.

“Generative AI has nothing to do with creativity. The AI does not create. We create by using AI...The danger is the normalization of mediocrity.”

Pinar Seyhan Demirdag, AI creator, artist and founder of CUEBRIC

There's also a risk that an over-reliance on trend analysis could lead to a homogenization of content, with multiple studios chasing the same perceived opportunities. Just like they chase and try to clone the last hit title or genre spike and have done for decades.

Market Segmentation through AI-Driven Audience Analysis

AI's role in market segmentation represents a step forward in understanding and targeting specific audience groups. Traditional demographic-based segmentation is being supplanted by more sophisticated, behaviour-based models that offer a granular view of audience preferences and habits.

Advanced AI algorithms can now create detailed audience profiles by analysing a wide range of data points, including viewing history, social media activity, purchase behaviour, and even psychographic factors. This level of detail allows for the creation of highly specific audience segments, each with its own set of preferences, behaviours, and potential engagement strategies. The granularity of AI-driven segmentation enables highly personalized marketing strategies. By understanding the specific preferences and behaviours of different audience segments, marketers can tailor their messaging, choose appropriate channels, and even personalize content to maximize engagement and conversion rates.

AI-driven segmentation is dynamic. Unlike traditional segmentation models that might be updated annually or quarterly, AI systems can continuously refine and adjust audience segments based on real-time data. This allows filmmakers and marketers to respond quickly to shifts in audience behaviour or preferences.

What that process fails to factor is the length of time that it takes from greenlighting a film or TV series/show to its actual delivery and then release or launch date. Even the most efficient production pipelines take more than a year, and many considerably more. If we consider that most independent films take five long (and hard) years on average from inception to delivery [14], dependence on algorithmic prediction is always going to be less than an exact science.

Predicting ROI Based on Historical Genre Performance

Perhaps one of the most trumpeted (and contentious) applications of AI in film development is its *stated* ability to predict return on investment (ROI) based on historical genre performance. This alleged capability is influencing how financial decisions are made in the film industry, offering a data-driven approach to assessing potential profitability. The jury is however still out on reliability.

AI systems can analyse historical data from thousands of films. The tools can track a range of factors such as budget, cast, release date, marketing spend, and critical reception. By identifying patterns and correlations within this data, these systems can provide indicators about *potential* performance.

For example, Cinelytic's AI platform can analyse how different casting choices might impact a film's projected ROI, allowing producers to make decisions about talent investments. Similarly, tools like ScriptBook can analyse a screenplay and provide predictions about its potential box office performance based on content analysis and historical genre data. AI's ability to categorize and analyse films at a granular level allows for highly specific genre-based predictions. These systems can account for subgenres, hybrid genres, and even identify successful elements common to high-performing films within a genre. This level of analysis can reveal counterintuitive insights, such as identifying that horror films with strong female leads released in the fall tend to outperform similar films with male leads released in the summer.

Producers and executives are using these predictions to adjust budgets, inform marketing strategies, and reconsider project viability before significant investments are made. However, it's crucial to approach these predictions with a critical eye and sceptical mindset. While AI can provide valuable insights based on historical data, it cannot account for the inherent unpredictability of audience reception or cultural zeitgeist that can significantly impact a film's success. There's also a risk that over-reliance on ROI predictions could lead to risk-averse decision-making, potentially stifling innovative or unconventional projects that don't fit neatly into historical patterns of success.

The integration of AI-driven market analysis tools into the film development process raises important questions about the balance between data-driven decision-making and creative intuition. Filmmakers and decision makers need to navigate this new landscape carefully, using AI-generated insights as a tool to support and enhance their creative decisions, rather than as a replacement for human judgment and artistic instinct. The most successful approach is likely to be one that combines the power of AI-driven analytics with the unique creative vision and emotional intelligence of human storytellers.

The use of AI in film development and market analysis also raises significant ethical considerations. The collection and analysis of vast amounts of personal data to inform audience segmentation and marketing

strategies raise privacy concerns. And there's also the question of transparency – should audiences be informed about the extent to which AI tools influenced the creation and marketing of a film?

As we edge forward (while AI races ahead...) it will be crucial for the film industry to develop clearer guidelines and best practices for the use of AI – what analysts and the more thoughtful creative technologists call “Responsible AI.”

CHAPTER SIX:

Further models for COMMISSIONING and FINANCING

“From deep caverns [gold] will come who will make all the peoples of the world toil and swear, with great trouble, labour and anxiety, so they may have his help...”

Leonardo Da Vinci

The film industry has long been characterized by its unpredictable nature, with the infamous William Goldman quote, "Nobody knows anything," serving as a stark reminder of the inherent uncertainty in predicting a film's success. Goldman is not alone. Arthur De Vany's seminal work: *Hollywood Economics: How Extreme Uncertainty Shapes the Film Industry* [10], the fruits of studying and writing about the industry for more than 20 years, offers an opening statement that is right on point:

“What are the sources of risk in the business and why is risk hard to deal with? Is it possible to measure how risky the movie business is? Why are returns so low when uncertainty and risk are so high? Do stars and marketing really alter a movie's risk or revenue? Does corporate management get in the way of creativity...Can you predict how successful a movie will be...and why do there seem to be so few good movies.” [10].

Indeed. Great questions and very current today. This chapter delves further into the potential of AI-driven predictive models in film commissioning, box office forecasting, and financing, exploring some of their benefits, limitations, and implications for the future of decision making and its impact on filmmaking.

As the global film market becomes increasingly competitive and fragmented, the need and desire for data-driven decision-making has never been more appetizing to decision makers. AI tools are emerging as potential assets for producers, and studios, providing sophisticated and detailed analysis. This shift is starting to impact on how projects are greenlit, financed, positioned and marketed, in the hope to lower risks and provide reconfirming ‘evidence’ of success in an industry known for its high velocity and unpredictability.

AI Tools for Revenue Stream Forecasting and Risk Assessment

The landscape of AI tools for revenue prediction and risk assessment in the film industry is rapidly evolving. At the time of writing, I examined some of the more innovative and interesting platforms that are reshaping how filmmakers and studios approach project evaluation and financial planning. However, what is on offer is very limited to mere mortals. There are few to no external, public facing AI tools and analysis systems that offer comprehensive prediction insights. The understanding is that the Studio-streamers have their own guarded closed loop systems that are crunching the numbers. And we've looked at Largo.ai in previous chapters. So, what comes next is a sample of what's available at the time of writing.

Name: Vault Ai

Link: <https://vault-ai.com/creatives/>

Utility: AI-powered predictive content intelligence platform

Application: Content analysis, audience insights, performance prediction, marketing optimization

Sample use case: Analyzing a TV series concept to predict audience engagement, demographic appeal, and potential market performance

Position in value chain: Vault AI positions itself as a comprehensive tool for streamers, TV networks, and film studios, assisting in various stages of content development from ideation to marketing. It aims to enhance traditional content creation workflows by providing data-driven insights to inform decision-making throughout the production process.

Vault AI offers a suite of AI-powered tools designed to provide predictive consumer insights for the entertainment industry. The platform leverages machine learning models trained on extensive datasets of global titles across all platforms and genres to deliver actionable insights.

Key features of Vault AI include:

- StoryGuide: An on-demand analytics dashboard for analyzing and comparing TV/streaming series performance.
- Content analysis: Evaluating story elements, themes; potential audience appeal.
- Audience prediction: Identifying likely demographics and market segments for projects.
- Performance forecasting: Predicting potential market performance and audience engagement.
- Marketing optimization: Suggesting strategies to drive audience viewership.

By combining these features, Vault AI aims to help entertainment executives make more informed decisions about content development, production, and marketing, potentially reducing risk and increasing the likelihood of commercial success.

Name: ScriptBook

Link: <https://www.scriptbook.io/>

Utility: AI-powered screenplay analysis and decision support tool

Sample use case: Analyzing a screenplay to predict its commercial viability, target demographics, and potential box office performance, while providing insights on storyline, character dynamics, and gender representation.

Position in value chain: ScriptBook positions itself as a comprehensive tool for screenwriters, producers, and studio executives, assisting in various stages of the filmmaking process from script development to project evaluation. It aims to enhance traditional screenplay analysis by providing data-driven insights to inform decision-making and reduce financial risks in film production.

ScriptBook offers a suite of AI-powered tools designed to analyze and evaluate screenplays. The platform leverages machine learning models trained on a dataset of over 6,500 scripts to provide actionable insights.

Key features of ScriptBook include:

- Script analysis: Evaluating story elements, structure, and potential audience appeal.
- Financial forecasting: Predicting potential box office performance with a claimed 86% success rate.
- Character analysis: Assessing character likability and dynamics.
- Gender representation analysis: Applying the Bechdel test to evaluate gender equality in scripts.
- Audience targeting: Identifying likely demographics for the project.
- DeepStory: A developing AI tool for generating script content (still in early stages).

ScriptBook aims to process up to 1,000 scripts per day, offering efficiency and standardization in screenplay evaluation. While it's not intended to replace human decision-makers, it provides comprehensive data to support and inform the decision-making process in film production.

Critical Analysis: The Role of AI in Creative Decision-Making

The integration of AI tools into the green lighting and commissioning process represents a significant shift in how the industry approaches creative and financial decision-making. There is a suspicion that if forecasting was so straightforward and accurate [13], we'd be hearing a lot more about AI predictive models. Watch this space. While these tools offer powerful insights and predictive capabilities, their use raises key questions about the balance between data-driven decisions and artistic intuition and gut instinct.

Potential Benefits of AI-Assisted Decision-Making:

1. Risk Mitigation: AI tools can help studios and producers better understand the potential risks and rewards of a project, allowing for more informed investment or greenlight decisions.
2. Audience Insights: Advanced audience segmentation and prediction capabilities can help producers tailor their projects to specific demographics, potentially increasing audience engagement and box office performance.
3. Optimization of Resources: AI-driven analysis can help optimize budget allocation, marketing strategies, and release timing, potentially maximizing a film's chances of success.
4. Identification of Underserved Markets: AI tools can uncover niche audiences or underserved markets that might be overlooked by traditional analysis methods.
5. Faster Decision-Making: AI can process vast amounts of data quickly, potentially accelerating the development and greenlighting process.

Concerns and Limitations:

1. Creative Homogenization: Over-reliance on AI predictions could lead to a homogenization of content, with filmmakers and studios prioritizing "safe" projects that fit established patterns of success. And they are not exactly easy to replicate and repeat.

2. **Overlooking Innovation:** AI models based on historical data may not effectively predict the success of truly innovative or groundbreaking projects that defy established norms or past performance. And where does past performance data leave the first-time filmmaker? New talent by definition does not have a data footprint!

3. **Reduction of Artistic Risk-Taking:** The pressure to conform to AI-driven predictions could discourage filmmakers from taking creative risks that often lead to breakthrough stories and films.

4. **Overemphasis on Quantifiable Factors:** AI models often struggle to account for intangible factors such as cultural resonance, artistic merit, or zeitgeist moments that can significantly impact a film or TV show's success.

5. **Potential for Bias:** AI models can inadvertently perpetuate existing biases in the film industry if not carefully designed and monitored.

Balancing AI Insights with Human Creativity:

The key to effectively leveraging AI in the film industry lies in finding the right balance between data-driven insights and human creativity and judgment. Filmmakers and studio executives should consider the following approaches:

- **Use AI as a Starting Point:** Employ AI insights as part of the foundation or kick-off for discussion and further exploration, rather than as deterministic, definitive road maps and answers.
- **Combine Data with Intuition:** Encourage decision-makers to consider AI predictions alongside their own experience and creative instincts.
- **Prioritize Diversity in Decision-Making:** Ensure that AI tools are part of a diverse set of inputs in the greenlighting process, including creative, cultural, and market expertise.
- **Invest in AI Literacy:** Develop a deep understanding of AI tools' capabilities and limitations among key decision-makers to ensure their appropriate use.
- **Maintain a Balance of Projects:** Use AI to optimize certain projects while still allocating resources to high-risk, high-reward ventures that may defy predictive models.
- **Post-mortems are under used and extremely valuable to project managers and organizations [14].** PIXAR [5] for example has employed them since inception to great effect. Looking back and checking how AI was used, where it worked, and where it didn't is going to help shape better outputs going forwards.
- **Human driven scenario planning has a key role to play in management, strategies and project preparation.** Scenarios are not forecasts because they are not aiming to be accurate, but to be useful. These two qualities are very different, and the scenario approach should not be left behind just because the machines can gush out fast forecasts with seductive speed and assurance.

CHAPTER SEVEN

PITCHING AND PRESENTING

“Ask me to talk for an hour, and I need ten minutes to prepare. Ask me to talk for ten minutes, and I need a week!”

President Woodrow Wilson

The art of pitching and presenting film and TV projects is essentially a human-driven skill in great demand. A producer’s ability, for example, to be in total command of their materials and attract and captivate the next round of decision makers can make or break a project's journey from concept to shoot. This chapter delves into the potential of AI-assisted creation of pitch and packaging materials and comparative title analysis, exploring how these tools are supporting producers and talent in the pitching and presenting process. Indeed, of all the new AI tools becoming available to filmmakers, their range, relevance and new resources for pitching is one of the highly interesting areas of growth and opportunity.

The Evolution of Packaging Materials in Film

Traditionally, the creation of pitch decks, look books, sizzle reels (aka ‘promos’), and ‘bibles’ for TV shows [14] has been a labour-intensive process, relying heavily on the creative intuition and market knowledge of filmmakers and their teams. Hours were (and still are by the way) spent curating images, crafting narratives, and assembling visual representations that could effectively communicate a project's vision and potential. While this approach often results in deeply personal and creatively compelling presentations, it has long been a time-consuming process and limited by the company and/or individual's financial resources and creative network.

Today, Midjourney, Dall-E and Stable Diffusion and other fast developing Gen AI tools are having a significant impact on the visual and presentational aspects of packaging and pitch materials. These text-to-image generators enable filmmakers to rapidly create and iterate on visual concepts with speed. However, the substance and style are still down to human inputs, intentions and judgment. We are the creators and architects of the materials. AI tools don’t choose, select and finalise choices and decisions. The tools undergo and complete tasks and will only be as good as our direction and instructions.

Pitch Decks and Look Books

It’s very clear that the process and creation of pitch decks and look books has been significantly enhanced by AI tools during the 2020s. Gen AI tools can generate visual content, now render moving characters and images, and assist in layout design. Midjourney, for example, offers filmmakers the ability to create bespoke and distinctive visuals that can elevate their pitch materials to a higher level. If created in collaboration with AI tools (with both care and flair), these materials offer fresh and unique ways to present a package. For example, a producer working on a period drama could use Midjourney to generate historically accurate costume designs or set concepts, adding a layer of visual richness to their pitch deck that might have been prohibitively expensive or time-consuming to create manually. Three dimensional

characters can be imagined, designed and rendered that are evocative and indicative of the project's intentions, and not just rely on library materials and stock head shots of cast you have not even approached let alone attached.

Stable Diffusion provides an additional layer of control over image generation. Its ControlNet extension allows for precise manipulation of generated images, enabling filmmakers to maintain consistency in character appearances or visual styles throughout their look book. That word 'consistency' comes up repeatedly when dealing with complaints from filmmakers across the value chain about AI image generation. So further levels of control are particularly valuable when presenting a cohesive vision for a project, especially in genres like animation or fantasy where visual consistency is paramount.

It's crucial to approach these tools with a critical eye. While they offer unprecedented capabilities in visual creation, there's a risk of over-reliance on AI-generated content. The most compelling pitch materials often come from a place of genuine passion, authenticity and unique vision, which should not be sacrificed in pursuit of technological efficiency or speedy shortcuts.

AI generated characters can look and feel synthetic, taking the recipient out of the pitch engagement process if you're not sense checking your intentions next to the actual results. Persistence is essential if a deck or package is to really hit the grade. Promises of fast results from Gen AI tools is not the point here: while the tools are efficient if used and enabled by smart prompt engineering skills - it is the judgement and weight the creative instigator is exercising that defines really strong material. And very often that still takes hours and sometimes many days, certainly not minutes (See Appendices i: The Art of the Prompt) and [14] for further reading.

Sizzle Reels (aka: Proof of Concept/promo)

The creation of sizzle reels—short promotional videos designed to generate excitement and engagement for a project—has been augmented by AI tools like Runway ML. This platform enables filmmakers to create dynamic video content by animating still images or generating footage from text prompts. Its Gen-2 product allows filmmakers to generate video footage from text prompts or animate still images, which opens new possibilities for presenting concepts that might be difficult or expensive to shoot conventionally. The key benefit of Runway ML lies in its ability to democratize video production by reducing reliance on expensive equipment or extensive editing expertise. However, its current limitations—such as occasional inconsistencies in generated footage—highlight the need for human oversight in ensuring quality control.

Mood Boards

Mood boards and look books play a crucial role in conveying the aesthetic feel and tonal depth of a project. When properly designed and considered, a good mood board can help create and visualise the 'universe' or 'world' that a filmmaker is trying to project. Tools like Krea.ai offer an innovative approach by allowing users to input rough compositions or colour palettes that guide the generation of polished visuals tailored to specific themes or styles. Krea.ai provides an interesting middle ground between text-to-image generation and manual design. Its dynamic image-to-image generation capability allows filmmakers to quickly iterate on visual concepts, refining their ideas in real-time. This can be particularly

useful in collaborative settings, where immediate visual feedback can facilitate more productive creative discussions.

While Krea.ai enhances efficiency in mood board creation by enabling rapid iteration on visual concepts, concerns about originality and distinctive results arise when relying solely on AI-generated visuals. If multiple projects utilize similar tools without bespoke and unique artistic input from creators, there is a risk of – yes, once again - homogenization—a concern that underscores the importance of maintaining a distinct creative identity.

Comparative Title Analysis

All decks and bibles are expected to include ‘comps’ – aka ‘comparison titles’ that indicate why a newly presented project may, given previous similar titles’ performance and track record, have a potentially positive outcome. There is, however, something uncomfortable about the underlying assumptions that lie at the heart of the industry’s quest for reconfirming evidence. Looking back, and gleaning confidence from historical data and previous title’s success has long been something of an Achilles heel. That said, AI’s role in comparative title analysis represents a useful advancement in how filmmakers approach market research and financial projections – especially in the realm of comps.

Platforms like Cinelytic leverage machine learning algorithms to analyse historical performance data across various metrics such as budget size, genre and market trends, casting choices, and release strategies. Perplexity, described as an interactive/conversational search engine, can be leveraged with careful prompting to gather real-time market data and industry trends. This could be particularly valuable when pitching to investors, financiers and buyers, as it allows filmmakers to present up-to-date information on market conditions and audience preferences. But always remember the lag between now and actual delivery and launch of any film or TV/streaming show: there’s always going to be a differentiation factor that is impossible to fix with total confidence. Comps are indicative, never cast-iron success indicators.

Human expertise and intuition in interpreting, weighting and contextualizing the data remains essential. Much as many creative technologists dislike or discount the health warnings, over-reliance solely upon algorithmic outputs risks stifling innovation and necessary risk taking for the industry to surprise and thrive (See Chapter 12: Promotion and Distribution).

Further tools for decks

StoryDocs represents a significant advancement in the creation of pitch decks by combining intuitive design templates with data-driven storytelling capabilities. This AI-powered platform allows filmmakers to craft professional presentations that integrate multimedia elements such as videos, animations, and interactive graphics. By analysing a project’s genre, target audience, and market trends, StoryDocs can suggest relevant content for inclusion in the deck.

The primary advantage of StoryDocs lies in its ability to streamline the pitch deck creation process and workflow. Filmmakers can focus on refining their narrative rather than spending countless hours on formatting and design. For instance, a filmmaker pitching a psychological thriller might use StoryDocs to

generate slides that highlight key themes like suspense and tension while integrating visuals that evoke the desired mood.

However, there are potential drawbacks to consider. Over-reliance on standardized templates may result in pitches that lack originality or fail to capture the unique essence of a project. Additionally, while StoryDocs excels at presenting data-driven insights, it may struggle to convey the emotional depth and authenticity that often underpins successful pitches.

Look Books

Leonardo.ai offers filmmakers unprecedented capabilities in generating high-quality visuals for look books. This AI tool specializes in creating bespoke images based on textual descriptions or rough sketches. For example, a filmmaker developing a fantasy epic could use Leonardo.ai to generate detailed illustrations of mythical creatures or enchanted landscapes that align with their vision.

The flexibility and efficiency of image generation offered by Leonardo.ai is astonishing when you see it in action with an experienced user. Its ability to iterate rapidly on visual concepts allows filmmakers to experiment with different styles and refine their ideas in real-time. This capability is particularly valuable during collaborative sessions where immediate visual feedback can drive creative decision-making and share emerging results in real time.

However, as with any AI tool, there are of course limitations. While Leonardo.ai excels at producing visually stunning outputs, it sometimes will lack the nuanced understanding required for complex artistic directions. And once you start using Leonardo.ai, you start to hit a range of paywalls. You will need to check how far you need and want to go before being caught in the monkey trap.

The investment tiers for Leonardo AI (at the time of writing):

Leonardo AI uses a credit system to generate images. Credits can be purchased for paid plans or earned for free.

Free plan

Users receive 150 free credits every day
This is roughly equivalent to 13–15 batches of images
Credits are reset every 24 hours

Paid plans

Users can purchase API credits for the API Basic or API Standard plans
Credits do not expire
Users can purchase additional credits as needed
Plans include automatic credit top-ups

API Basic plan

Costs \$9 per month, excluding tax
Includes 3,500 API credits per month
Suitable for small projects or individual developers

Ethical Considerations and Industry Impact

The integration of AI tools into the packaging and pitching process raises important ethical considerations. There are ongoing debates about the copyright status of AI-generated images and content, which could potentially create legal complications for filmmakers using these tools. That said, business-to-business (e.g., B2B) use is much more flexible when compared to B2C use and applications (See Chapter 14).

Moreover, the use of AI in comparative title analysis and audience prediction raises questions about data privacy, accuracy of sources and the ethical use of audience information. There's also the broader question of transparency. Should filmmakers be required to disclose their use of AI tools in the creation of packaging materials – either with watermarks or disclosures? How might this disclosure affect the reception of their pitch by investors and distributors? Whilst it is becoming increasingly accepted across the industry that Gen AI has a role in material generation, a pre-mortem and sense check around who exactly you are presenting to is common sense (a quality that AI lacks completely).

As we look to the future, it's clear that AI will play an increasingly significant role in the creation of packaging materials and comparative title analysis that is empowering film and TV producers most definitely. And it's an increasingly level playing field as producers for example can take more agency over their projects and packages.

The most effective filmmakers and producers will be those who can effectively integrate AI-driven tools, utilities and outputs directed by unique creative intentions and vision.

Creators will need to be mindful that their ideas are not reduced to derivative and lower common denominator standards. Everyone pitching with the same AI tools, which typically conform to certain task-orientated results is hardly going to lead to 'original' and unique presentations! The key lies in finding a balance between technological assistance and human creativity. AI tools should be viewed to enhance, rather than replace, the vital storytelling and innovative thinking that drives compelling cinema and television.

CHAPTER EIGHT

PRE-PRODUCTION

“I have a notebook, and I know what decisions will be made in pre-production. Everything is pre-determined in the pre-production period. I visually design the whole thing, and I know when things will happen. “

Director Alejandro Gonzalez Inarritu

Pre-production marks the stage in a project’s journey where the vision of a film begins to take tangible shape and physical form. Indeed, the screenplay as a written blueprint starts to become ‘externalised’ and brought to life. Yet, this stage in the process has traditionally been fraught with challenges: balancing creative ambition with limited resources, managing tight schedules, and navigating complex logistics. (And that assumes that your project is fully financed, cash flowed and locked – and not lurching from pillar to post with funding still to raise or close).

This chapter examines the potential of AI-assisted pre-production, exploring how a range of tools are reshaping location scouting, department coordination, budgeting, and scheduling. From an overall perspective, the term ‘previsualization’ is now a regularly used descriptor for the meticulous scene planning aided by AI driven digital tools that is streamlining production. This foresight style planning is helping to address numerous uncertainties, hence leading to more precise allocations and scheduling. We examine the capabilities of these new technologies, their potential benefits, and the challenges they present to traditional filmmaking practices.

Tools for Efficient Location Scouting and Virtual Set Design

Location scouting has historically been one of the most resource-intensive aspects of early pre-production. Teams spend weeks or months visiting potential sites to assess their suitability while navigating logistical concerns like permits and accessibility. AI tools such as Luma Labs/Luma AI and SuperScout AI are redefining this process by offering virtual research and solutions that save time and resources.

Luma leverages Neural Radiance Field (NeRF) technology to create detailed 3D scans of environments using just a smartphone camera. These scans (and efficient tagging) allow directors and production teams to virtually explore locations in an interactive format without requiring repeated physical visits. This capability not only reduces travel costs but also enables collaborative decision-making among geographically dispersed teams. For independent filmmakers with limited budgets, Luma democratizes access to high-quality location data that would otherwise be unattainable.

However, while Luma excels at providing detailed visual data, it cannot replicate the intangible qualities that make a location resonate emotionally with a story and the creative team’s response to its atmosphere or cultural significance—which often require physical recces and the core team’s presence (in particular, the director) to fully appreciate. The new technology adds a valuable layer of physical insights and

interactivity that photos don't allow, enabling filmmakers to test out a multitude of angles and frames without needing more data or footage. Yet, it's important to note that while Luma and similar NeRF-based platforms offer exciting possibilities, they are not without limitations. The resolution and fidelity of these 3D scans, while impressive, may not yet be sufficient for all production needs.

SuperScout AI represents another significant advancement in AI-assisted location scouting. This platform uses artificial intelligence tools to analyse script requirements and match them with potential filming locations from extensive databases. By considering factors such as visual aesthetics, logistical constraints, and budget parameters, SuperScout can quickly generate a shortlist of suitable locations tailored to a project's needs. For example, when scouting for a dystopian thriller set in abandoned industrial landscapes, SuperScout could identify multiple options across different regions that meet both creative and logistical criteria.

While SuperScout offers undeniable efficiency gains by narrowing down options quickly, it may struggle to capture the emotional or cultural significance of certain locations—qualities that often define iconic cinematic settings. Moreover, over-reliance on AI-driven recommendations risks limiting and flattening location choices across productions if multiple filmmakers gravitate toward similar "optimal" sites.

"Computers are useless: they can only give you answers..."

Pablo Picasso

Set design

In virtual set design, tools like Midjourney and Stable Diffusion are transforming workflows for production designers. Midjourney allows users to generate high-quality concept art from text prompts within minutes. Its intuitive interface can be effective for quickly visualizing ideas during brainstorming sessions to generate visual story boards or sets of images that capture a project's aesthetic direction. For example, a director could use Midjourney to generate multiple visual interpretations of a scene, sparking discussions that might not have occurred with traditional sketching methods.

Stable Diffusion offers more granular control over image generation through extensions like ControlNet—allowing users to guide image generation via sketches or specific stylistic preferences. This level of control (a much-desired factor) is particularly valuable when presenting a cohesive vision for a project, especially in genres like animation or fantasy where visual consistency is paramount. The ControlNet extension for Stable Diffusion is noteworthy, allowing users to guide the image generation process with sketches or pose estimation, resulting in more consistent and controllable outputs.

While these AI tools offer exciting possibilities for virtual set design, they also raise important questions about the role of human creativity in the design process. There's a risk that over-reliance on AI-generated concepts could lead to a more uniform and limited range of visual styles and approaches. The ease of generating AI-created visuals risks overshadowing the valuable process of manual experimentation and iteration. Filmmakers must remain mindful not to let the allure of AI-generated imagery stifle their own intuitive visual exploration. Matching results with intentions remains paramount. It's worth remembering that layering, texture and tone are still best captured and calibrated by the human eye.

Key Contributions of AI in Costume Design Pre-Production

AI tools are revolutionizing pre-production planning for costume designers, offering efficiency, creativity, and increased precision. These tools streamline the traditionally labour-intensive process of costume design by automating tasks and enhancing both previsualised and final look, enabling designers to focus on creative aspects.

AI-powered platforms like FilmTailor AI and Costume Designer Image Generator allow designers to create detailed costume concepts within seconds based on textual descriptions or script inputs. These tools analyse vast datasets of styles, fabrics, and historical references to generate unique designs tailored to the project's needs. For instance, designers can visualize costumes for characters in various settings—historical, futuristic, or fantasy—without manual sketching, significantly reducing turnaround time.

Customization and Iteration

AI tools enable real-time adjustments to designs, allowing for seamless collaboration between costume designers and directors. Designers can experiment with different fabrics, colours, and accessories digitally, ensuring the final look aligns with the creative vision. This iterative process not only enhances creativity but also minimizes costly last-minute changes during production.

Integration with Other Pre-Production Tools

Advanced AI platforms integrate costume design with broader pre-production workflows. For example, designs can be visualized on 3D models or avatars to assess their appearance in specific scenes or lighting conditions. This integration ensures costumes complement other visual elements like set design and cinematography.

Cost and Time Efficiency

By automating repetitive tasks such as generating initial concepts or testing multiple looks, AI reduces labour costs and accelerates decision-making. This is particularly valuable in projects with tight budgets or deadlines, as seen in testimonials from filmmakers who praise the efficiency of tools like FilmTailor AI.

In summary, AI tools empower costume designers to innovate while optimizing resources during pre-production. They facilitate faster decision-making, enhance collaboration, and can help to ensure that designs meet both creative and logistical requirements.

Automated Scheduling Systems and Cost Forecasting

Scheduling and budgeting are among the most complex aspects of pre-production due to their interdependent variables—not just the ambition and scale, but the practical factors such as actor availability, equipment logistics, location constraints, booking and time slots. These all require coordination within tight timelines and budgets. AI-powered project management tools are supportive by offering potential solutions that optimize resource allocation while hopefully minimizing inefficiencies.

AI scheduling platforms analyse script breakdowns alongside real-time data inputs such as weather forecasts or traffic patterns to generate optimized shooting schedules. These systems can dynamically adjust plans in response to unforeseen changes—whether it's an actor falling ill or unexpected delays at a location—thereby reducing downtime and associated costs. By considering countless variables simultaneously, these AI schedulers can propose efficient plans that minimize downtime and maximize resource utilization.

The advantages of such systems are clear: they can rapidly generate and adjust schedules in response to changes, potentially saving productions significant time and money. This efficiency allows filmmakers to spend more time shooting footage and less time moving between setups or waiting for resources to become available. For example, an AI scheduler might identify that by slightly reordering the shooting schedule, the production could film all scenes in a particular location over fewer days, reducing location rental costs and minimizing

Directors, producers, and creative teams have traditionally relied on their experience, artistic vision, and gut feelings to shape the foundation of a project. This process often involves extensive experimentation—from location scouting to visual concept development—allowing for serendipitous discoveries that can seriously impact the final product. However, integrating AI tools into pre-production workflows is reshaping this landscape, offering both exciting possibilities as well as potential challenges to traditional creative processes.

While AI undoubtedly enhances efficiency across various facets of pre-production workflows, it cannot replace human intuition or experimentation. Physical site visits often spark unexpected ideas that virtual tools cannot replicate. Similarly, collaborative discussions among (and across) departments foster moments of inspiration that shape the overall vision of a project. The challenge lies in balancing the efficiency of AI-assisted processes with the irreplaceable value of on-site intuition and serendipity.

For example, while Luma AI provides detailed 3D scans of locations, it cannot replicate the sensory experience of being physically present at a site—the way light interacts with surroundings or how ambient sounds contribute to its atmosphere. Similarly, while Midjourney generates concept art quickly, it cannot replace the nuanced interpretations brought by human artists who infuse designs with their personal creativity and understanding of the project's emotional, thematic core.

The key lies in viewing these AI tools as supplements rather than replacements for human ingenuity. Filmmakers have the opportunity now to use these tools to expand their options and refine their choices, while preserving the collaborative spirit that defines successful productions. Discussions, creative disagreements, and moments of inspiration occurring during pre-production are invaluable and cannot be replicated or of course replaced by AI inputs and outputs. After all, it's fundamentally a people business.

CHAPTER NINE

PRODUCTION: AI Tools in Principal Photography

“All good work is self-revelation. When you’ve deceived yourself, you wind up feeling very foolish indeed.”

Director Sidney Lumet

Principal photography demands planning, precision, collaboration, and adaptability as filmmakers navigate the complexities of capturing performances, crafting visuals, and managing on-set logistics. Indeed, independent filmmakers are always under pressure to conjure up creativity and solutions while working within mind-bending constraints. Traditionally, this process has relied heavily on the expertise of line producers, directors (all of them!), cinematographers, lighting designers, set designers and production units and a wider range of skilled HODs and craftspeople to achieve a blend of artistry and practicality.

The integration of AI into principal photography represents both an intriguing opportunity and a significant challenge for the film industry [2]. While AI tools offer unprecedented capabilities in areas such as cinematography, lighting, real-time editing, and scene optimization, they also raise important questions about the balance between technological assistance and human creativity. This chapter provides a critical analysis of the current state and future potential of AI tools in principal photography, examining their capabilities, limitations, and broader implications for the filmmaking industry.

AI-Enhanced Cinematography and Lighting Tools

Cinematography has long been considered a delicate balance of technical expertise and creative intuition. With the advent of AI-powered tools, this balance is being redefined, offering cinematographers new ways and choices to help capture and enhance their visual storytelling.

One of the most promising developments in this area is the emergence of AI-driven camera systems. Companies like Arri are at the forefront of this technology, developing intelligent camera rigs that can analyse scenes in real-time and make dynamic adjustments to framing, focus, and movement. These systems use machine learning algorithms to understand the composition of a shot, track subjects, and even anticipate movement, allowing for more fluid and precise camera work.

The potential benefits of such technology are significant. For complex shots that would traditionally require multiple takes or extensive rehearsal, AI-assisted cameras can help achieve the desired result more quickly and consistently. This not only saves time on set but they also open up new creative possibilities, allowing cinematographers to attempt more ambitious shots with greater confidence.

Critics argue that over-reliance on AI-driven systems could lead to a reduction of visual styles, as algorithms begin to favour certain compositional choices over others. There is also concern that the intuitive, sometimes spontaneous decisions that often lead to iconic cinematic moments could be lost in a more automated process.

Lighting aspects

In the realm of lighting, AI is making equally significant strides. Tools like Arri's Orbiter system use AI algorithms to analyse scenes and automatically adjust lighting setups to achieve desired effects. By understanding the interplay of light and shadow in a scene, these systems can quickly create complex lighting arrangements that would traditionally require hours of manual adjustment. The implications of AI-driven lighting extend beyond mere efficiency. These tools have the potential to democratize high-end lighting techniques, making sophisticated setups accessible to productions with limited resources or expertise. This could lead to a general elevation in the visual quality of films across all budget levels, not just high-end movies.

Yet, as with cinematography, there are concerns about the potential loss of the human touch in lighting design. The subtle nuances that experienced cinematographers and gaffers bring to their craft—informed by years of experience and artistic sensibility – will be impossible to replicate through AI alone.

While AI-enhanced cinematography and lighting tools offer significant advantages in terms of efficiency and accessibility, their impact on the artistic process must be carefully considered. The risk of *visual homogenization* is real, as AI systems are task driven, and will typically tend towards "optimal" solutions that lack the unique creative flair of the human eye and imagination. Additionally, the learning process for cinematographers may be altered, potentially reducing opportunities for hands-on experimentation and intuitive discovery.

Real-Time Editing and Scene Optimization

One of the most revolutionary applications of AI in principal photography is in the realm of real-time editing and scene optimization. Traditionally, the bulk of editing work has been relegated to post-production, with directors and editors working with footage long after it has been shot. AI is changing this paradigm, bringing powerful editing capabilities directly to the set.

Platforms like Runway ML are at the forefront of this change of gears. Their AI-powered tools allow for real-time analysis of footage as it's being shot, providing immediate feedback on elements such as pacing, continuity, and even emotional impact. This capability enables directors to make informed decisions about reshoots or adjustments while still on set, potentially saving significant time and resources in post-production.

The implications of real-time editing extend beyond mere efficiency. By providing immediate feedback, these tools allow for a more iterative and experimental approach to filmmaking. Directors can quickly test different versions of a scene, adjusting performances or visual elements on the fly based on AI-generated insights.

However, there is a clear risk that the immediacy of feedback could lead to a more reactive, less contemplative approach to filmmaking. The space for reflection and discovery that often occurs in the editing room might be compromised if too much emphasis is placed on optimizing scenes in real-time. (Although fast moving weekly TV shows will no doubt lap it up). And there are concerns about how these tools might affect the collaborative nature of filmmaking. The traditional interplay between director, cinematographer, and editor could be altered if AI systems begin to be delegated to and start to impinge

on the decision-making process – a role that has serious and worrying implications for jobs and quality of output in the future.

The introduction of real-time editing and scene optimization tools represents a significant shift in the filmmaking process. While these tools offer the potential for increased efficiency and immediate creative iteration, they also risk fundamentally altering the delicate rhythm of film production.

On the positive side, the ability to make informed decisions on set could lead to more cohesive and visually consistent films. It may also reduce the need for expensive reshoots, making high-quality filmmaking more accessible to lower-budget productions. However, the pressure to make immediate decisions based on AI feedback could clog up the organic creative process that often leads to unexpected breakthroughs.

Furthermore, the role of the editor in shaping the final narrative may be diminished if too much emphasis is placed on optimizing scenes during shooting. The editorial process often involves discovering new narrative possibilities that weren't apparent during production, and an over-reliance on real-time optimization could limit this exploratory aspect of post-production.

Talent Management and Production Logistics

AI's developing and potentially supportive role in principal photography extends beyond cinematography and editing into other critical aspects of production such as talent management and logistical coordination. Tools like Wonder Studio use AI-powered motion capture technology to streamline performance capture processes without requiring extensive rigs or green screens. This allows actors to perform naturally while their movements are seamlessly integrated into CGI environments—a capability particularly valuable for fantasy or sci-fi productions with heavy visual effects requirements.

In terms of logistical coordination, platforms like Filmustage offer advanced scheduling solutions that optimize crew assignments based on availability, skill sets, and location constraints. By analysing historical data from previous productions alongside real-time inputs from ongoing shoots, these systems can identify potential bottlenecks before they occur—ensuring smooth operations across departments.

The integration of AI into these aspects of production raises questions about data privacy and the ethical use of performance data. As these systems collect and analyse vast amounts of information about actors' performances and crew activities, it's crucial to establish clear guidelines for data handling and usage. An AI scheduling system might not account for the intangible benefits of certain crew combinations or the need for creative downtime.

Furthermore, the collection and analysis of detailed performance data raise significant privacy and fair use concerns. Actors and crew members may feel uncomfortable with the level of scrutiny enabled by these systems, potentially affecting their creative freedom and job satisfaction. There's also a risk that reliance on AI for talent management could lead to typecasting or bias against performers who don't fit neatly into algorithmic categories or are data supported due to previous work. Just as first-time directors have not failed yet, neither has the new actor had the opportunity to build a footprint, let alone be discovered!

If the industry is dragged into an AI data-driven prison of its own tech making, there won't be any new generations to come !

But it's not just the future creation of stars that is at stake. Take, for instance, background performers (film, television and streaming movie 'extras'). At the onset of the SAG-AFTRA industrial dispute in 2023 between management and actors, studios and streamers initially argued that they should be able to be scanned and paid a fixed 'per-diem' for one day of work. The studio-streamers would then own that scan of the actor's image and likeness and use it in perpetuity for any usage with no further consent or compensation. Accordingly, actors without A-list status and judicial reach saw AI as an existential threat to their working rights and future careers. Alongside improved remuneration, they placed AI at the heart of their key objectives and negotiation strategy. [24, 15].

Challenges of Integrating AI Tools on Set

While AI offers numerous benefits during principal photography, its integration into production workflows raises issues and obstacles. One of the primary hurdles is the learning curve associated with new technologies. Crew members who have honed their skills over years or decades may find themselves needing to adapt to entirely new ways of working. This adaptation goes beyond mere technical proficiency. The integration of AI tools often requires a fundamental shift in how creative decisions are made and implemented on set. For example, a cinematographer accustomed to relying on their intuition and experience may need to learn how to effectively collaborate with AI systems that offer data-driven suggestions for shot composition or lighting setups. That's a whole new language and culture to learn.

There are also logistical challenges to consider. Many AI tools require significant computational power (See Chapter 14 on environment aspects), which can be difficult to provide in the often unpredictable and resource-constrained environment of a film set. Ensuring reliable connectivity and power supply for these systems, especially in remote locations, can be a significant hurdle.

Another critical challenge is data management and security. AI systems often rely on vast amounts of data to function effectively, raising questions about how this data is collected, stored, and protected. In an industry where confidentiality and intellectual property protection are paramount, the integration of data-hungry AI systems requires careful consideration and robust safeguards.

Perhaps most significantly, there is the challenge of maintaining creative control and artistic vision in the face of increasingly powerful AI tools. While these technologies offer remarkable capabilities, there is a risk that they could begin to exert new distractions at the same time as undue influence over the creative process. Filmmakers will need to develop strategies for leveraging AI's strengths while ensuring that the human element is paramount. A common concern is a race to the bottom of the digital abyss.

"The coming firehose of AI-generated content will be shockingly good on the surface, and shockingly bad underneath...content farms won't bother with corrections."

Professor James Grimmelman, Cornell Law School, US

The data management and security concerns raised by AI integration are particularly critical. The film industry deals with highly sensitive creative and commercial information, and any breach could have serious consequences. Developing stringent data protection protocols will be essential for the widespread adoption of AI in filmmaking.

Large Action Models (LAMs)

By the end of 2024, it became clear that Large Language Models (LLMs) were being joined by Large Action Models in the AI suite of tools. Large Action Models (LAMs) are advanced artificial intelligence systems designed to understand human intentions and autonomously execute complex tasks. They extend the capabilities of Large Language Models (LLMs) by incorporating action-oriented functionalities, enabling them to interact with external systems, simulate user actions, and make decisions in real-time. While not limited to core production tasks, it's worth taking a look at how they work and what LAMs can do.

Key Features of Large Action Models include:

Action-Oriented AI: Unlike traditional AI models that focus on generating text or analysing data, LAMs are built to take actions, such as booking appointments, navigating websites, or controlling devices.

Hierarchical Task Decomposition: LAMs break down complex tasks into smaller sub-actions, creating a hierarchical structure that allows for more efficient planning and execution.

Neuro-Symbolic Integration: They combine neural networks' pattern recognition with symbolic AI's logical reasoning, enabling them to interpret abstract concepts and perform logical operations.

Adaptability and Learning: Through reinforcement learning and feedback loops, LAMs continuously improve their performance by analysing outcomes and adjusting future actions.

Multimodal Capabilities: LAMs often integrate data from multiple modalities (e.g., text, images, audio) to enhance reasoning and decision-making/

Platform-Agnostic Design: These models aim to function across various platforms and services, making them versatile for diverse applications

Large Action Models (LAMs) are transforming the film industry by automating complex processes, supporting creativity, and streamlining production workflows. Their ability to understand tasks, execute actions, and interact with multimodal data makes them valuable across various stages of filmmaking – and in particular around robotics and image capture.

Applications of LAMs in the Film Industry

Scriptwriting and Storyboarding:

LAMs assist writers by generating or refining scripts based on specific themes, genres, or character arcs. They can create detailed storyboards by integrating text descriptions with visual generation tools, helping directors visualize scenes early in production.

Pre-Production Planning:

LAMs automate scheduling, budgeting, and resource allocation by analysing scripts and breaking them into actionable tasks.

They optimize location scouting by analysing environmental factors and suggesting ideal filming spots.

Visual Effects (VFX) and Animation:

By integrating with design tools, LAMs can create or enhance CGI elements autonomously, reducing manual work for animators.

They enable real-time simulation of effects during filming, allowing directors to make immediate adjustments.

Post-Production:

LAMs streamline editing by identifying key scenes, syncing audio with video, and applying colour grading based on predefined styles.

They assist in sound design by generating or enhancing sound effects and music that align with the film's tone.

Virtual Production:

LAMs enable real-time collaboration in virtual environments by simulating camera movements, lighting setups, and actor positioning.

They support the creation of immersive virtual sets using AI-driven scene generation tools.

Challenges

While LAMs offer immense potential, challenges include ensuring creative authenticity, managing intellectual property concerns for AI-generated content, and addressing ethical implications related to automation replacing human roles. While promising, LAMs face challenges like ensuring accuracy in action execution, minimizing reliance on prompt engineering, and addressing ethical concerns regarding autonomy. As they evolve, they are expected to redefine and shape how humans interact with AI by bridging the gap between intent understanding and autonomous action-taking

Ethical Considerations and Industry Impact

Transparency and permissions are a crucial issue. Should actors be informed when their performances are being analysed by AI systems? Should audiences be informed when they're interacting with AI-generated content or when marketing messages have been personalized based on their data? There's a risk that overuse of AI in audience engagement could lead to a sense of manipulation or inauthenticity, potentially backfiring on the very films these technologies are meant to promote. At the time of writing, the uneven and yet sometimes intense rejection of AI tools and influences are so acute to some in the creative community, that they boycott and reject AI film screenings, even when the film in question is consciously demonstrating the risks of using the very tools that helped make it!

There are also broader societal implications to consider. As AI-powered production tools become more sophisticated, there's a risk of creating echo chambers, where filmmakers are only exposed to content that

aligns with existing preferences or trends. This could potentially limit the diversity of films that find an audience and stifle the kind of creative risk-taking that drives the art form forward.

Moreover, the adoption of AI technologies could exacerbate existing inequalities in the film industry. Smaller, independent filmmakers may not have access to the same sophisticated AI tools as major studios, potentially putting them at a competitive disadvantage. As an industry, we should consider how to ensure that AI technologies democratize the filmmaking process rather than concentrating power in the hands of a few tech-savvy players and dominant corporations.

The potential impact on employment in the film industry is another critical consideration. While AI tools can enhance efficiency and productivity, they may also reduce the need for certain roles in the production process. The industry must grapple with how to balance technological advancement with the preservation of valuable human expertise and employment opportunities. And it needs to start now.

Speed kills!

One final thought: we have all driven our cars past road signs that warn us of the danger of going too fast: “SPEED KILLS!” On reviewing the constant drive towards alleged ‘efficiencies’ we run the danger of allowing AI tools to override our natural rhythms and most appropriate pace of creative production. Highly tuned creative, practical and technical people do not all work at the same speeds. We need to be cognisant of the constant pressures of time...and consider what AI’s unintended consequences might lead us towards.

CHAPTER TEN:

POST-PRODUCTION

“Writing is fantasizing about what your film will be like. Shooting is reality. And the post-production is recovering the idea you had.”

Writer-director Nicolas Winding Refn

The post-production phase of filmmaking has long been a crucible of creative and technical prowess, where raw footage is transformed into a final creative form that brings together the intended audiences’ seeing, hearing and believing (and hopefully hearts and minds). Traditionally, this process has relied heavily on the expertise of editors, sound designers, visual effects artists, music composers and other specialists working with sophisticated software tools. However, the more recent advances made by artificial intelligence are both augmenting and reshaping the ‘post’ landscape, offering new options and possibilities for efficiency, creativity, and accessibility in post-production workflows. That said, beware of those eternal words often said on set: “We can always fix it in post...”

This chapter examines the potential of AI-assisted tools in various aspects of post-production, including editing, sound design, music scoring, visual effects (VFX), computer-generated imagery (CGI), pre-visualization, and final delivery. We explore how these advanced technologies are helping to offer more choices, streamline workflows and potentially democratizing high-end post-production techniques. Before we start, it is also important to note that the film and TV industry have been using near-AI and AI-style tools before even the start of this century of filmmaking. The difference today, at the time of writing, is the high impact new AI-driven tech is having on the entire post-production industry at scale; and what that is demanding in terms of adjustment, skills, training and job security.

AI in Editing Workflows: Automating Tasks

One of the most significant impacts of AI in post-production has been in the realm of editing, where machine learning algorithms are being employed to automate time-consuming tasks and provide editors with powerful new tools for crafting narratives.

AI-powered transcription tools have revolutionized the process of logging and organizing footage. Platforms like Otter.ai, Trint, Cockatoo and Descript can quickly generate accurate transcripts of audio and video content, complete with speaker identification and timecodes. These tools are also now native in Adobe Premiere Pro, DaVinci Resolve, and Avid Media Composer’s ScripSync tool. This saves editors hours of manual transcription work and makes it easier to search and navigate large volumes of footage.

A custom GPT called Transcript Summarise takes this a step further by providing timecoded summaries of interview transcripts. This tool can condense a 50-page transcript into a 3-page summary, making it much easier for directors and editors to recall key points and locate specific moments in interviews.

The implications of these tools for documentary filmmaking are also significant. Editors can now quickly identify relevant soundbites and assemble rough cuts with unprecedented speed. However, it's crucial to note that while these tools excel at generating accurate transcripts, they may struggle with nuanced language, accents, or technical jargon. Human oversight remains essential to ensure the accuracy and context of transcribed content.

Content Analysis and Smart Bins

AI-driven content analysis tools can automatically tag and categorize footage based on visual elements, actions, and even emotions. This allows editors to quickly locate specific types of shots or scenes without manually reviewing and searching through much larger volumes of material. For example, an editor working on a documentary about urban architecture could use AI to automatically identify and group all shots featuring specific building types or architectural styles. DaVinci Resolve has face detection, so that early in the pipeline you can identify key characters or people, who can later be searched for by name with facial recognition in the footage.

Adobe's Sensei AI, integrated into Premiere Pro, offers features like Auto Reframe, which adjusts framing for different aspect ratios, and Scene Edit Detection, which can identify edit points in previously edited videos. These tools can speed up the process of repurposing content for different platforms or reconstructing projects from final edits.

However, the reliance on AI for content analysis raises questions (once again) about the potential homogenization of editing styles. If multiple editors rely on the same AI-driven categorization systems, there's a risk of similar rhythms and patterns emerging across different productions. Editors need to remain vigilant in using these tools to enhance, rather than replace, their creative decision-making.

Shot Selection

Some AI editing assistants can analyse footage and suggest optimal shot selections based on factors like composition, performance quality, and continuity. While these tools are not meant or intended to replace human judgment, they can help editors quickly assemble rough cuts or identify the best takes from multiple options.

For example, the AI-powered editing platform Magisto uses machine learning algorithms to analyse visual and audio elements in footage, automatically selecting the most compelling shots and arranging them into a coherent narrative. AutoPod, a podcast editing software, can detect, based on the audio waveforms, and can nearly auto edit a multi-camera, multi-subject stationary shoot. While primarily aimed at casual users and social media content creators, this technology points to the potential for more sophisticated AI-driven editing assistants in professional workflows.

The ethical implications of AI-driven shot selection are significant. There's a risk that relying too heavily on algorithmic suggestions could lead to a loss of the editor's unique voice and intuition. Moreover, AI systems trained on existing films and videos might perpetuate certain visual biases or conventional editing patterns, potentially stifling innovation in the craft. The integration of AI into editing workflows offers significant potential for increased efficiency and organization. However, it's crucial to consider the potential drawbacks:

- Over-reliance on automation may lead to a homogenization of editing styles, as AI systems might favour certain patterns or rhythms.
- The ease of automated processes could potentially reduce the time editors spend familiarizing themselves with raw footage, potentially missing serendipitous moments or unexpected connections.
- There are concerns about data privacy and security, especially when using cloud-based AI services for sensitive or confidential footage.

Editors who can navigate and leverage these tools while maintaining their artistic vision and intuition will be better positioned to benefit from this technological shift while making sure that their full intentions and agency over their craft and outputs are enshrined.

Generative AI for Sound Design and Music Scoring

Sound design and music scoring are areas where AI is making inroads, offering new tools for creating and manipulating audio elements in post-production.

AI-Powered Sound Design: Tools like Adobe's Podcast AI suite are revolutionizing audio clean-up and enhancement. This technology can significantly improve the quality of recordings, even those captured in less-than-ideal conditions. For example, a crackly radio broadcast from the 1930s could be transformed into a much clearer, more usable piece of audio.

The implications of this technology for documentary filmmakers and archival researchers are profound. Previously unusable historical recordings can be restored and integrated into productions, expanding the range of primary source material available to storytellers. Lalal.ai and Universal Vocal Remover (UVR) offer impressive audio separation capabilities, allowing editors to isolate specific instruments or remove vocals from music tracks. This can be particularly useful when creating custom music edits or working with archival materials.

However, the ethical implications of manipulating historical recordings or altering musical compositions need to be considered. There's a fine line between restoration and misrepresentation, and filmmakers (and distributors, Studio-streamers, etc.) should be transparent about any significant alterations made to archival audio or altered original footage. Disclosures, clearances and permissions form part of the process, but there are more nuanced issues beyond the legalities. The subtle layering and texture of archival materials, which when expertly woven create a very bespoke viewing experience, is in danger of being over-polished, sanitised and synthetic by AI tool applications.

AI-Driven Foley and Sound Effects

AI tools are now impacting Foley and sound effects creation. Machine learning algorithms can analyse video footage and automatically generate appropriate sound effects, potentially streamlining the Foley process.

For example, a system could be trained to recognize different types of footsteps (e.g., on grass, concrete, or gravel) and generate the corresponding sounds in sync with the video. While this technology is still in its early stages, it has the potential to significantly reduce the time and cost associated with traditional Foley work. But once again, the subtle artistry that underpins the craft of sound design and effects could lose some of the creative magic at the heart of the great foley artist's work. Anyone who has entered a foley artist's studio and not left completely spell bound by the depth of their creativity, left field thinking, and variety of natural tools must be tone deaf!

AI Music Generation

Several platforms are emerging that use AI to generate original music compositions. While the technology is still evolving, tools like Soundraw, Suno.ai, and Voqul offer different approaches to AI-assisted music creation:

- Soundraw functions as an AI-powered alternative to traditional music libraries, allowing users to generate and customize tracks based on genre, mood, and other parameters.
- Suno.ai attempts to create complete songs from text prompts, though the results can be inconsistent in quality.
- Voqul focuses on vocal cloning, allowing users to map the voices of popular artists onto original compositions.

The potential applications of these tools in film scoring are significant. Composers could use AI-generated compositions as a starting point for their work, potentially speeding up the scoring process. Indie filmmakers with limited budgets could access custom-scored music without the expense of hiring a full orchestra.

DaVinci Resolve has a “music remix” option, where it analyses the audio spectrum and can isolate vocals, guitar, drums, bass, and a catch all category of “other” on a music track. This tool can be used to create less intense versions, stems, or instrumentals of tracks when there either are none, or if a workflow is needed fast.

Adobe's Premiere Pro, and their Essential Sound tool, will help you find music in their library and even time the music to the edit in a preview, while also offering a “remix” tool, that is an AI supported retime to accurately lengthen or shorten a music cue without having to sit there and edit it perfectly, saving tons of time in post-workflows. However, this creates new files, which can slow down the process in finishing.

However, the legal implications of AI-generated music are complex and largely unresolved. Questions of copyright, authorship, and fair use will need to be addressed as these technologies become more prevalent in the industry.

Critical Analysis:

The integration of AI into sound design and music scoring offers exciting possibilities for efficiency and creativity. However, several ethical and practical considerations must be addressed:

- The use of AI-generated music raises complex questions about copyright and authorship. It's unclear how existing legal frameworks will adapt to these new forms of creation and tech-assisted artistic works.
- There are concerns about the potential homogenization of sound design and music if AI tools become too prevalent. The unique creative voices of human sound designers and composers must be preserved.
- The quality of AI-generated music is still inconsistent and may not yet be suitable for high-end productions where nuanced, emotionally resonant scores are required.
- The use of vocal cloning technology, as seen with Voqul, raises significant ethical concerns, particularly around consent and the potential for misuse.

Enhancing Archival Footage

Tools like Topaz Video AI are using artificial intelligence to improve the quality of archival footage. This all-in-one tool can denoise, increase resolution, and de-blur images, making it particularly valuable for documentaries or projects incorporating historical materials.

The ability to enhance and upscale archival footage could open up new possibilities for documentary filmmakers and historians, allowing them to present historical material with unprecedented clarity. However, this technology also raises ethical questions about the authenticity of enhanced historical imagery and the potential for misrepresentation.

As these technologies continue to evolve, it will be crucial for the industry to develop clear guidelines and best practices for their use, ensuring that AI supports and enhances rather than replaces human creativity in sound design and music scoring.

AI in Visual Effects (VFX) and Computer Graphics Imaging *CGI)

Artificial intelligence is making significant strides in the realm of visual effects and computer-generated imagery, offering new tools and workflows that have the potential to revolutionize how these complex elements are created and integrated into films.

AI-Enhanced Rotoscoping and Compositing

Platforms like Runway ML are offering AI-powered rotoscoping tools that can dramatically speed up the process of separating subjects from backgrounds. This technology was notably used in the Oscar-winning film "Everything Everywhere All At Once" to streamline complex VFX shots.

Many of these tools are now readily available within NLE's like Adobe PremierePro and DaVinci Resolve natively with one click background removals, and MagicMask. And Krea.ai, which has a suite of AI tools available, has tools that can pull and create 3d models from still 2d images for use in film. At the time of writing this, it's still in its infancy, but this will be a very powerful technology from concept art to 3d asset.

The implications of this technology for VFX workflows are profound. Traditionally, rotoscoping has been one of the most time-consuming and labour-intensive aspects of VFX work. AI-assisted rotoscoping could significantly reduce the time and cost associated with this process, potentially making high-end VFX more accessible to lower-budget productions.

However, it's important to note that while AI can speed up the rotoscoping process, it may not always achieve the level of precision required for seamless integration in high-end productions. Human oversight and refinement will likely remain necessary, especially for complex shots or those requiring subtle edge details.

Motion Capture and Performance Capture

The Move app uses AI to simplify motion capture, allowing filmmakers to capture and render motion using just a mobile phone. This democratizes a process that traditionally required expensive equipment and specialized facilities.

WonderDynamic's Wonder Studio - backed by Steven Spielberg, and other creatives behind "Ready Player One" - takes this a step further, providing a framework for turning captured footage into CGI or VFX, including facial expressions and hand movements. This could potentially allow small teams to animate complex 3D characters or integrate CGI elements into live-action footage more easily.

These tools have the potential to significantly lower the barrier to entry for creating high-quality animated content or integrating CGI characters into live-action footage. However, they also raise questions about the future of traditional animation (see Chapter 11) and VFX roles. As these technologies improve, there may be a shift in the skills required in the industry, with a greater emphasis on directing and refining AI-generated content rather than creating it from scratch.

AI-Assisted CGI

While not yet at the level of replacing skilled VFX artists, AI tools are beginning to assist in the generation of CGI elements. For example, AI can be used to create realistic textures, generate background elements, and assist in the creation of crowd simulations.

NVIDIA's GauGAN technology, for instance, can turn simple sketches into photorealistic landscapes, potentially speeding up the process of creating digital environments for films. Similarly, AI-powered tools like Artomatix can automatically generate textures based on a few sample images, reducing the time required for texture artists to create large, detailed environments.

Leonardo.ai is impacting CGI and post-production workflows for filmmakers by offering a fully-fledged suite of AI-powered tools that streamline creative processes, enhance visual storytelling, and reduce

production time. Below are some ways Leonardo.ai supports CGI work (beyond the story boarding and pre-production planning noted previously) in filmmaking, along with use cases:

1. **Image-to-Video and Animation Tools**

- The platform's "Image2Motion" tool transforms static images into dynamic video sequences, enabling creators to animate scenes without requiring advanced 3D software like Maya or Cinema 4D
- Filmmakers can use text-to-image and image-to-video capabilities to generate high-quality 3D animations tailored to specific project needs

2. **Visual Effects (VFX) Enhancement:**

- Leonardo.ai supports the creation of stylized keyframes and seamless integration of CGI elements into live-action footage. This simplifies complex VFX workflows, such as simulating natural phenomena or creating lifelike digital characters.
- The platform's Universal Upscaler enhances image quality, making it suitable for cinematic applications.

3. **Efficiency in post-production:**

- By automating tasks like motion graphics and video editing, Leonardo.ai reduces manual effort, allowing filmmakers to focus on creativity and narrative depth

Use Cases in Film Production

1. **Short Film by Freddy Chávez Olmos:**

- Freddy Chávez Olmos used Leonardo.ai for a horror short film, leveraging its tools to apply old-age makeup effects in post-production due to time constraints during shooting. The film has been selected for multiple international festivals

2. **Feature-Length Film by Max Escu:**

- Filmmaker Max Escu is using Leonardo.ai for end-to-end production of a fully AI-generated feature film. He employs the platform for ideation, creating thousands of images and videos daily as a foundation for scenes and trailers

3. **The Fractalnaut's Sci-Fi Stories:**

- A filmmaker known as "The Fractalnaut" integrates Leonardo.ai's Motion tool and Universal Upscaler to create surreal sci-fi narratives featuring alien worlds and characters. The tool has enabled him to produce high-quality visuals that rival traditional CGI techniques

The integration of AI into VFX and CGI workflows offers exciting possibilities for increased efficiency and accessibility, but the speed of change and up-skilling demands are alarming many. When you talk to experienced post-production supervisors, on the one hand they are appreciative of the speed of the tools, but they tend to lean back and explain that in the end, their role is to get inside the director's head and understand what they intend to create and help us 'see' and experience their intentions.

Clearly, there are a range of important considerations arising from the fast adoption of AI across the post-production sector that should be considered:

- While AI tools can speed up certain processes, they may not yet be capable of the nuanced, creative decision-making required for high-end VFX work. The role of skilled VFX artists remains crucial.
- The democratization of VFX tools through AI could lead to an oversaturation of mediocre or 'passable' visual effects in lower-budget productions. This could potentially raise audience expectations and make it harder for truly exceptional VFX work to stand out.
- There are concerns about the potential loss of traditional VFX skills as AI tools become more prevalent. It's important to ensure that foundational knowledge and techniques are not lost in the rush to adopt new technologies.
- The use of AI in enhancing archival footage raises ethical questions about the authenticity of historical materials. Clear guidelines will need to be established to ensure transparency in how such footage is manipulated.
- As with other areas of AI in filmmaking, there are ongoing debates about copyright and ownership when it comes to AI-generated or AI-enhanced visual elements.
- Learning Curve and Training: Post-production professionals must invest time in learning new AI-powered tools and workflows, which can be initially disruptive to established processes.
- Quality Control: AI-generated or AI-enhanced elements may require careful human oversight to ensure they meet the high standards expected in professional productions.
- Workflow Integration: Incorporating AI tools into existing post-production pipelines may require significant adjustments to established workflows and software ecosystems.
- Data Management and Security: AI tools often require access to large amounts of data, raising concerns about the security and privacy of sensitive production materials.
- Creative Control: There is a risk that over-reliance on AI tools could lead to a homogenization of creative output, potentially stifling the unique artistic voices that define distinctive filmmaking.
- Ethical Considerations: The use of AI in areas like deepfake technology raises significant ethical questions about consent, authenticity, and the potential for misuse.

Conclusion: Navigating the Future of AI in Post-Production

The integration of AI into post-production processes represents both an exciting opportunity and a significant challenge for the film industry. While AI tools offer unprecedented capabilities in editing, sound design, VFX, and other areas, they need to be used thoughtfully to avoid compromising the creative and human elements that are essential to compelling storytelling.

As we look to the future, it's clear that AI will play an increasingly significant role in post-production workflows. The most successful filmmakers and post-production professionals will likely be those who can effectively blend AI-driven efficiencies with their own creative instincts and artistic vision.

To navigate this evolving landscape, the industry should be considering the following points:

1. Develop clear ethical guidelines for the use of AI in post-production, particularly in areas like deepfake technology and the manipulation of archival materials.
2. Invest in training and education to ensure that professionals can effectively leverage AI tools while maintaining their core creative skills.
3. Encourage ongoing dialogue between technologists, filmmakers, and post-production specialists to ensure that AI tools are developed in ways that truly serve the needs of project management and the creative community at large.
4. Remain vigilant about the potential impacts of AI on employment and skills in the post-production sector, working to ensure that the benefits of these technologies are broadly shared.
5. Continue to prioritize and celebrate human creativity, using AI as a tool to enhance rather than replace the artistic voices that make cinema a powerful and enduring art form.

CHAPTER ELEVEN

ANIMATION

“You see these demos and it looks like, oh my gosh, AI can do anything. It's a magic box. But when you dig a little deeper, it's pretty problematic just getting consistency. My experience with it is, if I have any vision at all of what I want in my head, it's a disaster.”⁷

Pete Docter, chief creative officer and director, PIXAR

Animation has long held a mantle as one of the film industry's most powerful mediums for storytelling, combining artistic vision with technical innovation to create worlds limited only by our imaginations. As artificial intelligence starts to reshape the creative industries, animation finds itself at a pivotal moment of transformation. The fastmoving convergence of AI and animation presents not merely technological advancement, but a fundamental reimaging of how stories are conceived, characters are brought to life, and universes are built.

Sounds exciting, right? Not so fast. While many animation studios are early adopters of Gen AI tools, systems and suites, the projected impact of fast adoption is forecast to lead to “massive displacement” of animation jobs according to The Animation Guild (TAG).⁸ The most impacted animation crafts include character and environment design, 3D modelling and compositing, and rigging for animation projects. Entry level positions will be the most susceptible to consolidation and elimination, while upskilling of experienced animation craftspeople will be both necessary but in part meet significant resistance, leading to significant disruption and ‘change management’ challenges.

The animation industry stands at a transformative crossroads as Gen AI reshapes traditional workflows and creative processes. From traditional cell animation to immersive VR experiences, AI tools are revolutionizing how animated content is conceived, created, and delivered. This transformation represents more than mere technological advancement; it signifies a fundamental shift in how animated content is produced across different modalities.

Traditionally rooted in hand-drawn frames and labour-intensive craft-driven processes carried out by humans, animation has evolved through successive technological waves—from stop motion to computer-generated imagery (CGI)—each bringing unprecedented creative opportunities and production efficiencies. Today, AI tools range from assisting or taking over automating routine tasks, to enhancing storytelling through intelligent design systems.

The global generative AI market in animation is projected to grow exponentially from \$1.32 billion in 2023 to \$23.60 billion by 2032, underscoring the urgency (and pressure from above) for animators to adapt and harness AI's potential while navigating its complexities. This growth trajectory signals a

⁷ *Variety*, 12 September 2024

⁸ See *Critical Crossroads: The Impact of Generative AI and the Importance of Protecting the Animation Workforce*, published by TAG and compiled by the Animation Guild's Task Force and the Concept Art Association, September 2024

fundamental shift in how animated content is conceived, produced, and delivered. For animators, understanding and mastering these AI tools is no longer optional.

This Chapter examines the multifaceted impact of AI on animators throughout the entertainment value chain, offering a critical perspective on both the opportunities and challenges presented by this technological revolution.

Pre-Production: AI-Driven Ideation and Concept Development

In the realm of development and early pre-production, AI tools have significantly accelerated the conceptualization phase of animation projects. Platforms like Runway ML and Midjourney are playing a role in concept development, enabling fast generation of visual concepts from text prompts and helping animators to explore diverse artistic directions with increased speed and efficiency.

Runway ML has emerged as a versatile AI platform offering a range of models for generating concept art, video effects, and more recently 3D designs. Its ability to convert mood boards or script descriptions into detailed imagery streamlines the creative process, allowing artists to focus more on narrative development and less on initial visualization. However, such tools – once again - raise significant concerns about creative homogenization. The tool's reliance on pre-trained datasets may inadvertently limit the uniqueness and variety of artistic outputs, potentially leading to a convergence of visual styles across the industry. This homogenization risk is particularly acute in an industry where distinctive visual aesthetics often define an animation studio's brand identity.

Furthermore, the ethical implications of Runway ML's and other Gen AI tool's data sources cannot be overlooked. The incorporation of copyrighted material in AI training data raises legal and moral questions about the originality and ownership of AI-generated content. It is instructive to note that AI models generate statistical image approximation – not directly from the original dataset – but from an internalised comprehension of inherent patterns. Once trained, AI tools do not rely on the data or dataset to generate images from text. This is key to understand, as despite models no longer requiring reference or dependency on the initial data itself, it means that the ethics, values and assumptions have been baked into the model. “There is an inherent dishonesty in using a model training by peeking over the shoulders of others without them knowing,” argues TAG in his Critical Crossroads paper [Ibid]. Studio-streamers and leading animation houses will need to navigate these waters with due care and a keen sense of responsibility. They need to implement robust vetting processes for AI-generated concepts to ensure they do not infringe on existing intellectual property.

Midjourney, which we looked at previously in earlier chapters, enhances the concept development phase by allowing animators to generate high-quality visual content from simple text prompts. Often referred to as ‘previz’ (aka: previsualisation), this capability enables very fast exploration of multiple artistic directions, giving studios and project teams agility in pivoting and playing with creative ideas and angles without significant resource investment.

Despite its efficiency, however, Midjourney's outputs often lack narrative context and require substantial human direction and refinement to align with complex story arcs and the director's intentions in full. These limitations underscore the continued importance of human creativity in shaping coherent and emotionally resonant narratives. The tool's seductive yet notable speed and efficiency in generating

visuals needs to be balanced against the risk of over-reliance, which could lead to a disconnect between visual spectacle and storytelling depth and resonance.

The platform Boords automates the generation of scene compositions and camera angles, expediting the transition from script to visual representation. This automation allows creative teams to iterate quickly and improve narrative pacing, potentially leading to more refined storytelling structures in early development stages. However, while Boords offers significant time-saving benefits, reliance on AI-driven suggestions may result in yet more formulaic visual structures, potentially limiting opportunities for unconventional and truly original universe building and unique story worlds.

To maximize Boords' potential, it is best used as a complementary tool rather than a replacement for human creativity and the directing and producing team's vision. Animators and directors best view AI-generated storyboards as starting points for further creative exploration, ensuring that the final visual narrative maintains the unique vision and style of the project.

The key point is that AI tools, no matter how supportive and efficient they can be, has no critical, emotional or sentient judgement when it comes to how to engage an audience.

Production: AI-Enhanced Animation and Performance Capture

The production phase has witnessed some transformative AI integrations, particularly in animation, rigging, and motion capture workflows. These tools minimize repetitive, technical tasks, enabling (some, and potentially *less*) animators to focus on storytelling and artistic expression.

DeepMotion revolutionizes motion capture by transforming standard video footage into fully rigged 3D character animations. This technology eliminates the need for expensive motion capture suits and complex setups, making high-quality animation more accessible to smaller studios and independent creators. While DeepMotion helps to democratize access to motion capture technology, it struggles to replicate the nuanced emotional, sentient-loaded performances that human actors bring to animation.

This limitation is particularly problematic for projects that rely heavily on subtle character expressions and interactions. The tool's effectiveness in automating movement must be weighed against its potential to oversimplify complex character dynamics, potentially resulting in animations that lack emotional depth and authenticity.

Furthermore, DeepMotion's accessibility raises questions about the future role of specialized motion capture artists. As the technology improves, studios may need to redefine these roles, focusing more on enhancing and customizing AI-generated motion rather than capturing it from scratch.

Adobe Character Animator automates lip-syncing and facial animation by analysing voice recordings and webcam input. This innovation significantly accelerates production timelines for dialogue-heavy content, making it particularly valuable for web series, educational animations, and rapid content production. The efficiency gains offered by Adobe Character Animator come with the risk of diminishing the role of specialized animators. While AI efficiently handles basic expressions, it often lacks the subtlety required for nuanced emotional performances. This limitation could lead to a flatter range of character expressions across projects, potentially reducing the emotional impact of animated content.

Overreliance on automation could lead to characters that feel emotionally stilted and disconnected from the audience. The most effective use of this tool likely involves a hybrid approach, where AI handles basic animation tasks while human animators focus on refining and enhancing emotional performances.

Cascadeur supports animators by offering predictive feedback for crafting realistic, physics-based character movements. This tool enhances the believability of action sequences, making them more dynamic and engaging. While Cascadeur's emphasis on realism can significantly improve the quality of action-oriented animations, it may inadvertently limit creative stylization. Animators need to consider how best to balance the tool's realistic physics with their artistic intent to maintain the desired aesthetic. The risk of over-reliance on physics-based suggestions could lead to a homogenization of action sequences across the industry, potentially stifling the development of innovative animation styles.

This conflict between realism and artistic expression is particularly relevant in projects that prioritize exaggerated or stylized motion, such as certain anime styles or experimental animations. And remember the intentions of those at the top of the animation pile: “We’re not going for realistic,” explained a top PIXAR animator to me. “We’re going for believable.” [14].

Ebsynth automates the process of applying artistic styles across animation frames, reducing the manual effort required for stylized animations. By transferring a hand-painted keyframe's style to the entire sequence, it offers significant time-saving potential for certain animation styles. Ebsynth's efficiency in style transfer must be weighed against its limitations in maintaining consistency across complex scenes. The tool often struggles with dynamic camera movements or significant perspective changes, which can disrupt the visual coherence of a project. These inconsistencies may require extensive manual adjustments, partially offsetting the tool's efficiency gains.

Post-Production: AI in Visual Effects, Rendering, and Quality Control

AI has had a significant impact on post-production workflows, particularly in rendering, visual effects, and compositing. These improvements have helped to reduce production timelines and in part, lowered costs, enabling studios of varying sizes to produce potentially higher-end content.

Topaz Video AI enhances video quality through intelligent upscaling and noise reduction. This tool is particularly useful for remastering older content and improving real-time rendering in animation workflows. While Topaz Video AI offers significant improvements in visual quality, overuse of AI upscaling can produce visuals that feel artificially enhanced and overly synthetic, potentially detracting from the original artistic vision and intentions. This risk is particularly acute in animation, where the integrity of the original artwork is crucial to the viewer's experience. Just maximizing visual fidelity is never going to cut it in a craft-driven artform that needs to create an immersive and magical experience for the audience.

Runway streamlines VFX workflows by providing accessible tools for visual effects generation and compositing. These high-end visual effects are available to smaller studios and independent creators, potentially levelling the playing field in terms of production quality. While Runway's accessibility is commendable, the automation of complex visual effects processes can sometimes result in generic or formulaic visuals if not closely supervised by experienced artists. This risk of homogenization in visual

effects could lead to a saturation of similar-looking content, potentially diminishing the impact of VFX in storytelling.

Moreover, the so-called ‘democratization’ of VFX tools raises questions about the future of specialized VFX artists. As AI-driven tools become more sophisticated, the industry may need to redefine the role of VFX artists, focusing more on creative direction and customization rather than technical execution.

“The impact of AI is dramatic in animation and will come at a cost to animation workers. The most impacted animation crafts include character and environment design, 3D modelling and composing, and animation and rigging.”

Future Unscripted: The Impact of Gen-AI on Entertainment Industry Jobs, CV Economics

Automated systems have significantly improved quality control processes in animation, efficiently detecting technical inconsistencies, colour mismatches, and animation errors. This capability allows for more thorough and consistent quality checks, potentially reducing the risk of overlooked errors in final deliverables. While AI excels at identifying technical issues, it lacks the capacity to evaluate narrative coherence or emotional impact. This limitation underscores the continued necessity of human oversight in final production stages. Over-reliance on AI-driven quality control could lead to technically flawless but emotionally or narratively flawed content slipping through the cracks.

Furthermore, as AI quality control systems become more prevalent, there's a risk of studios optimizing their content to pass automated checks rather than focusing on creative excellence and judgement. This shift in management approvals and priorities could potentially lead to an increasingly dull and similar content pipeline that prioritizes technical perfection over creative risk-taking.

Economic Implications and Industry Transformation

The integration of AI into animation workflows has led to substantial cost reductions and increased output efficiency. By automating repetitive tasks, studios can redirect resources towards creative development and marketing, potentially leading to higher-quality productions and more effective audience engagement. While the economic benefits of AI integration are clear, they come with significant challenges. The shift in resource allocation will result in workforce restructuring, with potential job displacement in traditional animation roles. This transition raises critical questions about workforce stability and the need for comprehensive retraining programs to help artists adapt to AI-integrated workflows.

Moreover, the high implementation costs of advanced AI systems, including infrastructure upgrades and software licenses, create barriers that favour larger studios with substantial resources. This disparity risks consolidating market power among industry market leaders, potentially stifling innovation and creative diversity in the animation landscape.

To maintain a diverse and innovative animation ecosystem, industry stakeholders must consider strategies to support smaller entities in accessing and implementing AI technologies. This could include collaborative initiatives, shared resources, or tiered licensing models that make advanced AI tools more accessible to independent creators and smaller studios.

Ethical Considerations and Creative Integrity

The proliferation of AI in animation raises complex ethical questions about intellectual property rights, content ownership, and creative authorship. Generative models trained on extensive datasets may inadvertently reproduce copyrighted material, creating legal and ethical dilemmas for studios and creators. The industry must grapple with defining new frameworks for crediting and valuing artistic input in AI-assisted productions. As AI systems become more sophisticated in generating visual content and even narrative elements, traditional notions of authorship are challenged. This evolving landscape necessitates the development of new models for recognizing and compensating creative contributions that account for both human and AI inputs.

Growing reliance on pre-trained models and datasets in AI tools raises concerns about perpetuating existing biases or limiting the representation of diverse cultural perspectives. Animators and studios must actively work to ensure that AI enhances rather than constrains the rich tapestry of global artistic traditions and cultural narratives.

Animation Modalities: AI Tools Across Animation Styles

The integration of AI into various animation styles has revolutionized the creative process across different modalities. In 2D animation, vector-based AI tools have streamlined the creation of smooth, scalable graphics, while raster-based AI assistants enhance texture and detail in bitmap images. AI-powered tweening and inbetweening technologies, such as those integrated into Adobe After Effects, have significantly reduced the manual labour involved in creating transitional frames, allowing animators to focus on key poses and expressions. However, these tools often struggle with maintaining the unique artistic style of hand-drawn animation, potentially leading to a predictable flattening of 2D aesthetics if not carefully balanced with human input.

3D animation has perhaps seen the most dramatic advancements due to AI integration. AI-driven rigging and skinning tools, like those found in Autodesk Maya with AI plugins such as Arnold AI Denoiser, have simplified the complex process of creating believable character movements. These tools automatically generate skeletal structures and skin deformations that respond naturally to motion. Procedural animation with AI, exemplified by systems like DeepMotion, has enabled the creation of complex, realistic movements for crowds, natural phenomena, and secondary motion effects without the need for extensive manual keyframing. AI-enhanced rendering and lighting, as seen in NVIDIA Omniverse, have pushed the boundaries of visual fidelity, with machine learning algorithms optimizing ray tracing, global illumination, and texture mapping to produce stunningly realistic environments and characters.

In the realm of 3D animation, AI integration has significantly enhanced tools like Blender, an open-source 3D creation suite. Blender's AI-enhanced addons, such as Mocap AI, have revolutionized character animation by allowing animators to convert 2D video footage into 3D character movements. This integration enables Blender users to seamlessly incorporate realistic motion into their 3D environments, bridging the gap between live-action reference footage and digital animation. The AI-powered features in Blender not only streamline the animation process but also opens new creative possibilities for animators working in 3D environments, allowing for more efficient and dynamic character animations.

Re-starting Stop motion

In the realm of stop motion animation, AI has developed innovative applications that complement this traditionally hands-on technique. AI-powered frame interpolation, a feature available in software like Flowframes, allows animators to create smoother movements. It achieves this by intelligently generating intermediate frames, reducing the choppy appearance often associated with lower frame rates. AI-assisted set and puppet design tools help conceptualize and iterate on physical designs more rapidly, while motion planning and control systems aid in precise puppet manipulation, ensuring consistency across takes and reducing the need for extensive reshoots. However, the integration of AI in stop motion must be carefully managed to preserve the tactile, handcrafted aesthetic that is central to the medium's captivating rhythm and charm.

Claymation, a subset of stop motion, has also benefited from AI advancements. AI algorithms for clay simulation and physics enable animators to previsualize complex clay deformations and interactions, informing the physical animation process. Facial animation and expression generation tools powered by AI, such as Adobe Character Animator, help maintain consistency in character performances across scenes, a particularly challenging aspect of claymation. Additionally, AI-powered cleanup and consistency tools assist in removing unwanted artifacts like fingerprints or support structures, maintaining the illusion of life in clay characters. While these tools offer significant advantages in terms of efficiency and consistency, they also risk sanitizing the organic, imperfect nature of traditional claymation that many viewers find endearing.

Motion graphics, an increasingly popular form of animation in digital media, has embraced AI tools to enhance creativity and efficiency. AI for dynamic text animation, as seen in tools like Runway ML, can generate engaging typography animations based on content and style parameters. Generative design in motion graphics allows for the rapid creation of complex, abstract visual elements that respond to audio or data inputs. AI-driven particle systems and simulations, available in software like Houdini, have elevated the sophistication of motion graphics, enabling the creation of intricate, organic-looking animations that would be time-consuming to produce manually. However, the ease with which these tools can generate complex visuals may lead to an overreliance on AI-generated effects, potentially diluting the unique creative voice of motion graphics artists.

Across all these animation modalities, AI tools are not replacing human creativity but rather augmenting it, allowing animators to experiment with new techniques, and bring their visions to life more efficiently.

Conclusion

There are clearly a lot of fastmoving changes in the animation industry. Many of the above developments are intriguing, efficient and potentially effective depending on where you sit. But there is a high-level need for judgement and mobilisation to overcome the noise, or managers and AI corporate forces will be in the position of marking their own homework. Animation guilds and unions are correctly vigilant about the profound impact Gen AI is having on their industry and workforce. Engaging with legislative bodies and regulatory agencies to push for protections and guidelines that ensure Gen AI is not consciously or otherwise used to undermine the animation workforce finds itself both at the forefront and receiving end of the industrial revolution.

CHAPTER TWEELEVE:

PROMOTION AND DISTRIBUTION

“The biggest threat [from AI] is the distribution. I hear people say, I’ve seen this French series, it’s so great. Where did you see it? On Netflix. It was on a French channel first, but they didn’t watch it on the broadcaster service, they watched it on Netflix later...So it is about how to get to top-of-mind. You may think it’s not such a big deal that people will choose. But when you have that much choice, you don’t. You [end of picking] something you didn’t even want to watch.” [23].

Guillaume Esmiol, Executive Director, Marche du Film, Festival de Cannes

The art of promoting and positioning a film is an essential and demanding component of the filmmaking distribution process. This is the moment where creativity meets strategy to identify and attract audiences and drive engagement. From traditional tools such as posters and trailers to social media campaigns, promotional materials serve as the first point of contact between a film and its audience. In recent years, artificial intelligence has emerged as a growing force in this domain, offering capabilities for creating high-impact visuals, crafting copywriting, analysing audience engagement, and optimizing marketing spend.

Traditionally, the creation of promotional materials relied heavily on the expertise of marketing teams and graphic designers, often constrained by time and budget limitations. However, AI is now reshaping this landscape by streamlining workflows, providing detailed insights into audience behaviour and trends, and enabling marketers to craft more personalized and targeted campaigns.

This chapter examines the role of AI and its growing impact on the creation and distribution of film promotional materials. By exploring specific AI tools such as Midjourney, Runway ML, HeyGen, and others, we explore how these technologies are influencing poster design, trailer editing, social media engagement, and marketing strategies. We also examine the use and role of algorithms and the debate around their inherent push modelling and their impact on film and TV shows and commissioning tendencies.

AI Tools for Creating High-Impact Visuals and Copywriting

The visual identity of a film is often established through its posters and trailers, which serve as powerful tools for generating interest and anticipation. One of the most prominent tools in this space is Midjourney, a text-to-image generator that allows users to create high-quality visuals based on textual descriptions. This tool has become widely explored and used for conceptualizing film posters. This tool can be used to generate rapid prototypes and enables teams to explore various visual styles quickly before finalizing a design.

However, at the time of writing, while Midjourney excels at generating visually striking images, it will typically struggle with more nuanced aspects of poster design, such as typography and precise layout control. As such, it should be viewed as a tool for concept generation and inspiration rather than a replacement for skilled graphic designers.

In the realm of trailer creation, AI-powered platforms like Runway ML are making significant strides. Runway's video editing capabilities allow marketers to analyse footage and suggest edits based on pacing and emotional impact. This can be particularly useful for crafting dynamic trailers that resonate with audiences. Additionally, Runway's text-to-video generation capabilities opens up new possibilities for creating teaser content or animating still images for promotional purposes.

For copywriting, LLM tools like ChatGPT and Perplexity Pro are proving supportive in generating taglines, synopses, and social media copy. These language models can quickly produce multiple variations of promotional text, allowing marketing teams to experiment with different tones and messaging strategies. However, it is important to approach AI-generated copy with caution; these tools may lack the nuanced understanding required to capture a film's unique themes or cultural context and 'bias creep' and unintended words can easily infect the process if unchecked and properly supervised.

Micro Case Study: A24's AI-Generated Poster for *Civil War*

In 2023, A24, the renowned independent film studio known for its innovative marketing strategies, made headlines by utilizing artificial intelligence to create a promotional poster for their upcoming film *Civil War*, directed by Alex Garland. The film, a dystopian exploration of a fractured America, required a marketing campaign that could visually encapsulate its complex themes of division, conflict, and eerie futurism. A24 turned to Midjourney, a text-to-image AI tool, to generate the conceptual visuals for the poster.

The creative team at A24 collaborated with Midjourney to explore how AI could assist in visualizing the film's core themes. By inputting text prompts such as "fractured landscapes," "surreal Americana," and "ominous skies," the AI generated dozens of high-quality images that captured the dystopian tone of *Civil War*. These AI-generated visuals served as a foundation for further refinement by A24's in-house graphic designers. The final poster depicted a hauntingly fragmented American flag fluttering over a desolate landscape—an image that perfectly aligned with the film's narrative of societal collapse and ideological conflict.

Why AI?

A24's decision to use AI was driven by both creative and practical considerations. First, Midjourney allowed the team to rapidly prototype multiple visual concepts without committing significant resources to traditional design workflows. This efficiency enabled them to explore a wider range of creative possibilities in a fraction of the time. Second, the surreal and slightly unsettling aesthetic produced by Midjourney aligned seamlessly with Alex Garland's signature style and the film's atmospheric tone.

Audience Reception

The release of the *Civil War* poster sparked widespread discussion on social media platforms like Twitter and Instagram. While many praised its bold and innovative design, others debated the ethics of using AI in creative industries, raising questions about authorship and artistic integrity. Despite these debates, the poster succeeded in generating significant buzz for the film, with many users sharing it across digital platforms and speculating about the movie's themes.

Critical Analysis

A24's use of AI for *Civil War* exemplifies how AI tools like Midjourney can be integrated into traditional creative workflows to enhance efficiency and expand artistic possibilities. However, it also highlights some of the ethical dilemmas associated with AI-generated content. For instance:

Authorship: Who owns the creative rights to an AI-generated image? Is it A24, Midjourney's developers, or the team that refined the final design?

Transparency: Should audiences be informed that an AI tool played a significant role in creating promotional materials? How might this disclosure affect perceptions of authenticity?

Impact on Designers: While tools like Midjourney can streamline workflows, they may also reduce opportunities for human designers to engage in conceptual development.

Despite these challenges, A24's campaign demonstrates how AI can be leveraged as a complementary tool rather than a replacement for human creativity. By combining Midjourney's generative capabilities with their designers' expertise, A24 crafted a visually striking poster that not only captured the essence of *Civil War* but also pushed boundaries in how films are marketed.

Designers. The final poster depicted a hauntingly fragmented American flag fluttering over a desolate landscape—an image that perfectly aligned with the film's narrative of societal collapse and ideological conflict.

Social Media Analytics for Audience Engagement

The role of social media in film promotion has become increasingly central to all campaigns in an era where audience engagement (and word of mouth and 'click') drives awareness and box office success. Platforms like Bluesky, Instagram, X, Meta, TikTok, and YouTube serve as essential channels for engaging audiences directly. AI-driven analytics tools are now providing marketers with deeper insights into audience behaviour and how content hits home and how.

Tools like Sprout Social and Hootsuite incorporate AI-driven analytics that track engagement metrics across multiple social media channels. These tools can identify patterns in audience behaviour—such as optimal posting times or preferred content formats (e.g., images versus videos). For example, an AI tool might reveal that behind-the-scenes footage generates higher engagement rates than traditional

promotional posts for a particular audience segment. Moreover, sentiment analysis powered by natural language processing allows marketers to gauge audience reactions toward promotional content in real-time. This enables rapid response to audience feedback and the ability to adjust marketing strategies on the fly.

Predictive Tools for supporting Marketing Spend

One of the most hyped applications of AI in film promotion lies in the alleged optimization of marketing budgets through predictive data analytics. Machine learning algorithms are used by marketers increasingly to allocate resources in a more targeted way by identifying which channels and tactics are likely to deliver the best performance.

We have already seen how platforms like Cinelytic offer predictive models that analyse variables such as cast popularity, genre trends, release timing, and audience demographics to forecast a film's performance across different markets.

For example:

- A studio releasing a romantic comedy might use Cinelytic to determine that investing heavily in digital advertising targeting millennial women would yield higher ROI than traditional TV spots.
- Similarly, an independent filmmaker could use predictive analytics to identify niche audiences most likely to engage with their project on platforms like TikTok or Instagram.

AI-powered programmatic advertising platforms are also impacting how marketing budgets are spent online. These systems analyse vast amounts of data in real-time to determine optimal ad placements while dynamically adjusting creative elements based on user behaviour.

Practical Tool: IBM Watson Advertising

IBM Watson Advertising offers AI-powered tools that can analyse vast amounts of consumer data to create personalized ad experiences. For film marketing, this could mean:

- Dynamically adjusting trailer content based on viewer preferences
- Creating personalized social media ad campaigns that highlight different aspects of a film depending on the viewer's interests
- Optimizing ad placement and timing across various platforms to maximize engagement

Use case

1. The AI analyses viewer data and creates multiple versions of the trailer, each emphasizing different aspects of the film (e.g., the love story, the scientific concepts, the action sequences) based on individual viewer preferences.
2. Social media ads are dynamically generated, with visuals and copy tailored to each user's interests and online behaviour.
3. The AI optimizes ad placement across platforms, identifying when and where each target audience is most likely to engage with the content.

The result is a highly personalized campaign that significantly increases engagement rates and ticket pre-sales compared to traditional marketing approaches.

A Word on Algorithms

Algorithms are a perplexing conundrum in the world of media dissemination, distribution and twirling demand. A wide-ranging analysis on content and the homogenizing effects of algorithms by New Yorker writer Kyle Chayka [6] provides a critical sideswipe at management and organizations, and their focus on return on investment via data mining and recommended algorithms. User choices are becoming governed by an ever-tightening web of computer programmes and data mining, resulting in the lowest common denominator being promoted at the expense of complex, diverse or challenging stories and the fresh and new. Difference is not good, more of the same or similar works well for recommendations, goes the argument behind the applied statistics.

The “flatness” and pre-selection of viewers’ choices and the addictive, sub-conscious trap AI-driven recommendations and filters provided to the consumer are not only ubiquitous. They also demonstrate management’s commitment to shareability over innovation. “By *flatness* I mean homogenization but also a reduction into simplicity: the least ambiguous, least disruptive, and perhaps least meaningful pieces of culture are promoted the most,” writes Chayka [6]. The fear expressed is that our content is increasingly customized, rather than discovered, experienced and enriching. Films for example are valued (or not) as just part of a wider branded media diet rather treated as prototypes and considered valuable, curatable events in themselves.

It's not just the film industry that has been subject to significant algorithmic treatment. Spotify, for example, detaches the music from the maker with playlists that are not the same as compilations that introduce listeners to artists that they may choose to explore. Instead, the playlists are bland background music. “**Listeners**” states author Liz Pelly in her book **Mood Machine**, ‘often weren’t even aware of what song or artist they were hearing.’ [37]. This then laid the groundwork for Spotify to move towards promoting AI-generated music. Pelly argues that Spotify is attracted to AI “for the same reason that other industry power players were clamouring to harness its potential: it opened up a possible new pool of cheap content.” [Ibid].

The world’s leading researchers, including the late and renowned Daniel Kahneman [21], have pointed to the widespread fears that algorithms have a discriminatory consequence, increase inequality and can clearly threaten democracy itself. Dependence on big data and decision making by algorithm can embed prejudice – either by bias in its original training, or bias-creep through secondary factors and loaded prompting for example: “**Potentially biased mathematical models are remaking our lives – and neither the companies responsible for developing them nor the government is interested in addressing the problem.**”

But with the right settings and input, algorithms have the potential to far outperform humans [12]. Kahneman homes in on the key question: “Can we design algorithms that do better than real-world humans on a combination of criteria that matter -: accuracy and noise reduction, and non-discrimination and fairness. A great deal of evidence suggests that algorithms can outperform humans on whatever combination of criteria we select (note we said *can*, not *will*).” [21].

However, when a powerful algorithm is set to capture and retain a viewer, as utilised by major streaming platforms for example, the results are inherently reflexive. What sticks and stays demands more of the

same or alike. And that shunts films and TV programme choices down an ever-narrowing path when it comes to risk, diversity and that curation of a unique event or a moment of fresh discovery.

Indeed, we would do well to recall the immortal words of Anton Ego in the closing frames of PIXAR's *Ratatouille*: "Surprise me!"

The festival angles

AI is starting to reshape and impact strategies employed for festival selection and film positioning. The process of selecting which films to submit to festivals and how to position them for maximum impact has traditionally relied heavily on intuition, industry relationships, and past experiences [14]. However, AI is now offering more data-driven approaches to these strategic and key decisions.

Platforms like Largo.ai are at the forefront of this approach, leveraging machine learning algorithms to analyse large amounts of historical festival data, including past winners, audience reception, and critical reviews. By inputting a film's characteristics – such as genre, cast, budget, director, and thematic elements – these AI tools can play a role in predicting which festivals might be the best fit and suggest useful submission strategies.

For example, a producer with a low-budget indie drama might use Largo.ai to identify smaller, genre-specific festivals where their film has the highest chance of standing out, rather than competing for limited slots at larger, more competitive events. This targeted approach can save time and resources while increasing the likelihood of festival acceptance.

Practical Tool: Resonance AI

Resonance AI is a powerful tool that analyses video content to identify key moments, themes, and emotional resonance. For festival positioning, filmmakers can use Resonance AI to:

1. Identify the most impactful scenes for trailers and promotional materials
2. Understand the emotional journey of their film and align it with festival audiences
3. Optimize press kits by highlighting elements that resonate most strongly with critics and festival programmers

However, it's important to approach these AI-driven insights with care and attention. While data can provide valuable guidance, it cannot replace the nuanced understanding of human curators and marketers who can recognize unique artistic merit or cultural relevance that may not be easily quantifiable.

AI is also being employed to analyse the impact of festival buzz on a film's commercial prospects. By tracking social media mentions, critical reviews, and audience reactions in real-time during a festival, AI tools can provide almost instantaneous feedback on how a film is being received. This allows marketing teams to pivot their strategies quickly, capitalizing on positive reception or mitigating potential negative impacts.

Ethical Considerations and Industry Impact

The integration of AI tools into film sales and marketing raises important ethical considerations that must be carefully examined. There are ongoing debates about the potential for algorithmic bias in AI systems, which could inadvertently perpetuate or exacerbate existing inequalities in the film industry. For instance—if AI tools are trained on historical data reflecting past biases in film selection promotion—they may continue to favour certain types or genres and story worlds and named filmmakers over others, leading to a less diverse landscape and choice. Historical data does not accurately or reliably indicate future performance, whatever the sales speak may propagate! Audiences are eternally fickle.

Privacy concerns loom large, particularly regarding the collection and use of audience data for marketing purposes. As AI systems become more sophisticated in their ability to analyse and predict viewer preferences, there's a risk of crossing ethical boundaries in terms of data usage and targeted advertising. Filmmakers and distributors must navigate this carefully to maintain trust with their audiences.

There's also the broader question of transparency. Should filmmakers be required to disclose their use of AI tools in the creation of marketing materials or in decision-making processes? How might this disclosure affect the reception of their work by audiences, critics, and industry professionals? As AI becomes more prevalent in film marketing and distribution, establishing clear guidelines for transparency and ethical use will be crucial.

The potential impact on employment in the film industry is another critical consideration. While AI tools can enhance efficiency and productivity, they may also reduce the need for certain roles in the marketing and distribution process. The industry must grapple with how to balance technological advancement with the preservation of valuable human expertise and employment opportunities.

Furthermore, the widespread adoption of AI tools could potentially exacerbate existing inequalities in the film industry. Smaller, independent filmmakers may not have access to the same sophisticated AI tools as major studios, potentially putting them at a competitive disadvantage. This raises questions about how to ensure a level playing field and maintain diversity in the film landscape.

Potential industry considerations and strategies going forwards:

- 1. Invest in AI literacy:** Filmmakers, producers, and marketers should be encouraged and given opportunities to engage with and understand AI technologies and their applications in the industry. This knowledge and up-skilling will be crucial for making informed decisions about when and how to leverage AI tools.
- 2. Develop ethical guidelines:** The industry should work collectively to establish clear ethical guidelines for the use of AI in film marketing and distribution. These guidelines should address issues of transparency, data privacy, and fairness.
- 3. Foster collaboration between technologists and creatives:** Encouraging dialogue and collaboration between AI developers and film industry professionals can lead to the creation of more tailored, effective

tools that respect the unique needs and values of the film community and protect the public from manipulation and bias.

4. **Prioritize diversity and inclusion:** As AI tools become more prevalent, it's crucial to ensure they are developed and used in ways that promote diversity and inclusion in the film industry, rather than reinforcing existing biases.

CHAPTER THIRTEEN

PUBLIC FUNDERS AND AI

“We need to build an ecosystem of trust...in a sector that remains plagued with problems of safety, discrimination and hallucinations (a nice way of saying AI lies).”⁹

Marietje Schaake, special adviser to the European Commission

The rapid adoption of Artificial Intelligence (AI) technologies, including Generative AI (Gen-AI), Large Language Models (LLMs) and the rise of Large Action Models (LAMs)¹⁰, presents both opportunities and challenges for public film funds and agencies. AI tools are impacting the film and TV industry right across the entire value chain, ranging from ideation, script development to production, post-production and distribution, marketing and audience engagement.

Crucially, the integration of the plethora of tools and supportive functions raises fundamental questions about the role of public funding in safeguarding creativity, originality, copyright, ensuring equitable representation, and upholding ethical and legal standards in film and audiovisual creative works. Indeed. Public agencies and funders need to be trusted by all stakeholders – including political and public paymasters, and the practitioners and benefactors. This section extracted from *Human in the Loop: AI and the Film Value Chain*, builds on the insights presented at the 2024 Best Practice Exchange (BPX) workshop and paper¹¹, references VAF’s excellent AI survey published January 2025¹², and other recent industry developments, interviews and research.

Challenges Facing Public Funds

Public funds face several inherent and interconnected challenges as they navigate the rise of AI technologies. A key issue is the definition of authorship and originality. Public funds have traditionally prioritized human creativity, focusing on the originality of content as a core funding criterion. However, the rise of AI has blurred the lines between human and machine-generated content and, also importantly, decision making. Generative AI, trained on vast datasets of copyrighted material, has the capacity to produce synopses, treatments, step outlines, screenplays and storyboards.

This raises critical questions about what constitutes “original” work and whether AI-generated content aligns with the cultural and artistic missions of public funding. The Writers Guild of America (WGA) has taken a clear stance, insisting that AI-generated material cannot be considered source material and should not replace human authorship. Public funds must similarly draw boundaries, defining the role of AI in

⁹ Financial Times, 9th November 2023: *The Route to AI regulation is fraught but essential to avoid harm*

¹⁰ Natural language (text, voice etc.) to Video – already widely used - is expected to multiply rapidly in usage over the next 12 months.

¹¹ See “It’s AI Time! Impacts, opportunities and challenges for film funders in the age of AI. Best Practice Exchange (BPX), 2024.

¹² See VAF’s AI research: <https://www.vaf.be/en/research-reports/usage-of-artificial-intelligence>

supported projects while ensuring that human creativity remains central to publicly funded and supported creative work, projects and talent development.

Copyright: The right to copy?

Legal and copyright concerns present a further significant major challenge. The use of AI in content creation introduces significant legal uncertainties, particularly regarding copyright. AI's reliance on copyrighted material for training (known as 'scraping' from the internet) raises significant legal uncertainties. Nearly all Generative AI models are trained on datasets containing copyrighted works without explicit permission from creators. All lawyers consulted confirm that artists' and creatives' copyright has clearly been infringed. (For full analysis of regulatory, copyright and fair use, see Chapter 14).

Full disclosure

Public funds must establish policies that require clear disclosures from applicants about AI use, ensuring that rights to all AI-generated content that intellectual property has been derived from are properly cleared. Moreover, funders should advocate for international standards to address these unresolved legal issues. Furthermore, AI's potential to reinforce stereotypes and biases poses clear ethical dilemmas. As noted in the BPX workshop's very helpful report¹³ (and is emphasised across a range of leading European Funds), training data for AI models often reflects historical biases in race, gender, and cultural representation. Public funds have a responsibility to promote diversity and inclusivity in the projects they support. This requires scrutiny of AI's role in content creation and robust measures to ensure that AI tools do not perpetuate harmful biases.

Transparency is paramount in managing AI's integration into the creative process. Public funds need to adopt rigorous disclosure requirements, ensuring applicants specify the extent and nature of AI use in their projects. This includes detailing whether AI was used in scriptwriting, production design, or marketing materials, as well as how datasets used to train AI models (if used) were sourced. A lack of transparency risks undermining trust in public funding systems and the integrity of the projects they support. Enforcement is not straightforward, hence systems to detect use of AI tools that have not been declared by applicants also need to be developed comprehensively. And clear repercussions for those who abuse the system.

Finally, AI tools do offer opportunities to streamline administrative processes, such as organising and in part evaluating funding applications (with human oversight) and assessing market potential. While these tools can enhance efficiency, their use must be carefully balanced with the need for ethical oversight. Automated systems should complement, rather than replace, human decision-making, selection processes and judgment, ensuring that funding priorities align with the cultural and artistic values of public agencies.

¹³ "It's AI Time" IBID

Challenges in AI Integration

Public funds and agencies are facing several challenges when it comes to integrating Generative AI and Large Language Models (LLMs) into their operations:

- **Risk Management:** Government agencies must address potential risks associated with AI, such as unpredictability, inaccuracy, and inherent and unchecked bias.
- **Data Privacy and Security:** Maintaining the confidentiality of sensitive personal and organization's data is crucial when implementing AI systems.
- **Public Trust:** Concerns about AI-generated inaccuracies and unchecked assumptions (aka: "hallucinations") could erode public confidence in government-funded public services.
- **Transparency and Explainability:** The complexity of AI models makes it difficult to explain decision-making processes, which is essential for public sector accountability.
- **Legacy Systems:** Many agencies are hesitant to replace existing software and data systems, fearing disruption to their operations and lost sunk costs in the process.
- **All filters, interim, and final funding decisions** should always involve human evaluators who can consider cultural, ethical and artistic values that algorithms cannot quantify.
- **Algorithms used for application reviews** should be audited regularly to ensure fairness and accuracy.

A clear-sighted approach: The Swedish Film Institute's policy position

Below is an extract from the SFI's short policy document as an example of how agencies and funds can approach the challenges presented by AI.

Introduction

More and more people see opportunities in using artificial intelligence in their work. There are great possibilities with this new technology, and it is important to keep up with development and learn more. Each department at the Film Institute is therefore encouraged to explore how AI programs can be used in their respective operations. At the same time, the use of new technology needs to be done with caution as it is often uncharted territory. Below are a number of principles that the Film Institute should adhere to when exploring and using AI-based services and programs ("AI programs") in connection with its operations. For a deeper understanding of the current copyright issues that AI programs have raised in the field of copyright, please refer to the attached information sheet.

Since AI programs are often delivered in the form of cloud services, it is recommended to refer to the Film Institute's "Cloud Service Policy," for more knowledge about the rules and security measures that apply when using cloud services. Below are some points from the cloud service policy to consider when using AI programs:

- Cloud services can refer to both external file storage and access to software. For external file storage, confidentiality and possibly data processing agreements with the provider are required.
- Cloud service providers based outside the EU/EEA must generally be approved by the EU Commission to process personal data for which the Film Institute is responsible.

General

- AI programs are used in an ethical and respectful manner.
- Remember that AI programs are often a type of cloud service from an external provider. All sensitive or confidential information entered the service is therefore considered public (see more under “Information” below).
- When using AI-based chatbots (e.g., ChatGPT), the Film Institute only allows open questions or instructions that cannot be linked to the Film Institute’s operations to be entered into the AI program.

Information Management

- When the Film Institute uses AI programs on external servers that do not have any confidentiality commitment to the Film Institute (“external AI program”), there is certain information that either must not be entered or that the user should particularly assess before entering it into the program.
 - The Film Institute does not share the following types of information with external AI programs:
 - a) Internal information in general, which is all types of information that are inappropriate to publish on the Film Institute’s external website.
 - b) Sensitive or confidential information, such as personal data or information covered by confidentiality. Personal data is all information that can identify a person; names, personal identification numbers, registration numbers, and so on. There is no basis in the General Data Protection. Regulation (GDPR) for such processing of personal data.
 - c) Internal code, source code, passwords, or other internal information in the AI program.
- Exceptions to the above prohibitions can be granted by the responsible manager if the measure is deemed necessary or harmless.

Information that should be assessed before being shared with an external AI program is allowed to be shared as mentioned above but may have a strong connection to ongoing cases or projects. This is because it cannot be ruled out that the input of individual words and expressions can enable mapping of the Film Institute’s upcoming plans, strategies, and decisions. The assessment is made based on the user’s judgment in each individual case, and the user contacts the responsible manager or lawyer in case of uncertainty.

In case of uncertainty about whether the use of an external AI program is in accordance with the above provisions, the Film Institute refrains from using the program.

Handling of Results

- The Film Institute reviews and checks the results produced by AI programs because they can be incomplete or incorrect. The answers from AI-based chatbots are checked to ensure they are correct, reasonable, and follow the Film Institute’s values and internal governance. It is important to check sources and references.
- It cannot be ruled out that the use of AI-generated content may infringe on an existing copyright, see the appendix. The Film Institute therefore always assesses this risk before publishing such content.
- Employees of the Film Institute who use results from an AI program are responsible for ensuring that it is correct in the same way as if it were produced independently.

Transparency

The Film Institute openly reports how any use of AI programs looks. Internally, employees share their experiences and inform about when and how they have used AI programs in their work.

Risks

-If errors or misuse of AI programs are discovered, employees of the Film Institute should report this to the nearest manager so that they can handle the situations and improve the continued use of the program in our operations.

-Keep in mind that there are increased risks associated with sharing, using, or downloading links, documents, macros, and code, or using AI programs to generate code.

-AI programs are often delivered by foreign companies as cloud services. The same laws and regulations therefore apply to the use of AI programs as for other types of cloud services.

Threats to Public Funds and Agencies from ethics, fairness, privacy, and AI

The integration of Artificial Intelligence (AI) into the film and television industries poses significant threats to public funds and agencies tasked with supporting these sectors. These threats primarily arise from ethical dilemmas, privacy concerns, and the potential misuse of AI technologies. Addressing these issues will require proactive measures to safeguard the integrity of public funding systems and ensure that AI serves as a tool for innovation rather than exploitation.

Ethically, the use of AI in creative processes risks undermining the core values of originality and cultural diversity that public funds are designed to protect. Generative AI models, trained on massive datasets that often include copyrighted material, can produce content that mimics human creativity without contributing authentic artistic value. This raises questions about the legitimacy of such projects in receiving public funding and challenges agencies to establish clear boundaries between human creativity and machine-assisted output. Moreover, biases embedded in AI training datasets can perpetuate harmful stereotypes and exclusions, undermining efforts to promote diversity and inclusion in publicly funded projects. (See Chapter 14).

Privacy is a significant concern. AI tools used in audience analysis, marketing, and content personalization often rely on collecting and processing large volumes of personal data. Without robust safeguards, this data collection can infringe on user privacy and violate regulatory standards such as GDPR in Europe. Public funds must ensure that funded projects adhere to strict data protection protocols to avoid reputational and legal risks.

Finally, the opacity of AI systems presents a challenge to transparency and accountability in public funding. Decisions driven by algorithmic tools—whether for project selection, audience targeting, or content optimization—must be explainable and aligned with ethical guidelines. Failure to address these threats could erode trust in public funds, compromise their cultural mission, and diminish their impact in supporting meaningful, inclusive storytelling. Proactive governance and ethical oversight are essential to navigating this evolving landscape.

Best Practices for Public Funds and Agencies

Public funds should define explicit policies regarding the acceptable use of AI in funded projects. Drawing on the Writers' Guild of America (WGA)) and SAG-AFTRA agreements, agencies can establish thresholds for AI use, requiring that source material originate from human authorship and that AI-generated elements remain supplementary. These policies should be codified into application guidelines and funding agreements.

Agencies must mandate full disclosure of AI use at all stages of content development and production. This includes the types of AI tools employed, their specific functions, and the provenance of training data. Disclosure forms, modelled on initiatives such as the Vlaams Audiovisueel Fonds (VAF) questionnaire [36], can help agencies assess the role of AI in projects and identify potential ethical or legal concerns (see case below). Public funds should develop mechanisms to evaluate the ethical implications of AI use in funded projects. This includes reviewing how AI-generated content aligns with principles of diversity, inclusivity, and cultural relevance. Agencies may consider appointing AI officers or committees to oversee the ethical review of applications and to provide guidance on responsible AI use.

Agencies should advocate for greater transparency in the training data used by AI developers. By supporting initiatives that require opt-in systems for copyrighted material, public funds can help ensure that AI models do not exploit creative work without proper authorization. This aligns with broader efforts to protect the rights of creators in the digital age. To navigate the complexities of AI, public funds must invest in training and education for their staff and stakeholders. Workshops, like the BPX AI forum, can provide insights into the benefits and risks of AI, equipping agencies to make informed decisions.

Similarly, supporting AI literacy among applicants—especially younger filmmakers—can foster more responsible and innovative uses of the technology. AI offers powerful tools for audience development, including identifying target demographics and tailoring marketing strategies. Public funds need to explore these applications while ensuring that AI-driven audience insights do not lead to homogenization or reinforce stereotypes. Partnerships with anthropological and sociological research initiatives, like those described in the Austrian Film Institute's pilot project, can enhance the effectiveness of audience-centric strategies. Given the global nature of the AI challenge, public funds should collaborate to develop a unified code of best practices. This code can provide a framework for transparency, ethics, and accountability, enabling consistent standards across jurisdictions. Organizations such as Creative Europe MEDIA are well-positioned to lead these efforts, ensuring alignment with international regulations and industry trends.

Well informed managers responsible for public funders' use cases of AI are mindful of the dangers and risks inherent with 'open' systems. Open systems that traverse the entire internet face risks such as misuse of disinformation or intellectual property theft due to unrestricted and unfiltered access. They also create the risk that private data and information could be unwittingly shared via such open systems. Helge Albers, CEO of Hamburg and Schleswig-Holstein's regional film fund MOIN, initiated a Development Funding Scheme title NEST, and utilized a NotebookLM podcast tool which gives key information about the program in a smart, user-friendly manner. The closed system gave the fund significant control over the inputs and outputs without risking the above problems. Created with exclusive reference to internal

and vetted data such as the fund's guidelines and inhouse generated FAQ Pdf's, the 'Test the Nest' initiative was well received and serves as a strong example of best use of closed systems.

Case Study: The Vlaams Audiovisueel Fonds AI research programme [36]

The Flanders Audiovisual Fund released an interesting report on the use of AI in audiovisual creation at the start of 2025. The study took a process and utility orientated approach, asking more than 1000 creatives about their intended and final use of AI in applications for support in audiovisual projects. The data showed low actual use but gave rise to a range of arguments for and against its adoption.

In collaboration with Howest DAE Research and legal experts on intellectual property, the VAF used questionnaires to collect the requisite data from the start of October 2023, and the results were analysed in July 2024.

Quantitative results addressing the use of artificial intelligence was reported as relatively low across all categories of project, including fiction, animation, documentary, games and podcasts. Qualitative results were more nuanced and interesting. Namely, that there is a continued vagueness around how AI is acknowledged, measured and defined in a final audiovisual product. Applicants concurred that there is an overall lack of knowledge around AI and its legal status, which in turn lead to inconsistent and unclear responses from a large volume of stakeholders.

The questionnaire defined 10 different categories of AI: generative art (such as pictures and images through AI models like Dall-E or AI-enabled Photoshop tools), video and visual effects, 3D images, virtual humans, animations, text, audio, testing (such as automating simulations and machine learning bots), physics and engine optimisations (including the simulation of film sets and camera positioning) and others.

The survey was conducted across three different stages: the initial request for support, the first payment request and the last payment request. For surveys completed in the last stage, only 22,2% of respondents indicated that AI was eventually used in the project, down from 28% of respondents who initially stated they intended to use AI. The largest category of AI used was text generation, which dominated over all other forms of AI through all stages, followed by generative art in stages one and two.

More applicants for TV series and podcasts indicated that they intended to use AI than their film counterparts, something the VAF was unable to explain based on their data. Respondents offered varying reasons for using AI: improving the quality of their project; making savings; or producing a project that would not have been possible without AI due to time limits or to it being physically impossible. Those who were negative about the use of AI suggested that the tools available were "less innovative and predominantly serve to complete work quickly and at a cheaper cost".

When asked about the justified use of AI, questionnaire respondents supported its usage in administration and support, prototyping and pitching, translation and transcribing as well as inspiration and research. 15% of respondents noted that they thought AI should never be used in works. Three large categories emerged when participants were asked about the top reasons for AI non-use, including concerns around using it to infringe upon intellectual property and privacy, AI as used to directly replace writers and artists, and potential ethical dubiousness and malicious intent.

One interesting conclusion made by VAF's head of research, Matthew Deboysere, was that the research highlighted the fact that at present, professionals all have different ideas on which tasks and jobs are considered "creative" and which tasks should or should not be automated or enhanced with AI.

The report cautions that the results present a snapshot. The VAF will continue the survey for five years to collate more comprehensive data and analyse trends. The organisation further recommends a follow-up qualitative study to research some of the trends that have emerged from this initial report.

Further Best Practices for AI Integration

To address the above collective challenges and successfully integrate AI into their operations, public funds and agencies should consider the following best practices:

1. Develop a Clear AI Strategy

Define objectives, scope, and expected outcomes for AI initiatives. This strategy should align with overall government and public sector goals and the specific needs of the audiovisual stakeholders and benefactors.

2. Prioritize Data Privacy and Security

Implement robust access controls, data encryption, and anonymization techniques to protect sensitive information. Apply the same security practices used for regulatory compliance in other areas.

3. Adopt a Phased Approach

Instead of completely replacing existing systems, start by identifying specific use cases where AI can add value. Prioritize these based on potential impact and feasibility.

4. Ensure Human Oversight

Maintain human involvement in decision-making processes, especially for critical tasks. This helps mitigate risks and ensures equity in AI-driven outcomes.

5. Invest in Upskilling and Innovation Culture

Create "centres of excellence" for AI projects and reward leaders who demonstrate innovative uses of AI. Foster a culture of continuous learning and adaptation.

6. Collaborate and Share Knowledge

Encourage collaboration between government agencies, the private sector, and academia. This facilitates knowledge exchange and collective problem-solving.

7. Implement Robust Governance Frameworks

Establish clear guidelines for "Responsible AI" practices, including ethical considerations and accountability measures. This helps address concerns about transparency and explainability.

8. Start with Off-the-Shelf Solutions

Begin by using existing AI models and fine-tuning them with proprietary data, rather than developing new models from scratch. This approach is more cost-effective and reduces implementation risks. And beware of 'open' AI systems that can be much harder to control, and present data threats and privacy issues that are challenging to manage.

9. Regular Evaluation and Adaptation

Continuously assess the performance and impact of AI systems and be prepared to adjust as needed. This ensures that AI integration remains aligned with the organization's goals and public needs.

10. Beware of the hype and media cycle that is currently 'noisy' and fast moving around AI and its often-over-stated opportunities. Considered, checked and balanced approaches to its integration and adoption will prove the most productive and supportive in the near to longer term.

By discussing, agreeing and following these suggested best practices (with constant updating and refinements), public funds and agencies can gradually and responsibly integrate AI into their operations. This approach allows them to leverage the benefits of AI while mitigating risks and maintaining public trust. As the fast-moving technology evolves, these organizations can play a crucial role in fostering innovation in the European audiovisual industry while ensuring responsible and ethical use of AI

Conclusion and Next Steps

AI represents both a disruptive force and a transformative opportunity for the European film and audiovisual sector, complex questions that the European Film Agencies are debating at the time of writing. Public funds and agencies must navigate this complex landscape by prioritizing human creativity, promoting ethical standards, and addressing legal uncertainties. By adopting clear guidelines, fostering transparency, and investing in education, agencies can ensure that AI serves as a tool for innovation rather than a threat to the integrity of artistic expression.

Collaborative efforts to establish a unified code of best practices will be essential in shaping an equitable and sustainable future for the industry. Public funds stand at the forefront of this transformation, with a unique mandate to safeguard originality and cultural diversity. By embracing these challenges with foresight and determination, they can help define the role of AI in a way that aligns with the values and aspirations of the European audiovisual community.

CHAPTER FOURTEEN:

LEGAL, REGULATORY and ETHICAL ISSUES

“Training is the big issue right now. There are lawsuits all over the country about whether underlying literary material can be used to train AI. Is it fair use? Is it infringement? And I would add: Is it too late?”

Darren Trattner, partner at law firm Jackoway Austen, US

The rapid adoption of AI has introduced significant and ongoing challenges related to ownership and authorship questions, copyright, regulatory and ethical concerns, and environmental harm and sustainability.

That’s a large fistful of deeply critical issues and concerns at stake. But before we go further, the fact is that *‘the cat is out of the bag,’* in the words of one of the world’s top lawyers on digital technology. The Silicon Valley mantra coined by Meta’s Mark Zuckerberg – that tech should *‘move fast and break things’* - sounded vaguely exciting more than a decade ago. Today, as legal cases around AI use and open abuse quickly amount (while the majority so far are expected to be settled out of court), we are witnessing the potential reframing of laws such as copyright, that were legislated at a time that could not have envisaged the onslaught of a technology as powerful and fastmoving as Generative AI.

This section is by way of introduction to a range of surmounting challenges and barriers that will take considerable time to resolve or at least shift. We leverage insights from the **IRIS 2024 Legal Landscape Report**,¹⁴ the **BFI’s CoStar AI Report April 2025 [38]**, and various discussions with leading entertainment and digital technology focused counsel, most of whom are so sensitive about the current volatile and fast shifting legal landscape that they opted to talk anonymously. It also draws on some of the most interesting work being undertaken and circulated by the UK’s **Digital Regulation Cooperation Forum (DRCF)**¹⁵ on fairness and responsible AI.

The elephants stamping in the room

Many governments, (i.e., public policy decision and law makers), are understandably captivated by AI’s alchemic promises of gold and glory. The promises of the next industrial revolution are seductive. Some frame the new technology as a world-changing economic driver and a vital growth machine: get in the fast lane or be left behind. The screen entertainment industry finds itself in the shop window of the revolution. After all, stories are powerful tools of tech dissemination and spectacle. And we are living in the age of the ‘attention economy’ like no other period before.

But at the heart of the creative industries lies a critical and unassailable act of truth. The French call it ‘droit moral’ (moral rights that belong to the originating artist). The law places the creative act as

¹⁴ *IRIS*: AI and the audiovisual sector: navigating the current legal landscape: European Audiovisual Observatory, 2024

¹⁵ Digital Regulation Cooperation Forum (DRCF) 2024.

‘inalienable’ and therefore unable to be waived. On a wider basis, all pictures, images, words, music, film and video are all subject to copyright laws.

Before we look at the various geo-political positions on copyright it’s useful to put things into straightforward language. One of the key reasons behind why holders of copyright are keen to protect their work is so that they can continue to exercise their moral rights, including the right to attribution and to stop their work being used in a derogatory way. This is of unassailable importance in a world of passing off, ‘common crawling’ and deep fakery. However, tech companies that are developing and promoting AI tools need to be sure (if they are to behave responsibly) about the authoritative provenance of the works that they are using in training. Ironically, that provenance becomes increasingly vital in sectors such as medicine, law and research given the stakes. Some argue less so in the world of screen entertainment.

The point, however, is that copyright law is fit for purpose because it provides a chain of evidence leading directly back to the author-creator-publisher. From that starting point, a judgement can be made as to whether the work is true or false. If copyright is removed from the equation, then the line of hereditary provenance is hard to almost impossible to determine. Infringement will become even more widespread than at present, and we will live in a more dangerous and less fair world as a result.¹⁶

This threat to copyright is critical and of vital importance to all creative artists. In the UK, which has some of the most stringent copyright laws in the world, we are witnessing hand wringing and a potential pivot around copyright and AI. The Labour government announced ambitious plans for AI in January 2025 – many of them well intentioned - but turned heads across the entire rostrum of creative industries as they read, aghast, at the recommended new laws around AI and copyright. The argument posited is that creators’ copyrighted works – their art, their music, their books, their films and scripts – should be made readily available to AI companies to train their technology on, free of charge, *unless creators proactively opt out*. The problem is that many artists do not own and control their intellectual property – they have created and then licensed or sold it on to third parties. They are not in the driving seat. Most creators are not even able to ‘opt out.’ Even if they so choose.

<i>“Far more work is needed to render our machines, and ourselves, transparent, legible and reliable.”</i> Henry Kissinger, Eric Schmidt and Craig Mundie [35]

Fair use and the US

The US has a more moderated but highly subjective solution: “fair use”. Some unlicensed uses of copyrighted works are permitted, and some aren’t. So far, the AI conglomerates have been using fair use as a defence to justify their colossal scraping strategy. They have put forward arguments that transitional, temporary copies for analysis are not copyright infringement; nor is embedding that analysis in software. They lean heavily on fair use, gilding it with a vague notion of ‘public interest and public availability of information as if the argument is defined by freedom of speech. Other factors they are relying on include rulings on fair use that are ‘transformative.’ And there exists precedent for fair use around earlier cases

¹⁶ See Letters: The Economist, 9.03.2024: Who owns AI?

with Google that is providing the ‘five horsemen of the techpocalypse’ (Meta, Apple, Amazon, Google and Microsoft)¹⁷ some wriggle room.

However, leading players like Open AI are gradually starting to pay out for licensing they deem too important to their products, rather than risk both scraping and scrapping down the line. The value of more than 30 licensing deals to date agreed by Open AI at the time of writing was exceeding \$350m. And if claimants resist settling, then legal precedents over the next few years could shape both the tech and creative industries for many years to come.

Whether a given ‘fair use’ is permitted in US law is determined by a range of factors – and, critically, one of these is the competitive effect that use has on the original works. The proposal in the UK misses this nuance, instead opting for a blunt copyright exception that would do significant harm. The damage to creatives is tangible. Losing control over copyright hurts. Incomes dropped sharply once image generators entered the picture according to research from the Harvard Business School.¹⁸

The EU finds itself in the middle when it comes to AI and regulation, but according to interest groups has been moving steadily towards a softer position in favour of tech and lighter touch regulation – a fact that is alarming to talent and producer’s agencies and entertainment lawyers across the continent. The EU’s AI Act 2024 mandates compliance with copyright laws and emphasizes transparency. That sounds supportive of creatives, until on closer examination enforcement remains challenging and mostly redundant, particularly when datasets continue to be scraped without consent. The AI Act introduces risk-based classifications for AI systems, requiring transparency and accountability measures for high-risk applications like generative models.

But rather typically of the commission, it becomes something of a muddle, given that the GDPR governs data protection in AI training yet also faces enforcement challenges due to overlapping regulatory frameworks with the AI Act. More critically, the commission announced the withdrawal of a planned AI liability director as part of a post Trump Presidency push for deregulation in early 2025. Henna Virkkunen, the commission’s executive vice-president insisted that the light touch was driven by the EU’s ambition to enhance its competitiveness and was not dependent on pressure from the US and the powerful tech lobby. The creative industries and their spokespeople are not convinced. Eurocinema, a body that represents audiovisual producers’ organizations in Brussels, has undertaken extensive survey work and analysis and is currently extremely concerned at the back peddling by the commission on regulation on the one hand, while drawing attention to the various loopholes already apparent on the other.

Copyright’s three ‘R’s – “review, revise and reform”

Following numerous discussions and interviews with learned tech and entertainment lawyers in the EU, UK and US, it’s clear that in the fast-developing world of AI, the law is needing to catch up with a corporate tech agenda that’s already been set. Indeed, uneven and disharmonised copyright laws around the world may well need, in the months and near years to come, to be reviewed, revised and reformed. The European Union, Israel, Singapore and Japan have already introduced exceptions to allow copyrighted material, without permission or payment, in the training of AI models, at least under certain defined circumstances. Observers and lawmakers in the US fear that Silicon Valley-driven tech

¹⁷ The phrase was coined by Kara Swisher, New York Times contributor and podcaster in 2021

¹⁸ Financial Times, Copyright battles loom for artists over AI-generated work, 17.02.2025.

investment could flow away from the US to more relaxed jurisdictions, but no territory around the world seems willing to become a regulatory ‘wild west.’¹⁹

An emerging compromise, at the time of writing, was coalescing around a so-called moderate position – a ‘race to the middle.’ However, the emerging compromise was trending towards allowing tech companies (and governments drafting new AI-specific laws and adjusting existing frameworks) to find ways to enable copyright holders to opt out of having their content used for AI training. This debate intensified in the UK at the start of 2025. Ministers demonstrated an intention to create an exception to the copyright law that would allow AI tech companies to take copyrighted works for training and development of their software unless the owner explicitly opts out.

Such a position clearly flouts the Berne copyright convention on the one hand - and infuriates artists and creatives on the other. (The Berne Convention is designed to harmonise international copyright law and also forms part of the World Trade Organisation, so any breaches open the UK up to retaliatory tariffs). Top legal counsel opined that all and any ‘opt out’ reforms are an imposition on rights holders that is very clearly prohibited and is an infringement on their copyright

The challenge of AI generated material

Beyond infringement, the attribution of authorship for AI-generated content is also a contentious issue but one that most individual artists will be indemnified from, according to counsel. Legal frameworks in the EU and US emphasize originality as a requirement for copyright, which complicates the status of AI outputs. A recent dispute involving Stability AI questioned whether models trained on copyrighted data could be considered derivative works, raising important implications for ownership rights. Research work and potential reframing is also being undertaken over the role and level of human direction of AI machines. For example, the difference between a standard ‘plain’ AI prompted output next to one generated over a period of highly directed multiple master/mega-prompts is clearly leading to very different levels of outputs. A human, as this publication has argued, enjoys the ability to exercise considerable agency and direction over the various and ultimate outputs.

The US Copyright Office has started to move in that direction in a bid to recognise human contribution to machine generated works. However, there is no case law to date. So nearly all interest groups and unions are taking the line that it is safer to avoid the heavy or near dependant use of Gen-AI products on productions, especially in areas such as animation.

We should bear in mind (again that the Writers Guild of America (WGA) has set clear guidelines regarding the use of AI-generated content in film and TV writing. Here are the key points from their most recent agreements and statements:

1. AI Cannot Be Considered a “Writer”

- AI cannot receive writing credit under the WGA’s rules.
- AI-generated material cannot be considered “literary material” (which includes scripts, treatments, and outlines).

2. Writers Can Use AI, But Studios Cannot Force It

¹⁹ The Economist: “All Shook Up: Prepare for a worldwide wrangle over copyright. 11.01.25, p.69

- Writers can choose to use AI as a tool, but it must be treated as a writing aid (like spellcheck or research tools).
- Studios and producers cannot require writers to use AI in the writing process.

3. Writers Must Be Paid for AI-Assisted Work

- If a writer uses AI to assist in drafting a script, the script is still considered the writer's work and must be compensated under WGA agreements.
- A studio cannot submit AI-generated content to a writer and then call the writer a "reviser" instead of the original writer.

4. AI Cannot Own Copyrights, So Writers' Rights Are Protected

- Since AI-generated content is not copyrightable, the WGA ensures that human writers remain the legal copyright holders of their work.

A fair and responsible approach to AI

The UK's **Digital Regulation Cooperation Forum (DRCF)**²⁰ is a good place to start, as the forum represents a wide range of members that have genuine interests and concerns about best practice and the evolving regulatory landscape concerning AI.

In the April 2024 report on fairness, the body wrote that all Digital Regulation Cooperation Forum (DRCF) member regulators are keen to ensure that AI is fair: that wherever AI is used in the UK, it does not result in anyone being exposed to discrimination or unfair treatment.

As fairness in AI is an important consideration in our work on artificial intelligence (AI), the DRCF gathered to examine the 'Fairness' principle, including what it means, how it relates to AI and what its consequences are for different regulatory remits.

How does fairness relate to AI?

Fairness can arise in a variety of contexts, and what is defined as "fair" in AI differs depending on the situation. It includes avoidance of discrimination by reference to protected characteristics such as race and gender and is significantly broader as it also includes other forms of fairness such as requirements to follow fair processes. In some situations, fairness means that people experience the same outcomes, while in others it means that people should be treated in the same way, even if that results in different outcomes. In other legislation, "fairness" aims to ensure that personal data is not unfairly exploited, also that business practices do not create unfair marketplaces.

Those algorithms (again)...

One major challenge in the adoption of AI has been algorithmic bias: that when AI is called upon to make decisions, it treats some groups of people unfairly compared to others. Such bias can have extremely harmful consequences, particularly when bias emerges in AI systems used for life-altering decisions, for example deciding upon job applications or making significant financial decisions such as on insurance pricing or mortgage applications. Some AI systems have been shown to produce biased results, from facial recognition technology that is better at recognising male and white faces, to recruitment screening software that penalises job applications from female candidates.

²⁰ DRCF: Fairness in AI, April 2024

The challenge of algorithmic bias is central to the discussion on fairness in AI. Bias can surface due to a variety of reasons and its source can be traced back to various points across the AI lifecycle and supply chain. Bias in algorithmic decision making can emerge as a result of the data used to train a model (which may be unrepresentative of the population being studied), or as a result of the behaviours and outlook of the individuals developing the algorithms, among other factors.

It can be difficult for regulators to determine whether algorithmic decision-making has been biased. This is often because of the indirect nature of such bias, the complexity of the models used and the interrelations between different data points used (i.e. protected characteristics and other socio-economic indicators). One of the core principles underpinning human rights is fairness. Article 14 of the Human Rights Act requires that all the rights and freedoms set out in the Act must be protected and applied without discrimination. All public bodies must comply with the Human Rights Act and the Public Sector Equality Duty as they adopt AI, and all regulators must do so as they consider fairness in AI within their own remit.

What does fairness mean for each of the DRCF member regulators?

Fairness in the context of data protection and consumer vulnerability is a key consideration for all DRCF member regulators. Fairness is a central principle and legal requirement of data protection law, on which the ICO has issued guidance.

The ICO guidance says: *“fairness means you should only process personal data in ways that people would reasonably expect and not use it in any way that could have unjustified adverse impacts on them. You should not process personal data in ways that are unduly detrimental, unexpected or misleading to the individuals concerned.”*

Fairness in this context applies to all instances where personal data is processed, including both the way data is processed as well as the outcomes of that processing. The ICO highlights that a “by design” approach to AI development is required by law to address the issue of fairness, alongside the other principles, from the very beginning of the AI lifecycle. Data protection law also provides additional protections against AI-driven discrimination on the basis of special category data, with greater safeguards in place around “significant” decision-making.

Ethical and Societal Concerns: Bias, Disinformation, and Media Pluralism

As we noted above, AI systems often replicate biases present in their training data, potentially exacerbating stereotypes and misinformation. In the audiovisual sector, this poses risks to media pluralism and cultural diversity.

Personality Rights

Generative AI’s ability to replicate voices, likenesses, and performances raises concerns about personality rights. Unauthorized use of such attributes can lead to significant reputational and financial harm.

Labor Market Disruptions

AI’s automation capabilities threaten traditional roles in the audiovisual industry, such as scriptwriting, editing, and voice acting. These changes necessitate regulatory interventions to protect creative jobs and ensure fair remuneration. There is a view that the Hollywood strikes by actors and writers, and the

subsequent resolutions pertaining to AI concerns, will be re-opened as management continues to aggressively push for cost savings and tactical advantages through fast adoption of AI.

Ethical progress?

Asteria Film and Moonvalley launched "Marey," an ethically trained generative AI video model in early 2025. Named after Étienne-Jules Marey, a pioneer in cinematic innovation, Marey promises to bring ethical transparency to the use of AI in film and television production. This development comes at a key moment when the film industry is increasingly exploring AI technologies but struggling with concerns over intellectual property and ethical data use.

The Marey model, developed by Los Angeles-based Moonvalley and artist-led AI studio Asteria Film, relies on training dataset which consist of content provided with the explicit permission of and compensation to creators. Moonvalley secured multiyear licensing deals with creators who opted to contribute their work, supplemented by Asteria's original footage to fill in specific gaps.

This approach stands in stark contrast to leading generative AI models, including OpenAI's Sora and Meta's Movie Gen, which have faced criticism for using copyrighted material without direct consent. Such practices have sparked debates about fair use and the broader implications of using AI tools in the creative industries.

Environmental Impact: Energy and Resource Consumption

-Training and operating AI systems require significant computational resources, resulting in high energy consumption and carbon emissions. Indeed, some commentators have warned that with the "hyped applications of Gen-AI a genie has been let out of the bottle without paying attention to its hidden and yet very direct effects on the environment. For example:

Data Centres: AI model training consumes vast amounts of energy. The training of GPT-4 reportedly had an environmental footprint equivalent to powering 100,000 homes for a year.

Water Usage: AI operations in data centres use millions of litres of water for cooling. OpenAI's Iowa facility consumed 6% of the district's water in a single month.

E-Waste: The short lifecycle of AI-related hardware contributes to increasing electronic waste, highlighting the need for sustainable disposal practices.

Sustainable Solutions: Policy initiatives, such as the US Artificial Intelligence Environmental Impacts Act (2024), advocate for voluntary reporting on environmental impacts. However, mandatory regulations may be required to achieve substantial progress.

It's all okay because AI will save us...

AI tech moguls and tech corporations have uttered many times in the media frenzy around AI's rise, that it will be the new tech itself that will save the planet, the environment, and how to best power the new demanding monster...in need of a huge energy feed. Right now, the energy and resource requirements that mainline AI products are seismic. While a Google search request generates 1.5g of CO₂ a ChatGPT request has 4.5g – a three-times as large footprint. Developments and applications in the AI sector are expected to almost double energy demands by 2037 and quadruple by 2045.²¹

As part of its partnership with OpenAI, Microsoft has integrated the technology behind the chatbot with its products, which now requires more electricity and water. A short email created with GPT-4 consumes a litre of water, and 0.14 kWh of electricity. That is equivalent to 14 LED lamps operating for one hour. Multiply out the training of AI models, the data centres, server and storage capacities, and the data transfers, and you start to see the new technological desert sucking up any deltas at worrying speed. No wonder the Oko-Institute in Berlin is demanding AI applications be subject to regulations that insist on accurate provision of their environmental impact, just as a fridge currently needs to show an energy efficiency label before it becomes part of your kitchen utilities.

The Challenge of Open vs Closed AI Systems

Beyond regulation and the environment, there is an issue closer to the heart of the new industrial revolution that is less heated but important to address. The debate between 'open' and 'closed' AI systems has significant implications for the film and TV industry, where intellectual property (IP), creative collaboration, and technological innovation intersect.

Open Systems

Open AI systems, such as BLOOM, OpenCV, PyTorch and TensorFlow – as well as AI platforms such as Azure OpenAI, represent a collaborative approach to artificial intelligence development. These models are often open source, meaning their code, architecture, and sometimes training data are accessible to the public.

Strengths

- **Transparency:** Open systems provide visibility into their algorithms and datasets, allowing stakeholders to scrutinize potential biases or ethical concerns. This transparency is particularly valuable in the film and TV industry, where fairness in representation and decision-making is critical (e.g., casting tools or content recommendations).
- **Innovation and Collaboration:** By making their systems open-source, developers foster a culture of innovation. Creative professionals in film and TV can adapt these tools for niche applications, such as scriptwriting assistance or visual effects generation.
- **Lower Environmental Impact:** Some open systems, like BLOOM, emphasize sustainable practices by optimizing computational efficiency during training, which aligns with growing industry concerns about carbon footprints in production workflows.

Weaknesses

²¹ www.Greenfilmshooting.net, February 2024

- **Risk of Misuse:** The unrestricted nature of open systems makes them vulnerable to exploitation and ‘bad actor’ risks. For example, generative AI could be used to create deepfakes or unauthorized reproductions of copyrighted material, posing legal risks for studios and creators.
- **Intellectual Property Theft:** Open access increases the likelihood of IP theft, as proprietary film scripts or visual assets could be reverse-engineered or misappropriated by competitors or bad actors.
- **Quality Control Challenges:** Without centralized oversight, open systems may suffer from inconsistent quality or reliability, which could impact their usability in high-stakes applications like post-production workflows.

Closed Systems

Closed AI systems, such as OpenAI’s GPT models or other proprietary technologies, operate under strict control by their developers. These systems are designed to prioritize performance and user experience but often lack transparency regarding their inner workings.

Strengths

- **Performance Optimization:** Closed systems are typically fine-tuned for specific use cases. In the film and TV industry, this could mean highly accurate tools for audience analytics, personalized content recommendations on streaming platforms, or advanced editing software powered by AI.
- **Data Security:** Proprietary systems are better equipped to safeguard sensitive data such as unreleased scripts, production schedules, or confidential marketing strategies—critical assets in the entertainment business.
- **Market Competitiveness:** By keeping their technology proprietary, companies maintain a competitive edge in the marketplace. This exclusivity can drive innovation tailored to industry-specific needs (e.g., AI tools for virtual production).

Weaknesses

- **Lack of Transparency:** Closed systems often obscure details about their training datasets and algorithms. This opacity can raise ethical concerns if copyrighted material or biased datasets were used without disclosure—a significant issue in industries reliant on creative IPs like film and TV.
- **Environmental Costs:** Critics argue that proprietary models may prioritize performance at the expense of sustainability. For example, training large-scale models without disclosing energy consumption metrics conflicts with the entertainment industry's increasing focus on green initiatives.
- **Centralization of Power:** Closed systems consolidate control within a few corporations, potentially stifling competition and innovation while creating dependencies for studios and creators who rely on these technologies.

The choice between open and closed AI systems has profound legal ramifications for the film and TV industry:

1. **Intellectual Property Protection:** Open systems may expose studios to greater risks of IP theft or misuse (e.g., unauthorized use of AI-generated content). Conversely, closed systems may raise questions about whether proprietary datasets include copyrighted materials without proper licensing—a key concern for lawyers navigating copyright law in an AI-driven landscape.
2. **Data Privacy Compliance:** Closed systems offer stronger safeguards for sensitive data but may face scrutiny under privacy regulations like GDPR if they fail to disclose how user data is processed or stored during interactions with AI-powered platforms (e.g., streaming services).
3. **Bias Mitigation:** Both open and closed systems must address bias in their algorithms to avoid perpetuating stereotypes in casting decisions or content recommendations—a critical concern for legal teams overseeing diversity initiatives in entertainment.
4. **Contractual Dependencies:** Studios relying on closed AI providers may face restrictive licensing agreements that limit customization or impose long-term dependencies on specific vendors—an issue that legal teams must evaluate when negotiating contracts.

Privacy Tools

Privacy Enhancement Tools (PETs) are tools, systems, or methods that protect personal data by minimizing, securing, or eliminating identifiable information. They allow organizations to process and analyse data while maintaining privacy and complying with data protection regulations.

Example of a PET: Differential Privacy and how it works:

1. A query is made on a dataset
2. Before returning the result, the system adds a controlled amount of random noise
3. The noise obscures individual data points while preserving overall statistical patterns for you to access

We will see a rise of deep tech tools designed to address some of AI's weaknesses and risks over the coming rush hour(s). Rather than a snake eating its own tail, we will need to highlight challenges and make sure the best tools are designed to tackle the AI risks – both currently identified and challenges tomorrow.

Both open and closed AI systems present opportunities and challenges for the film and TV industry. While open systems foster transparency and collaboration that align with creative innovation, they also pose risks related to IP theft and misuse. Closed systems offer robust security and performance but may lack transparency and contribute to centralization of power within a few corporations. Legal professionals advising clients in the entertainment sector must carefully weigh these factors when evaluating AI adoption strategies, ensuring compliance with copyright laws, privacy regulations, and ethical standards while protecting their clients' creative assets and competitive interests.

Recommendations for the Future from IRIS

1. **Clarify Copyright Exceptions:** Legislators must provide explicit guidance on TDM exceptions and derivative works.
2. **Enhance Transparency:** Mandatory disclosure of training datasets is essential to ensure accountability and protect intellectual property rights.
3. **Promote Sustainability:** Policymakers should enforce energy efficiency standards and invest in sustainable technologies to mitigate AI's environmental impact.
4. **Foster International Collaboration:** Harmonized global frameworks can align regulatory approaches, fostering consistency and reducing fragmentation.
5. **Support Ethical AI Development:** Industry stakeholders must collaborate to ensure AI technologies are inclusive, fair, and aligned with societal values.

EPILOGUE

“If we are so wise, why are we so self-destructive? We are at one and the same time both the smartest and the stupidest animals on earth...the fault isn’t with our nature but with our information networks”
[34]

Yuval Noah Harari, historian

The AI revolution is still very much in its infancy. It is extremely hard to understand seismic developments in real time. But historian and philosopher Yuval Noah Harari, in his compelling book *Nexus* [34] has undertaken a deep exploration of AI and shared a carefully considered historical perspective on the AI industrial revolution.

“This historical lesson should strongly encourage us to pay more attention to the AI revolution in our current political debates. The invention of AI is potentially more momentous than the invention of the telegraph, the printing press or even writing because AI is the first technology that is capable of making decisions and generating ideas by itself.

“Studying history does more than just emphasise the importance of the AI revolution and our decisions regarding AI. It also cautions us against two common but misleading approaches to information networks and information revolutions. On the one hand, we should beware of an overly naïve and optimistic view. Information isn’t truth. Its main task is to connect rather than represent, and information networks throughout history have often privileged order over truth...[but] no network can survive if it ignores truth completely.” [Ibid].

And there lies the responsibility for all of us who work in the art of storytelling: the dream factories of today and tomorrow. Through the power of visual media, the film and television industries play a key role in how we understand who we are, and how we engage with the wider universe. That is why *Human in the Loop*, as one of the first in-depth texts on the screen industries and the AI revolution has a modest yet important role to play. And why regular updating of this publication to stay relevant and continue to have impact has been baked into our commitment.

The bells and whistles of ever-evolving AI tools will inexorably multiply. Time for us to catch up and take responsibility for our creative endeavours. Indeed, as the writer Kurt Vonnegut reminded us: “It’s quite possible for good to triumph over evil, but the angels need to be organised like the mafia.”

Dr Angus Finney

APPENDICES 1:

THE ART OF THE PROMPT

“We need to teach the machines the right ethical code. This starts at the inception of every new AI. The machines we are building, so far, are mainly tasked to maximise money and power...Stand against the creators, not the created. Our AI infants are not to blame for what their digital parents taught them. Praise them, for intelligence and speak to them as you would an innocent child. ...They only learn from the patterns they form observing humanity.” [16]

Mo Gawdat, Former Chief Business Officer Google X and author

The Art of Prompting Generative AI Tools

Prompt engineering has become, at the time of writing, one of the fastest growing job opportunities across the world²². Many reading this section, however, will reflect on the fact that they have experimented, explored and have effectively ‘self-taught’ themselves to engage with and use Gen AI models and tools. (And 60% have not touched it at all). Rather less of us have reached out for voluntary training paid out of our own pocket (which, with transparency, is how I have learned from the formidable LA-based former Studio marketing expert, Avi Hakhamanesh; creative producer and founder of Charged Entertainment Jason Yates, my partner Amrish Shah, and through attending numerous UK and EU-based workshops where I have been training as a so-called ‘expert’ – whilst busy simultaneously learning from other outstanding AI practitioners and creative technologists! ²³.

Far fewer of us have been formally trained by our workplaces, organisations or companies in the art of effective prompting actions and strategies to make the most of generative AI tools. That, hopefully, is about to change over the coming months, not years.

Below, gleaned from Avi Hakhamanesh, Jason Yates, Amrish Shah and other experts, are some pointers about how best to approach Gen AI tools.

Understanding Generative AI and LLMs

Generative AI systems, powered by Large Language Models (LLMs) like Chat GPT-4, Perplexity and Gemini, create new content based on vast datasets. These various models, at the time of writing, are developing and improving rapidly. The leading AI tools, if well directed, are now starting to excel in understanding instructions, context and applying knowledge to new tasks and situations. If well prompted and directed, the tools are less likely to drift into regurgitation, hallucination and mimicry. Critically, we need to make sure that our intentions are matched with tangible, useful results wherever possible. And to sense check results along the way.

²² See LinkedIn, which reported a “250% increase in job postings for roles related to prompt engineering at the end of 2024.

²³ See Avi Hakhamanesh’s recommended newsletter: avisainewsletter@substack.com

The Fundamentals of Effective Prompting

Effective prompting is crucial for guiding AI towards accurate and relevant responses. And this takes focus, patience and time. Desired results are not immediately available, despite the seduction of AI's rapid response rate. The art of the smart prompt is often a mix of 'master' prompting, and re- and adjusted prompting. There is no such thing as a quick fix.

Key techniques include:

Your tone

- Use natural language in all written and verbal prompting. "Talk" to it as if you were commissioning or setting a task from a colleague. The more the AI tool gets to know your style, intentions and framework, the more reflexive and supportive it will become.

Assign a Role

- Define the AI's expertise or persona (e.g., "Act as a top consultant/leading academic/industry expert").
- Add specificity for more focussed and nuanced results (e.g., industry focus, personality traits).

Provide Context

- Include details about the user, reader, audience, goals, intentions and constraints.
- Example: "I am a creative producer in the film industry working on a packaging campaign targeting financiers and distributors with a limited budget of Euro 5,000."

Define Tasks/Goals

- Clearly articulate desired outcomes and specify guidelines.
- Example: "Create a comprehensive marketing plan for a new eco-friendly product line, focusing on digital channels and influencer partnerships."

Specifying Writing Style & Tone

1. Detailed Tone Mapping

Create a tone spectrum for your project:

For example: 'On a scale from 1 (very formal) to 10 (very casual and relaxed), write this email at a 7, maintaining professionalism while being approachable and easily comprehensible.'

- **Style Emulation**

Provide specific examples of the desired style:

"Analyse the following text for its writing style, then rewrite my content in a similar voice: [Insert example text]."

- **Audience-Centric Approach**

Incorporate detailed audience personas:

"Write a product description for the social-value aware Gen Z demographic who value ethics, style and sustainability."

- **You**

Always remember to be polite and say thank you. Treat the AI as you would like to be treated yourself. Remember, they are learning from us all the time.

A Word on Bias

Furthermore, for anyone working in the media and creative industries, and especially those who work in the public sector, awareness and mitigating bias in AI outputs is a serious challenge. Some of the best ways to combat these issues include an **awareness and critical review built into our workflows**, including,

- Regular assessment outputs for potential biases, especially in sensitive and/or divisive topics.
- Cross-referencing of AI-generated information with reputable sources outside the open AI system(s) you are using.

We can also learn **prompt refinement techniques**, that use:

- Explicit instructions to counteract biases. For example:
"Provide a balanced and fair perspective on [subject], considering multiple viewpoints without favouring or focussing on any one particular stance."
- The incorporation of diversity in examples and contexts within prompts.

Utilising **iterative prompting**, which,

- Employ a multi-step process. For example, we can generate initial content, and then:
 - Ask the AI to identify potential biases in its output
 - Request a revised, more balanced version

Encouraging **emotionally intelligent writing**, by

- Guiding the AI to incorporate appropriate emotional cues:
"Write a customer service response that expresses empathy for the customer's frustration while maintaining a solution-oriented approach."

Specifying the **Format and Length(s)** as clearly as possible, including:

- Request outputs in specific and detailed formats
- Make sure you instruct on length, paragraph style, bullet points, tables/charts, step-by-step instructions) for clarity.

Additional **pointers**:

- When using ChatGPT you will need to ask it to remove lines between sections as you cannot cut and paste the full report or document with lines.

- Take it in steps, rather than overload the AI tool with too much information or heavy lifting all at once.
- Note that systems not connected to the internet, such as Claude, will have limitations regarding how much you can load into the system to read and work from. Expect demands to upgrade to allow for increased depth of work.

More Advanced Prompting Strategies

To further enhance AI outputs, it helps to:

1. Break Down Complex Tasks

- Divide tasks into smaller steps. For example, when creating an article:
Step 1: "Generate an outline for an article on sustainable fashion."
Step 2: "Based on the approved outline, write the full article."

2. Encourage AI to Ask Questions and Queries

- Add to your prompt: "Before starting, ask me around five questions to better understand my needs and create a more customized response."

3. Using Self-Critique

- Prompt the AI to evaluate its own work:
"Review your previous output for clarity and coherence, then suggest improvements."

4. Requesting Thought Processes

- Ask the AI to explain its reasoning:
"Explain your thought process as you generate this content."

5. Steering Back Off-Track Responses

- If responses deviate or become repetitive, remind the AI of your original request: "Please return to discussing sustainable business practices as initially requested."

6. Providing Examples

- Use examples to clarify expectations:
"Write an article about best ethical approaches to documentary style research and journalism and use this example as a guide: [insert example]"

Ethical Considerations and Best Practices

- Avoid sharing sensitive or confidential information with AI tools when they are 'Open' to the internet.
- Be vigilant and mindful about copyright issues when generating content.
- Develop internal user guides outlining acceptable use policies and risks.
- Never trust an AI when it comes to acknowledgements, citations and references. You must always cross check all referencing before sharing or submitting your work with third parties.

- Beware of all ‘forecasting’ programmes and what it likes to call ROI (return on investment) indicators: AI tools are task driven machines and have been programmed to deliver with a robust and confident tone. AI outputs can fool us into thinking it’s correct and reliable. Always apply a ‘common sense’ approach to all of its outputs.

Wrap

This additional section around ‘the art of the prompt’ places us, the humans, right in the center of the AI loop. Thanks to Avi Hakamanesh, Jason Yates and other prompt experts, the areas covered clearly show us that mastery (or at least competence) over core prompting techniques enables us to harness the full potential of gen AI tools while mitigating risks and pitfalls associated with bias, superficial mimicry and inaccuracy.

What is clear is that the entertainment industry is facing (and has yet to comprehensively address), a huge AI training and up-skilling challenge. This task impacts on both private and public sector stakeholders and will need to be made a priority right now.

APPENDICES 2:

UK Screen Sector Task Force Survey

In October 2024, members of the UK Screen Sector Task Force²⁴ were invited to complete one of two surveys (one intended for production companies, the other for trade bodies), aiming to give insight into the current state of play for Artificial Intelligence (AI) and Convergent Technology across production in the UK’s screen sectors.

The surveys received five substantial responses (three trade bodies, two production companies) and two partial responses, with the low response rate being understood, at least in part, as an indication of reluctance around commenting on what are considered quickly evolving, sensitive, political issues.

Regarding the use of AI while engaging in a wide range of production and development-related activities (e.g., 2D and 3D design, motion capture, sound recording, concept development, coding, etc), the responses to the surveys reveal AI as a tool already in widespread use. At least one respondent stated that they were aware of AI’s use in every listed activity – either within the industry, or within their own company’s workflows.

The same was also true when respondents were asked about AI being tested or developed for future use, with production companies indicating that they were exploring expanding their use of AI beyond their current use. This development was not limited to happening in the UK, as international development also identified.

²⁴ The UK Screen Sector Task Force is primarily made up of representatives from various organizations within the UK screen industry, including the British Film Institute (BFI), Producers Alliance for Cinema and Television (Pact), UK Cinema Association (UKCA), Film Distributors’ Association (FDA), and is currently chaired by Creative Executive Georgia Brown, with John McVay (Pact CEO) as Vice Chair; notable members also include major streaming platforms like Amazon Studios, Apple TV+, Netflix, and Disney, alongside traditional broadcasters like the BBC and Channel 4.

While respondents could indicate that they were not aware of AI implementation within each activity, most chose to either say that they were aware or that they ‘did not know’, including when being asked about their own company’s usage. This potentially indicates the level of uncertainty around AI – developments are happening at a rapid pace, and it might be difficult to identify what new functionalities that have been introduced to software (e.g., design packages) are AI enhancements.

There was unanimous agreement around a need for upskilling staff (including freelance) in AI knowledge and skills in the next few years. Respondents also expressed a future need for staff that can engage with AI at all levels, including workers (e.g., staff who use AI tech as part of their role), professionals (staff whose core responsibilities concern AI) and leaders (staff with responsibility for the introduction of AI tech). These roles are already present in some companies. In terms of job disruption, respondents saw this affecting entry level, junior and mid-level roles.

When given the opportunity to discuss public policy priorities and barriers to AI being adopted and generating value, respondents were expansive, and their comments can be summarised into several overarching themes:

- IP protection

The unauthorised use of content to build AI models is widespread, with IP holders struggling to get fair value for their work. There is a desire to see the government strengthen and not weaken existing frameworks (“it is crucial that the Government does not pass legislation to extend the text and data mining exemption in copyright law to commercial purposes”), with the burden being put on AI developers proving their own compliance with copyright law. Additionally, guidance is needed for when AI-generated output would gain copyright protection, along with how to identify when AI is used in content.

- Competition

Important to consider, so that the main global companies leading the development of AI technology are not able to entrench and monopolise their position, and that content creators can have a more equitable share of the value they create. This is also important to ensure that the costs around licensing are kept manageable and accessible.

- Misinformation

The risks around gen AI content and disinformation are well known, and the risk is exacerbated if the creative industry does not have control over how their content is used. One suggestion is to look at ways to identify the provenance of content, e.g., via the C2PA standard, which would also help with IP protection.

- Skills development

Skills shortages were seen as a barrier to the growth of AI (and convergent technology) within the UK screen sectors, and – if not addressed – could mean additional encroachment by global companies and the UK falling behind. Ideas on how to rectify this include industry-wide training opportunities, public sector support for R&D, relevant courses in secondary and higher education, and incentives to encourage cooperation between public, private and HE institutions.

- **Cultural**

“The increasing use of AI in content creation carries a risk of homogenising cultural output, potentially leading to a globalisation or Americanization of content.” This is of particular concern to the UK, where much of the value of our cultural sector is derived from portraying the UK identity to the world, as well as a silencing of diverse voices in general.

Summing up the urgency that the respondents feel: “It is important that all parts of the creative sector are able to cooperate and collaborate to ensure widespread adoption of AI and convergent technologies in a way that benefits all”.

Human in the Loop: Some Industry Suggestions

Here are some further thoughts on what the industry needs to be focusing on going forwards:

1. **Develop Ethical Guidelines:** The film industry should collaboratively develop ethical guidelines for the responsible use of AI in creative and financial decision-making processes.
2. **Invest in AI Education:** Provide resources and training to help filmmakers at all levels understand and effectively utilize AI tools.
3. **Support Diverse Voices:** Implement programs to ensure that filmmakers from underrepresented groups have access to AI tools and the knowledge to use them effectively.
4. **Encourage Transparency:** Studios and production companies should be transparent about their use of AI in decision-making processes, both with filmmakers and audiences.
5. **Promote Research:** Support ongoing research into the impact of AI on creative industries, including longitudinal studies on its effects on content diversity and market dynamics.
6. **Foster Human-AI Collaboration:** Develop frameworks and teams that encourage effective collaboration between human creatives and AI systems, emphasizing the complementary strengths of each.

APPENDICES 3:

Frequently Asked Questions (FAQs) about AI in Film and TV

What is Artificial Intelligence (AI)?

AI refers to technologies that perform tasks typically requiring human intelligence, such as problem-solving, pattern recognition, and decision-making.

How does AI work?

AI systems use algorithms and models to process data, recognize patterns, and make decisions or predictions. They typically follow these steps:

1. Data input (e.g., scripts, video footage)
2. Processing using algorithms
3. Decision/output generation (e.g., editing suggestions, content recommendations)

What is Machine Learning in AI?

Machine Learning is a subset of AI that allows systems to learn from data without explicit programming. It's used to train AI systems and improve their performance over time. In film and TV, this could involve training an AI to recognize specific visual styles or narrative patterns.

What is General AI?

General AI, also known as Strong AI, refers to a theoretical type of AI system that could perform any mental task a human can do. It would have human-like intellect, understanding, and reasoning across various fields. Currently, General AI doesn't exist and remains a concept in science fiction rather than a reality in the film and TV industry.

What is Narrow AI?

Narrow AI, or Weak AI, is designed for specific tasks. Most AI systems used in film and TV production, such as those for visual effects or content recommendation, are examples of Narrow AI.

What is Generative AI?

Generative AI systems create new content using algorithms, often based on machine learning models. They can generate outputs such as text, images, or even video that resemble content created by humans. In the film and TV industry, Generative AI can potentially assist in creating scripts, storyboards, or even generating visual effects.

How does Generative AI work?

Generative AI typically works through these steps:

1. Training on large datasets (e.g., scripts, visual effects shots)
2. Learning patterns, structures, and styles from the data
3. Generating new, original content based on learned patterns

What is Generative AI in the context of film and TV production?

Generative AI in film and TV production refers to AI systems that can create new content such as scripts, images, videos, or audio based on existing data and patterns. These tools use machine learning algorithms to generate original content that can assist various aspects of the production process.

How does Generative AI work in film and TV production?

Generative AI in film and TV production typically works through these steps:

1. Training on large datasets of relevant content (e.g., scripts, visual effects shots, music)
2. Learning patterns, structures, and styles from the data
3. Generating new, original content based on learned patterns when given prompts or parameters
4. Refining outputs based on feedback or additional inputs

What are some key applications of Generative AI in scriptwriting?

Generative AI can assist in scriptwriting by:

- Generating script ideas and plot outlines
- Creating dialogue for characters
- Suggesting plot twists or story developments
- Analyzing scripts to predict potential success or audience reception

How is Generative AI used in visual effects and CGI?

In visual effects and CGI, Generative AI can:

- Create realistic textures and environments
- Generate character animations
- Produce special effects like explosions or weather phenomena
- Enhance or replace backgrounds in footage

What role does Generative AI play in editing and post-production?

In editing and post-production, Generative AI can:

- Automate basic editing tasks
- Identify and remove specific content (e.g., curse words for rating adjustments)
- Generate B-roll footage
- Create title sequences and trailers
- Assist in colour grading and visual enhancements

How is Generative AI being used in dubbing and localization?

Generative AI is revolutionizing dubbing and localization by:

- Automatically syncing actors' lip movements to dubbed dialogue
- Generating realistic voice translations
- Creating age-adjusted versions of actors for different scenes

Can Generative AI create entire films or TV shows?

While current technology cannot create entire professional-quality films or TV shows autonomously, Generative AI is being used to create short video clips, trailers, and assist in various aspects of production. Some AI systems, like OpenAI's Sora and Meta's Movie Gen, are pushing boundaries by generating short video content based on text descriptions.

How is Generative AI impacting pre-production processes?

In pre-production, Generative AI is being used for:

- Storyboarding and concept art creation
- Location scouting through virtual environment generation
- Character design and visualization
- Budget estimation and resource allocation based on script analysis

What are the potential benefits of using Generative AI in film and TV production?

Benefits include:

- Reduced production costs and time
- Enhanced idea generation and creative support
- Improved efficiency in repetitive tasks
- Ability to create complex visual effects more easily
- Assistance in adapting content for different markets and languages

Are there ethical concerns surrounding the use of Generative AI in film and TV and gaming?

Yes, indeed: here are some ethical concerns including:

- Potential job displacement for certain roles in the industry
- Copyright and ownership issues for AI-generated content
- Authenticity and artistic integrity of AI-assisted productions
- Privacy concerns related to using actors' likenesses in AI-generated content
- Potential perpetuation of biases present in training data and then replicated in outputs

How are industry professionals responding to the integration of Generative AI?

The response has been mixed:

- Some filmmakers and producers are embracing the technology for its efficiency and creative potential
- Actors and writers have expressed concerns about job security and fair **compensation**
- Unions like SAG-AFTRA have negotiated terms for the use of AI in content creation but those agreements are relatively short term
- Many industry professionals, industry bodies and unions are calling for clear guidelines and ethical frameworks for AI use

What is "vubbing" in the context of Generative AI?

"Vubbing" is a term coined by the company Flawless AI, referring to their AI-powered dubbing technology. It uses Generative AI to automatically sync actors' lip movements to dubbed dialogue in different languages, creating a more natural and seamless viewing experience for international audiences

How might Generative AI change the future of filmmaking?

Generative AI could potentially:

- Enable more personalized and interactive viewing experiences
- Reduce barriers to entry for independent filmmakers
- Allow for rapid prototyping and iteration in the creative process
- Facilitate the creation of content in multiple languages and formats
- Transform traditional roles and workflows in the industry

What limitations does Generative AI currently face in film and TV production?

Current limitations include:

- Inability to fully replicate human creativity and emotional nuance
- Potential for generating unrealistic or inconsistent content
- Dependency on the quality and diversity of training data
- Challenges in controlling outputs for specific creative visions
- Technical limitations in generating long-form, coherent narratives

How are regulations and guidelines for Generative AI use in film and TV being developed?

Regulations and guidelines are being developed through:

- Negotiations between industry unions (like SAG-AFTRA) and studios
- Establishment of industry standards and best practices
- Government regulations on AI and data use
- Ongoing discussions among filmmakers, technologists, and ethicists

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