



New Zealand's creative economy: in search of research

Gudrun Frommherz & Aditya Narayan

To cite this article: Gudrun Frommherz & Aditya Narayan (2025) New Zealand's creative economy: in search of research, Creative Industries Journal, 18:3, 357-379, DOI: [10.1080/17510694.2023.2234894](https://doi.org/10.1080/17510694.2023.2234894)

To link to this article: <https://doi.org/10.1080/17510694.2023.2234894>



© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 14 Jul 2023.



Submit your article to this journal [↗](#)



Article views: 1117



View related articles [↗](#)



View Crossmark data [↗](#)

New Zealand's creative economy: in search of research

Gudrun Frommherz and Aditya Narayan

TOROA Centre for Communication Research, Auckland University of Technology, Auckland, New Zealand

ABSTRACT

The activity of researching is a customary part of creative work, often for understanding the wider territory of an assignment, resolving issues of production, or optimising creative outcomes. Creatives do not always appreciate or even recognise the commercial value of their research, i.e. in the form of novel processes, unique applications of technology, or ground-breaking creative solutions. A mixed-model study into on-the-job research practices in New Zealand's creative industries evidenced a profound disconnection between research input in creative labour and output of economically deployable innovation. It was observed that although many originations effectively resulted from creative research practice, these were not normally leveraged beyond the immediate task. Against the backdrop of New Zealand's aspiration to become a leading innovation economy, the article proposes the development of a knowledge-sharing innovation ecosystem that absorbs the manifold casual research outcomes from creative production work and develops pathways for New Zealand's creative professionals to convert imaginative specialist solutions into sustainable innovation capital.

ARTICLE HISTORY

Received 15 June 2022

Accepted 5 July 2023

KEYWORDS

Creative research; innovation; creative industries; New Zealand; innovation ecosystem

Introduction

Departing from a legacy as an agricultural economy, New Zealand's Growth and Innovation Framework (Clark 2002) identified the development of the creative industries sector as a key strategic area for the nation's future growth and prosperity. Building on a reputed Kiwi ingenuity and recognising 'creativity as an infinite resource' for driving an economy based on talent and originality, the framework sought to advance New Zealand as 'a birthplace of world-changing people and ideas' (Clark 2002, 6). Since then, the government has devised a broad scaffold of innovation agendas and respective institutional bodies, incentivised local R&D, and encouraged creative production, particularly in the screen and design sectors. The creative industries today contribute a significant percentage to the annual GDP, more than double the creative GDP in each of the North American, European, and Asia-Pacific

CONTACT Gudrun Frommherz  gudrun@aut.ac.nz  TOROA Centre for Communication Research, Auckland University of Technology, Auckland, New Zealand.

© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

economic regions (EY 2015). In 2015, New Zealand was named the third most creative country in the world (Florida, Mellander, and King 2015).

Yet, New Zealand's high creativity appraisal stands opposite a much lesser ranking as an innovator, where New Zealand merely reached the 26th place in the latest Global Innovation Index (WIPO. 2021), of 132 featured nations. New Zealand's economic value production from innovation is further eclipsed by an overall poor national productivity standard, which has slipped to a below-average position among the OECD nations (New Zealand Productivity Commission 2021a) and near-bottom amid small advanced economies globally (Skilling 2020). Low productivity performance indicates an inferior translation of resources into viable economic outcomes – or inputs into outputs. These indices suggest that the Growth and Innovation Framework has not substantially enriched domestic innovation, and they prove that New Zealand continues to struggle with converting its creative potential into significant outcomes, or great ideas into business (Callaghan 2009).

Nevertheless, New Zealand's creative economy is buzzing. Thus, the question arises of how a successful creative sector fails to transform its inherent creativity into sustained economic value. How is it possible that the so-called 'creator industries' (Miles and Green 2008), which originate new ideas as their core activity, effectively neglect to turn innovation into capital? Where exactly in the pipeline of producing creative outcomes are opportunities missed for generating durable IP and re-deployable knowledge assets?

Intending to identify potential gaps between creativity and innovation in New Zealand's creative industry sector, this study set out to explore the 'shopfloor' professional practices by working creatives, with particular attention to the interactions between creative production, creative research, and innovation practice. The study wanted to find out whether, where and how on-the-job research, as it is endemic to creative work, produces a noteworthy potential for innovation and original IP. A qualitative study comprising a nationwide creative industries survey and a series of in-depth interviews with creative professionals, undertaken in 2021 by researchers from the TOROA Centre for Communication Research at the Auckland University of Technology, pursued three distinct but interrelated questions:

1. What, in the view of creative professionals, constitutes 'research' in their creative work?
2. How do creatives go about executing and applying research?
3. What are creatives' perceived outcomes of their research activities?

As yet, only a small number of scholarly publications have paid attention to the specific practices and outcomes of on-the-job research in commercial creative work. Miles and Green (2008) industry report on four creative sub-sectors in the UK is one of the few detailed examinations of creatives' innovation practices. The vast majority of literature on creative industries research instead tends to focus on creative practice as a research tool (e.g. Biggs and Buchler 2008; Candy & Edmonds, 2018; Collins 2010; Harper 2011; Roth 1999; Skains 2018), i.e. considers creative practice *as* research – in contrast to research *in* creative practice, which this study sought to examine. Although anecdotal information exists about creatives' research activities, mainly in the form

of collegiate conversations in industry forums and professional networks, very little systematic empirical data about creative research practice is presently available – and virtually none in the New Zealand context. Hence, this study was significant, as local data was needed for evaluating the existing innovation dynamics in New Zealand’s creative sector, which ideally would aid the development of a well-functioning creative innovation ecosystem for the nation.

Data

The study underlying this report collected New Zealand-based data from three different sources:

1. Creative roles job adverts on Seek NZ were sampled on six evenly distributed dates between December 2020 and June 2021. Over 3,000 creative industries job adverts were screened for the mention of research skills as a job qualification or as an expected professional activity.
2. A nationwide survey in the form of a comprehensive online questionnaire was conducted between 11 January and 10 February 2021. More than 1,000 data points could be collected from fifty participants. Participants represented the majority of New Zealand’s creative industries subsectors, and their distribution was roughly equivalent to the respective employment share of the particular industry (Figure 1).
3. Ten semi-structured interviews with active creative professionals were undertaken in March 2021. The interviews produced over 15 hours of qualitative data on the pursuits and experiences of creatives concerning their on-the-job research activities and innovation practices.

Although the overall sample size was small, the results from data analysis were nevertheless significant and illuminative of the day-to-day research practices of

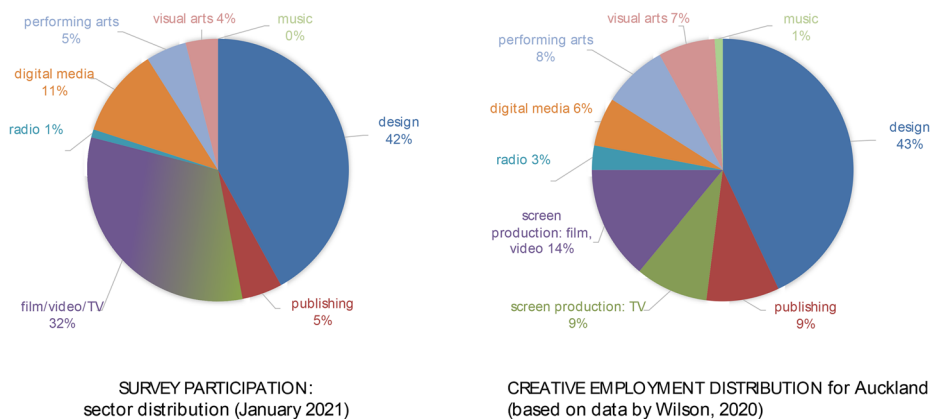


Figure 1. Employment shares per creative subsector and distribution of survey participants. Source: the authors.

creative professionals. The interviews in particular provided rich qualitative data that produced detailed insights into the industry's challenges when translating endemic research practice into significant outcomes.

Results

Findings from both survey and interview data confirmed a substantial level of regular, on-the-job research activity that is a part of professional creative work. Over three-quarters of participants stated that their creative role regularly involved research, which in almost 70% of cases exceeded more than half of the total project time. In contrast, the requirement of research skills in job adverts for creative positions appeared in less than 8% of postings (Figure 2).

Despite generally high research engagement by creatives, the predominant aim of project-based inquiry, more often than not, targeted immediate creative problem-solving rather than the generation of reusable and economically deployable knowledge (Figure 3). Economic utilisation of research outcomes beyond a specific brief or project was not commonly a goal and hardly ever influenced creatives' approach to researching and preserving research outcomes. Instead, it was extremely rare that creative professionals managed their research processes and findings in such a way that they could readily re-access research outcomes for further use beyond the immediate creative task. Data evidenced a profound lack of systematically documenting research, and showed that research processes tended to be almost always ad hoc, on-the-fly, and highly individualised (Figure 4).

Creatives stated that they acquired the vast majority of their research skills through personal self-learning, with education providers contributing to research training in about one quarter of situations and industry in a mere 10% of cases. This fairly low level of formal research training stood in contrast to creative skills learning that more commonly was delivered by both education providers (85%) and industry-supported learning opportunities (71%), such as internships, professional development or software training (Figure 5).

Perhaps as a result of low formal research education, essential research concepts and terms were not always well appreciated by creatives. For instance, none of the participants offered a clear attribution of what they called their job-based research activities (Figure 6), and there existed uncertainty about the function of 'data' within

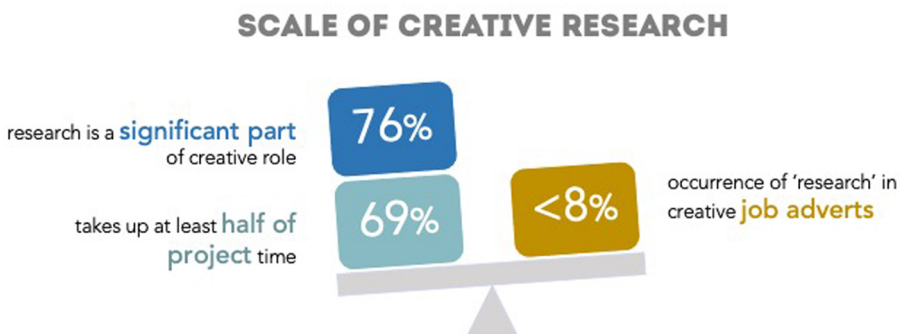


Figure 2. On-the-job research requirements: what creatives say vs. what job adverts specify. Source: the authors.

CREATIVES MOST COMMONLY RESEARCH...

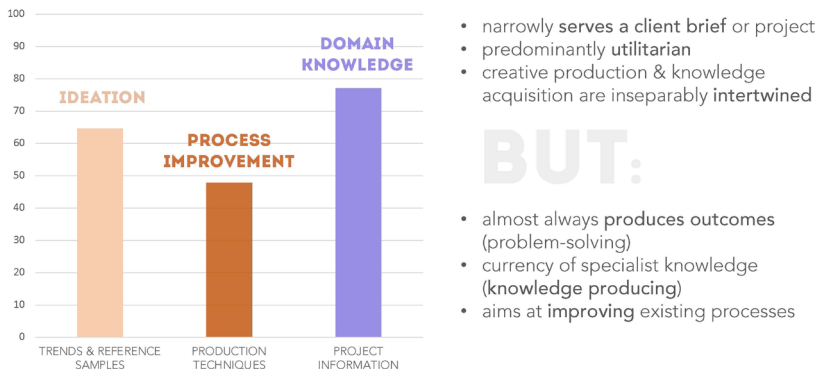


Figure 3. What creatives most commonly research. Source: the authors.

RESEARCH PROCESS



Figure 4. What creatives say about their research processes. Source: the authors.

CREATIVE AND RESEARCH TRAINING

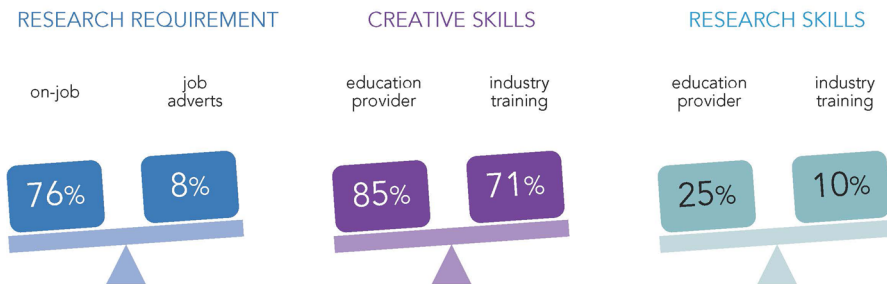


Figure 5. Delivery of creative vs. research skills. Source: the authors.

research. 'Data' was mostly associated with numbers, spreadsheets and analytics (Figure 7).

Still, creative researchers usually evidenced a sound grasp of the validity of findings from their creative research activities. The participants reported that they habitually

RESEARCH ATTRIBUTION



Figure 6. Attribution of research activities. Source: the authors.

RESEARCH DATA



Figure 7. Perceptions about the use of 'data' in creative research. Source: the authors.

verified critical information and commonly gauged the credibility of a source. Professional networks often served as dependable platforms for substantiating research data. The fear of using flawed information or misrepresenting details in their professional work seemed a strong motivator for cautious fact-checking. There was a sense that the level of individual research skill and the overall quality of creative research was vitally important for establishing and maintaining a creative's professional credibility.

Notwithstanding high research engagement and the latently perceived importance of high-quality research outcomes, most research efforts remained hidden as an economic activity. Instead, creatives often perceived their research needs as a 'necessary evil' for getting a job done – or even a sign of deficiency in professional aptitude – and clients often rejected the time and costs of research as project excess (Figure 8). Accordingly, and against the fact that creatives on average spent significant time on research, they could rarely account for research as a directly billable project resource (Figure 9). As a result of push-back from clients, and a self-perception that research



Figure 8. Perceptions of the importance of on-the-job research; creatives' positions, their clients, employers and the community. Source: the authors.

ACCOUNTING FOR RESEARCH



Figure 9. Participants' approaches to accounting for research time and costs, if so. Source: the authors.

was predominantly about filling a gap in practical knowledge, the broader leverage of research outcomes was severely inhibited. Creatives who ultimately cultivated their research and used research findings for improving their creative production processes rarely recognised the larger economic value of the specialist knowledge they had produced.

Despite a generally low appreciation of the economic value of creative research that was accompanied by a lack of documenting research in systematic ways (Figure 10), the level of 'unintended innovations' – especially concerning technology optimisation, workflows and specialist technical processes – was notably high. Creatives evidenced a wide range of innovations they had devised over the course of their professional work, which they often felt made up for the lost research time on

DOCUMENTING RESEARCH

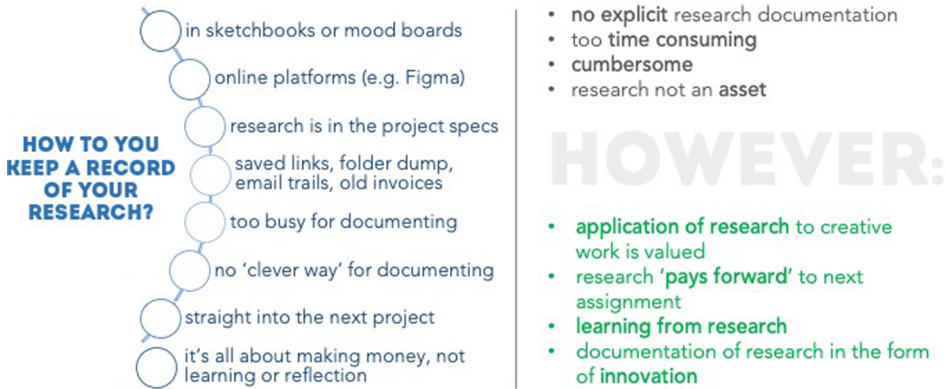


Figure 10. How creatives document their research. Source: the authors.

previous work. It is there that many creatives had developed a personal repertoire of highly specialised practices and 'creative shortcuts' that allowed them to optimise production work sufficiently enough for absorbing the resource burden that constant research in a fast-changing industry placed on them. But because these innovations were generally regarded as merely functional, one-off and for individual use, a wider sharing of research outcomes and innovation did not occur freely (Figure 11). With the consequently limited inflow of original knowledge and inventions into the industry's innovation ecosystem, opportunities for converting tacit IP into tangible commercial outcomes seemed to be missed on a rather regular basis.

Overall, the study evidenced that although innovation was a regular outcome of creatives' research activities, new knowledge was not normally shared in the creative community. As a consequence, new ideas and originations remained hidden in

KNOWLEDGE SHARING



Figure 11. Knowledge-sharing practices by creative professionals. Source: the authors.

individual creative outcomes and rarely matured into recognised innovation capital to fuel New Zealand's creative productivity.

Creative New Zealand

In a nation with a total population of about five million, New Zealand's creative economy employed over 131,000 people (6.6% of the total national workforce) and generated NZ\$17.5bn, amounting to 6.8% of its GDP in 2016 (NZIER. 2016; WeCreate 2020). Design-related economic activities alone were evaluated at NZ\$10.1bn, equalling 4.2% of New Zealand's GDP, and accounting for 4.4% of NZ's employment (PwC 2017). On the global scale of a US\$2.25tr creative economy worldwide (3% of the world's total GDP in 2015), the Asia-Pacific economic region of which New Zealand is a part leads creative value production both in terms of revenue (US\$743bn or 33% of global creative total) and jobs (US\$12.7m or 43% of global creative total) (EY. 2015; Florida 2015). The Global Creativity Index 2015 deemed New Zealand the third most creative country in the world (Florida, Mellander, and King 2015), up from 6th place in 2010 (Florida, Mellander, and Stolarick 2011).

If the creative sector in New Zealand was classified as a unique industry,¹ creative production would far outrank agriculture at NZ\$8.1bn; design work alone yielded a higher GDP contribution than the entire agricultural sector² (PwC 2017). The widespread perception that New Zealand is an agrarian economy seems positively outdated (Forbes 2018). Instead, the future of New Zealand is creative. The continuing strong growth of the creative sector, especially in the areas of interactive media (compound annual growth rate of 39% over six years) (Gray 2019), digital media (8.9%) and design (3.8%) (Wilson 2020), and the rapid growth of the screen industry (8% in the 2016/17 financial year) (StatsNZ 2018), indicate a thriving creative industry. The shift from a primary to an idea economy makes sense for a nation that is geographically isolated, small in population but big on landscape and affluent of entrepreneurial spirit. A legendary Kiwi ingenuity embedded in a culture of creative problem-solving, enriched by the arts and creative traditions brought into the nation by immigrants from over 200 ethnic and cultural backgrounds, provides a steady base for New Zealand to propel its creative potential (Grant 2019; Manch 2019; NZ Herald 2013; Up Education 2021). New Zealand's natural inventiveness and creative diversity are further aided by inbound production contracts, including legendary large-scale screen projects such as Peter Jackson's *Lord of the Rings* and *The Hobbit* trilogies, James Cameron's *Avatar* sequels, Netflix's *Cowboy Bebop*, and Amazon's season one of the *Lord of the Rings* TV series, bringing into the local economy additional creative resources and secondary revenues. About one-third of the 1.8bn screen production and postproduction revenue in 2016 came from international contracts (NZIER 2017), up 19% from the previous year (StatsNZ 2018).

WeCreate, an alliance of New Zealand's creative industries, seeks to further grow the creative sector to NZ\$25bn over the next five years (Up Education 2021). The government department for Economic and Regional Development projected an inflow

of NZ\$4.4bn from international screen production spending over the coming five years (Nash 2021). Equally, the New Zealand Interactive and Game Development Industry, already drawing 93% of its revenues from digital exports, aspires to achieve NZ\$1bn in exports by 2024 (NZGDA. 2019). With a range of legislative initiatives that aim at boosting local innovation, New Zealand aspires to become 'a global innovation hub, a world-class generator of new ideas for a productive, sustainable and inclusive future' (MBIE 2019b, 3) by 2027.

Growth and innovation framework

The government has helped immensely with advocating for New Zealand as a creative powerhouse. Built on a formidable 100% Pure brand (TNZ 2009) that promotes the nation as an authentic, pristine, and highly liveable country, the government established various frameworks and initiatives for growing its domestic innovation capability. Reaching back to an initiative by then Prime Minister Helen Clark (2002), the Growth and Innovation Framework identified the creative industries as one of three focus areas for future growth, next to ICT and biotechnology. Subsequent incentives for advancing the screen sector came in form of a screen (NZSPG) and postproduction (PDV) grant introduced in 2014,³ seeking to encourage the production of significant TV and film projects on New Zealand soil. Recognising the spill-over gains from inbound projects to the wider economy, the NZSPG allows for heavy subsidies on qualifying international productions (NZSC, 2021b). In one instance, a memorandum of understanding between New Zealand and Amazon Studios LLC underwrote the big-budget production of *The Lord of the Rings* TV series with a full 25% rebate⁴ against providing local employment, developing local business potential, internationally promoting the New Zealand brand, and exploring mutually beneficial R&D opportunities (MBIE 2019a, MBIE. 2020). Although the memorandum was withdrawn by Amazon after only a few months (Malpass et al. 2021), for New Zealand, this undertaking demonstrated the government's commitment to increasing creative productivity.

Recognising a need for increasing domestic knowledge production, the government introduced a 15% innovation tax credit in 2019 to encourage more R&D in the local industry. Public funding for research, science and innovation was projected at around \$2bn in 2020 (MBIE. 2018), a respectable investment into New Zealand's future. Despite significant support for boosting innovation, there is yet a gaping discrepancy between innovation input and lasting positive outcomes. The 2020 and 2021 Global Innovation Indices recurrently ranked New Zealand 26th out of over 130⁵ evaluated economies, sliding further down from 22th in 2018 and 25th in 2019 (WIPO. 2020, 2021); these rankings avow a weak innovation performance, especially in the light of a superior creative competence. The rankings suggest a considerable disparity between New Zealand's assumed creative potential and the actual production of economically deployable innovation.

A closer look at the Global Innovation Index reveals that New Zealand's innovation input sits reasonably strong at 19th place globally. Thus, it seems that the local economy is doing well enough with providing a suitable environment for innovation. Nevertheless, innovation outputs overall (e.g. IP receipts, patents,

high-quality technical, creative and knowledge exports) still lag in 32nd place (WIPO. 2021). Regardless of some very strong input markers, e.g. ease of starting a business and getting credit (globally 1st place), political and operational stability (both 2nd place) and protection of minority investors (3rd place), the knowledge and technology output only made 39th place, with the sub-index of knowledge dissemination trailing at the abysmal ranks of 64th in 2021 and 77th in 2020. It appears that those economic activities that effectively translate creative aptitude into sustained tangible assets (i.e. knowledge sharing) are the areas in which New Zealand performs least well.

All in all, New Zealand's current productivity data indicates a misalignment between available creative resources, current research investment, and actual innovation outputs. The Research, Science and Innovation System Performance Report (MBIE 2018) noted that New Zealand's economic productivity continues to lag behind comparable nations, citing modest R&D investment and inferior innovation rates as key factors behind such low productivity. This appraisal has been echoed by several public bodies (e.g. NZPC 2021), industry (e.g. PwC 2020), and academic evaluators (e.g. Greenway-McGrevy et al. 2020) alike.

Some initiatives under the government's Industry Transformation Agenda, although much needed and welcomed by the respective industries, seem to have aided direct revenue generation more than building innovation capability. The present screen grants, for instance, have positively helped attract international productions to New Zealand and have as such bolstered the creative sector. Still, it is unclear how much the grants ultimately aided the growth of the domestic innovation potential. Some believe that the grant money would be better spent on home-grown creative products and locally developed IP (Coughlan 2020). Even the screen industry, although a direct beneficiary of the grants scheme, has called for the accelerated development and protection of domestic IP (Screen Sector Strategy NZ 2020) over the promotion of international grants. There are concerns that the focus on international exports may erode local IP development and prioritise short-term gains over the production of sustained innovation value (Coughlan 2020; Grant 2019; McWha et al. 2018). For instance, an evaluation of the NZSPG (McWha et al. 2018) indicated that the screen incentive has benefitted mainly in two areas, 1) temporary local employment⁶ including support businesses during the production schedule⁷ and 2) inbound tourism in the aftermath of an international release⁸ (Nash 2021; NZIER 2017; TNZ 2020). Despite these certainly positive effects on the local economy, externally driven economic activity tends to be volatile: spill-over gains are often restricted to the duration of on-site screen production, relocation of crews and gear from overseas negatively impacts the environmental footprint, and film tourism is susceptible to disruptive global events, as the COVID pandemic so patently demonstrated. And despite contractual grant agreements with international producers, there is ultimately no guarantee that these will be honoured, as in the case of the sudden relocation of the *Lord of the Rings* productions from New Zealand to the UK (Aljazeera 2021; Frater 2021; Malpass et al. 2021; Milne 2021). From the perspective of attaining a viable and reliable innovation economy, it seems that incentivising international productions might not easily generate the sustained high-value exports that New Zealand wants and needs for building long-term innovation capital (Coughlan 2020).

If the international screen grant indeed should be ill-suited for advancing local IP, then perhaps the resident innovation tax credit might aid domestic innovation more directly. However, WeCreate (2020) identified challenges in sourcing investment for creative innovation as a definite barrier to the sector's growth. They noted that current R&D funding would not normally be open to creative enterprises. The innovation tax incentive, for one, does not apply to research in the social sciences, arts, humanities, management studies, and organisational design, even if they otherwise would meet the definition of eligible R&D (IRD. 2019). Further, the tax incentive requires a minimum research investment at a scale commonly beyond the ability of most players in the local creative sector, which is largely comprised of self-employed entrepreneurs and SMEs (Wilson 2020, Up Education 2021). It thus appears that neither a grant system aimed at exporting the New Zealand brand to international producers nor a narrowly drawn R&D enticement might significantly fuel New Zealand's creative productivity.

Creative research, R&D and innovation

New Zealand's economic innovation project is rooted in the assumption that investment in R&D eventually generates deployable IP. In contrast to such linear 'research in—innovation out' formula, Kiwi physicist and inventor Sir Paul Callaghan (2009) warned that it might not be sufficient for New Zealand 'merely to create a macro-economic environment conducive to business, and especially export business, and then hope that seed nuclei will form' (13). This is perhaps especially true for the creative sector that in large part is carried by freelance labour and small studios often less interested in or altogether resistant to corporate ways of doing business (e.g. Hesmondhalgh and Baker 2011; Hodgson and Briand 2013; Huws 2010; Townley, Beech, and McKinlay 2009). The premise that scheduled R&D activity consequentially encourages innovation comes with at least three principal challenges for the creative industries: 1) The conundrum of precisely which pursuits and processes in creative work may account for legitimate research, especially as research-related activities are intricately woven into, and cannot be separated from, the production of creative outputs. 2) The question of where and when in the creative process artistic intellectual capital begets creative innovation, and 3) how busy and project-focused creatives may recognise (and leverage) any eventual innovation embedded in their day-to-day practices.

R&D vs. creative research: a question of definition?

The issue of what exactly in creative work may account for authentic research is, at least for its commercial trajectory, a policy matter at the national level. New Zealand's current definitions and economic classifications of R&D are largely blind to the day-to-day research activities of creative professionals. Although the vital importance of project-based research seems silently acknowledged by most creative practitioners, the commercial value of on-project research appears much less appreciated – and this is so with stakeholders across the entire creative value network,

from clients, creative firms and professionals, all the way to economic forums and decision-makers on local and national boards. Data from this study has highlighted how little the research activities necessary in daily creative work seem valued – or even admitted – as an essential component of creatives' labour. However, creatives have nevertheless emphasised the significant advantages they gain from their creative research, both for improving creative outcomes in present and future commercial work and for innovating their own specialist workflows and techniques that set them apart from the competition. One of the interviewees remarked that *'The core value of work in the creative professions is not tied to what we make but how we make it. The process for arriving at an outcome is much larger than the outcome itself.'*

New insights arising from creative on-the-job research are often latent and as such yet intangible. In contrast to recognising 'soft' research outcomes as essential for innovation, the legislative definition of eligible research activities for the New Zealand tax credit emphasises the *'material'* purpose of creating new knowledge, or new or improved processes, services, or goods' (Research and Development Tax Credits Act, 2019, 7; emphasis added). Correspondingly, Grant (2019) observed that 'Government support continues to focus on the traditional physical production of goods' (10–11).

Even so, present R&D qualifiers are also blurry. Information provided by the Ministry of Business, Innovation & Employment clarifies that to avail of the tax credit, applicants

must seek to resolve a scientific or technological uncertainty. In other words, it's not enough to be applying existing knowledge in a new situation. You must be trying to solve a hard problem or do something that professionals in that field don't know how to do without going through an investigative process to try to find an answer. (MBIE 2022, non-pag.)

Removing creative and/or technological uncertainty by engaging in an investigative process that seeks answers to something that professionals in the field do not (yet) know, is exactly what creatives profess they are doing when exploring, for instance, the impact of new technology on a specific aspect of the creative process or its outcomes, or when they devise emerging technological affordances into novel creative tools and techniques. Each of these innovations effectively produces new knowledge towards attaining entirely novel outcomes or altogether advancing a previous cutting-edge standard.

Still, the classifications of what qualifies as supported R&D activities are purposefully crafted to invite some but not all research activities with innovation potential. First and foremost, government support is extended to research that *explicitly* aims at producing new ideas, products, or processes of notable commercial potential. Research activities that primarily focus on solving a creative task, which is the case for creative on-the-job research, are not included in this qualification regardless of whether or not the eventual outcomes might generate unique new markets. Next, outcomes from R&D must be *material*, which implies a recognisable form of clearly described and delineated concepts, models, products or procedures. The requirement of the materiality of R&D outcomes also infers rather direct and immediate availability for

deployment – something that the latent knowledge production in creative research infrequently fulfils.

Further lacking in regular creative research practice is the R&D requisite of using ‘a systematic approach’ (Research and Development Tax Credits Act, 2019 8; MBIE 2022, non-pag.) whereby ‘investigation is a primary objective’ (StatsNZ 2016, ‘purpose’). Data in this study has well evidenced that creatives rarely follow a systematic or structured research process but instead engage with research in arbitrary and idiosyncratic ways. Established research terminology, concepts and protocols are not commonly applied in creative research practice. Instead, creatives individually seek to make sense of their perceived need for researching when they, for example, investigate possible improvements to production techniques or explore, analyse and critically appraise ideas for concept development. Thus, the ad hoc research practices of creatives hardly qualify as ‘research proper’ – neither in the legislative R&D definitions nor in the understanding of scholarly research in the academic context (Table 1).

Creative innovation: a tautology?

The second challenge for IP production in the creative industries, i.e. the question of where and how creative practice might spawn innovation, resides with the overall ‘system’ of the creative economy, i.e. the organisation, standards and conventions of the industry. This concern probes the difficult question of the boundary between creative intellectual capital directed at achieving an ideal creative solution and imaginative inventiveness that produces novel knowledge assets of a much larger disposition. The author of *Hidden Innovation in the Creative Industries*, Kestenbaum (2008), admitted that ‘we do not understand well the process of innovation within the creative industries, nor how waves of innovation from elsewhere impact upon them’ (3). Similarly, the review report of the initial screen grants acknowledged that ‘IP has a number of different meanings’ (Joyce and Finlayson 2013, 3) and recognised that IP emerging through the production of creative products ‘is not easily replicable’ (4). Indeed, creative IP does not readily move from one project or application to another, which inherently encumbers the wider deployment of innovative ideas.

In a response to inconsistent and unclear interpretations of what creative innovation might entail, the New Zealand Institute of Economic Research conceded that ‘traditional measures of innovation such as patents are a poor indicator of innovation because the speed of industry development means that new products and services quickly become obsolete and are overtaken by new innovations’ (NZIER 2017, 25). They proposed that industry-recognised awards could provide a more suitable indicator of creative innovation and IP, in part because the industry itself ‘is best placed to judge innovation when they see it’ (25).

Table 1. Research in industry, academia and the creative professions.

PRIMARY PURPOSE OBJECT OF INQUIRY	innovation works with data	new knowledge produces original data	problem-solving data not normally recognised
PROCESS OUTCOMES BENEFICIARY/SCOPE	systematic tangible-material often proprietary	systematic & critical tangible or theoretical public	ad hoc often intangible personal

Source: the authors.

Although technology-rich creative enterprises à la Weta Digital have been acknowledged as operating at the forefront of technological innovation (Kluyskens, as cited in McWha et al. 2018; Lock 2014), creative IP encompasses much more than the origination of technologies or advancements in technical production. Ordinarily, creative innovations result not as much from new tools and technologies themselves but rather from inventive ways of using them. Yet because improvements to creative processes and workflows are commonly motivated by a perceived need for immediate problem solving, automating repetitive tasks or cutting corners, creatives seldom see their solutions as innovations that could be scaled, transferred or adapted for wider leverage, let alone packaged into commercially viable IP.

The entanglement of innovation with bounded creative briefs provides a significant barrier to realising originations beyond the immediate project. Because innovation work is not a separate and dedicated activity, many originations remain narrowly drawn and elusive and, as such, they locate outside of what is deemed economically worthwhile IP. Interviewees in this study explained that they mostly developed their innovative ideas 'just good enough to make it work' – sufficient for optimising a respective solution but not enough for redeploying the innovation or transferring it to other tasks or areas of application. In a way, such short-stopping resembles the infamous 'last mile problem': the creative origination process itself works more or less smoothly except for the crucial last stage where research remains undocumented, originations uncoded, and solutions undeveloped for wider deployment.

Realising innovation opportunities

Sense-making of creative research engagement and the labour of pursuing innovation opportunities normally take place at the level of the individual creative and their immediate community of practice (Lave and Wenger 1991). Green, Miles, and Rutter (2007) noted that 'New ways of doing things are typically the product of practitioners, rather than the result of innovation activities or R&D work' (cited in Miles and Green 2008, 16). Although participants in this study were generally aware of the innovations that resulted from on-the-job explorations, the actual situation for creative practitioners might be somewhat more complex. Individual approaches to creative work – together with the ability to innovate – tend to be embedded in the specific structures and practices of the respective employer, agency or studio, and the team of which the creative is a part. These structures and conventions, which can differ vastly across different creative entities, circumscribe the overall space in which innovation work is or is not conceivable. Limited innovation capacity is also aggravated when job roles are exclusive of dedicated research responsibilities, i.e. where creative employment is confined to the production side of an assignment. A 2016 study by PricewaterhouseCoopers revealed that the vast majority of New Zealand's creative employment was located in the production phases of creative work. PwC mapped creative job roles to the design double diamond (Figure 11), which is a popular shorthand model for outlining the complex and iterative creative process, originally developed by the Design Council UK in 2005. PwC (2017) observed that 94% of creative employment was concentrated in the second diamond, i.e. the *Develop* and *Deliver* parts of the creative process. The *Develop* stage alone accounted for two-thirds

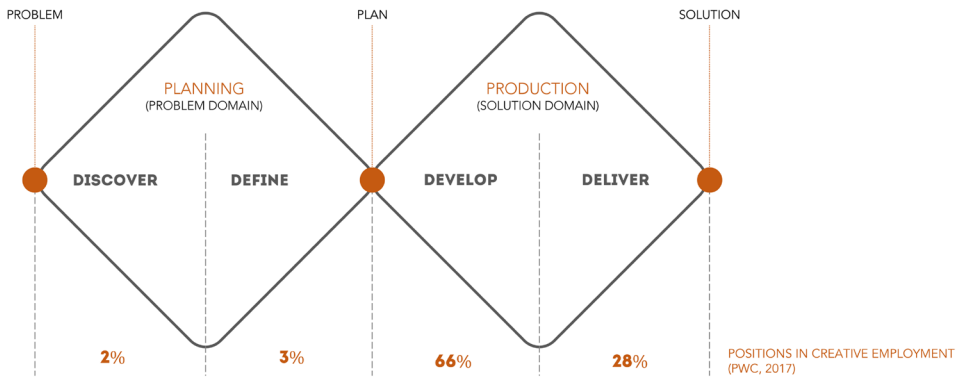


Figure 12. The four double-diamond stages of the creative process. Source: adapted from Design Council UK (2005); creative employment percentages taken from PwC (2017).

of all creative jobs, while employment in the *Discovery* bracket was lowest at a minuscule 2% (Figure 12).

The PwC findings illustrate the risk of curtailing innovation potential when the initial discovery phase in creative work is either truncated (as it often occurs for budgetary reasons) or creatives are removed from the larger problem-defining research by allocating this stage to an external team – or, worse, accepting a narrow list of ‘insights’ from the client as the basis for the creative solution. Travis (2017) recognised that indeed there are two different kinds of research integral to the creative process: 1) *discovery research* that explores the big picture of the actual design problem and 2) *iteration research* that aims at optimising a focused solution. He advised that it is the initial discovery research that may lead to truly transformative solutions. In contrast, the ideation-oriented research of the *Develop* stage means iterating towards the best possible realisation of a creative plan that is already set in stone and is thus curbed in its potential for stunningly ingenious outcomes. While opportunities for innovation are arguably highest in the discovery phase, which genuinely explores the research problem in necessary depth, it is exactly this activity that tends to be under-appreciated and under-resourced in creative work.

Adding to these limitations for attaining groundbreakingly new outcomes, creatives themselves hired into the *Develop* and *Deliver* stages of design do not necessarily concentrate on research for innovation, especially if exploration is not a part of their job description and cannot be budgeted for easily. Whatever research-to-innovation is ultimately achieved by development-focused creatives likely aims at getting the job done rather than making good on the original ideas that go into optimising processes and techniques. It was perhaps unsurprising to find that production-focused creatives in this study would regard time and effort for research – even if it was focused purely on ideation or optimising technical production – as a creative liability. Some creatives felt they should not disclose to clients or colleagues their need for research, as this could be seen as a professional ineptitude.

The fracturing of the full creative process, e.g. the breaking of the double diamond into two parts, i.e. into a distinct problem domain and a separate solution domain each managed by a different team, risks isolating and curtailing potentially great

ideas. Lock (2014) remarked that 'siloed ideas are not usually realised' (8). Data triangulating between the designated job roles of the participants in this study with their actual research activities suggested that the narrower a creative role was the less value was attributed to research. Professionals in creative production roles more commonly considered research an unofficial activity that best was kept secret than creative lead positions did.

Insulation of creatives within their perceived or described job roles might be one of the significant restraints for recognising and realising ingenuity that potentially could turn into commercial innovations. As the Global Innovation Index (WIPO, 2021) has lucidly illustrated, a lack of disseminating (i.e. *sharing*) knowledge is the single largest inhibitor of innovation, far ahead of *creating* knowledge, the latter occurring in creative work quite habitually. It appears that the actual limitations to raising innovation outcomes do not result from an absence of bright new ideas but from a failure of nurturing these ideas, developing them beyond immediate use, connecting with opportunities outside their own discipline, and drawing on business practices that assist the managerial aspects of translating ideas into deployable IP. Utilising Sir Callaghan's (2009) euphuism, seeds are aplenty but nothing can grow if they are not tended.

Building a resilient innovation ecosystem

The actual innovation dynamic at the intersection of research and creative work, albeit practised every day in creative studios, is little understood in disciplined scholarship. Argyris and Schön (1974) encapsulated that 'Integrated thought with action effectively has plagued philosophers, frustrated social scientists, and eluded professional practitioners for years. It is one of the prevalent and least understood problems of our age' (3). Indeed, today's commercially-facing creative practice has not significantly departed from its historic roots in the fine arts. Thus, contemporary training of creative professionals has remained embedded in the epistemologies of autonomous creativity, the inspired artist and the traditions of art practice, resulting in a creative community of practice that is insular and protectionist of ideas rather than collaborative. The legacy of the self-reliant artist continues to guide creatives' work ethics in an industry that is global, public and charged with the momentous task of converting resource-eroding industries around the world into sustainable innovation economies. This ambitious work cannot be carried out by creative labour alone. What is required is championing innovation ecosystems that form around the gentle whispers of budding ideas wherever they might occur, whether in R&D labs, in individual art practice, or on the shopfloor of the creative enterprise. Review work towards this study suggested that there are sore gaps between the current government frameworks, the unique realities of creative work, and the artistic ethos of creatives themselves. All too often, too many questions and challenges are left to creative professionals who struggle to meet deadlines and budgets in a vocation that profoundly resists quantification and classification. In contrast to regimented economic innovation models of the R&D-to-innovation type, genuine innovation spaces are more likely to open when and where government initiatives, the creative economy system, and actual creative work realities overlap and integrate (Figure 13).

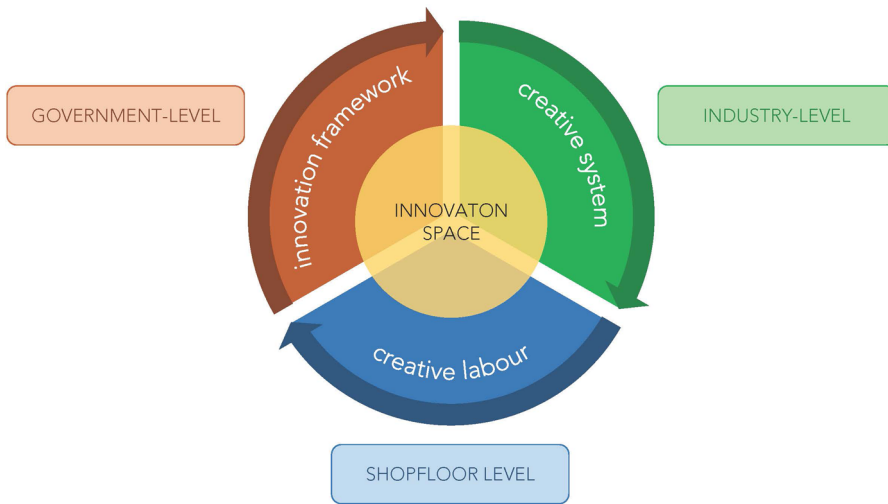


Figure 13. Building New Zealand's innovation ecosystem: creating space for innovation. Source: the authors.

New Zealand's innovation ecosystem can only be effective if it truly aligns legislative support with the vastly distinctive characteristics of creative value production. Perhaps that very same untamed, free-flowing creative thinking that is in action every day on the creative shopfloor might aid a softening of some of the cardinal barriers to converting New Zealand's unique creative potential into sustained innovation capital. What if, for instance, freelance and SME creatives were rewarded for transforming complicated technology into practical solutions? What if there was a Crown Research Institute for creative innovations, as there are for science fields? What if there was a performance-based research fund for creative enterprises similar to those found in universities? And what if creative education providers paid much greater attention to delivering innovation-oriented research skills? A new generation of research-savvy creative graduates might just look differently at their hitherto thankless research efforts. They might ask some of the hard questions about their worth as innovators in the industry and their contribution to the advancement of the nation. Working upwards from the daily realities as creative innovation engines to assisting industry bodies and lawmakers with job-tested expertise, research-savvy creatives might eventually resolve the last mile problem of turning their innate creative research towards capitalizable IP.

Notes

1. The creative and cultural industries, and design activities in design disciplines and market verticals that contribute to the creative economy, are not uniquely classified industry groups in the ANZSIC coding system that is used by New Zealand Statistics. The economic value of the creative segment is calculated based on various aggregate models accounting for the sum of creative economic activities.
2. Notwithstanding a comparably average contribution to GDP, agricultural goods are still New Zealand's largest exporter. The export contribution of the primary industries, led by agricultural products, accounted for 79.4% in 2019 (Hutching 2019).

3. The New Zealand Screen Production Grant (NZSPG) and the Post, Digital and Visual Effects Grant (PVD) have evolved from the Large Budget Screen Production Grant, which was established in 2003 to grow the screen sector in New Zealand (MBIE. 2019c).
4. Other international productions that to date have received the additional 5% Uplift on top of the 20% grant are *Power Rangers Dino Charge*, *Pete's Dragon*, *Ghost in the Shell*, *The Meg* and *Mortal Engines* (Nash 2021).
5. The Global Innovation Index 2020 featured 131 economies and the Global Innovation Index 2021 involved 132 nations.
6. 89% of labour on international screen productions in 2017 was staffed by New Zealanders (McWha et al. 2018).
7. Over 60% of the production budget went towards other support sectors including hospitality and catering, construction, transport, beauty and professional services (Nash 2021).
8. New Zealand's overall film tourism was up by 46% in 2016 with a locational increase of 213% in the Matamata-Waikato, area where the Hobbiton is located (NZIER 2017). Before Covid-19, 19% of tourists cited *The Hobbit* as a motivation for visiting New Zealand (Nash 2021).

Acknowledgements

Rain Roque, a Master's student in the School of Communication Studies, Auckland University of Technology, assisted in the data collection of this study. We further acknowledge all participants who have contributed to this research. The study was approved by the Ethics Committee of the Auckland University of Technology (AUTC 20/423).

Disclosure statement

The authors report that there are no competing interests to declare.

Funding

This study was supported by the Auckland University of Technology with a Summer Research Grant.

Notes on contributors

Gudrun Frommherz (PhD) is a senior lecturer in digital communication and the Head of Postgraduate Studies in the School of Communication Studies at the Auckland University of Technology. Her research focuses on communication leadership and creative communication practice.

AD Narayan is a lecturer in digital communication at the Auckland University of Technology and a practice-based researcher into future directions for community video and extended reality technologies in interactional communication.

Data availability Statement

The data underlying this study is not currently available to the wider community.

References

Argyris, M., and D. Schön. 1974. *Theory in Practice. Increasing Professional Effectiveness*. San Francisco, CA: Jossey-Bass.

- Aljazeera. 2021, 13 August. "New Zealand loses Lord of the Rings as Amazon Moves Filming to UK." <https://www.aljazeera.com/economy/2021/8/13/new-zealand-loses-lord-of-the-rings-as-amazon-moves-filming-to-uk>
- Ardern, J. Hon. 2018, September 17. "Minister's Address to the WeCreate Creative Economy Conversation." <https://www.beehive.govt.nz/speech/ministers-address-wecreate-creative-economy-conversation>
- Biggs, M., and D. Buchler. 2008. "Eight Criteria for Practice-Based Research in the Creative and Cultural Industries." *Art, Design & Communication in Higher Education* 7 (1): 5–18. <https://doi.org/10.1386/adche.7.1.5/1>
- Callaghan, P. 2009. *Wool to Weta. Transforming New Zealand's Culture & Economy*. Auckland: Auckland University Press.
- Candy, L., and E. Edmonds. 2018. "Practice-Based Research in the Creative Arts. Foundations and Futures from the Front Line." *Leonardo* 51 (1): 63–69. https://doi.org/10.1162/LEON_a_01471
- Clark, H. 2002, February 12. "Growing an Innovative New Zealand." Office of the Prime Minister. New Zealand Government. <https://www.beehive.govt.nz/speech/growing-innovative-new-zealand>. Full document available from: https://www.mcguinnessinstitute.org/wp-content/uploads/2021/04/29.-Strategy_Growing_an_Innovative_New_Zealand.pdf
- Collins, H. 2010. *Creative Research. The Theory and Practice of Research for the Creative Industries*. Singapore: AVA Publishing.
- Coughlan, T. 2020, June 3. *Time to Call 'Cut!' on the Government's Film Subsidy*. Auckland: Stuff. <https://www.stuff.co.nz/entertainment/film/300026054/time-to-call-cut-on-the-governments-film-subsidy>.
- Design Council UK. 2005. "Double Diamond." <https://www.designcouncil.org.uk/news-opinion/double-diamond-universally-accepted-depiction-design-process>
- EY. 2015. "Cultural Times. The First Global Map of Cultural and Creative Industries." http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ERI/pdf/EY-Cultural-Times2015_Low-res.pdf
- Florida, R. 2015, December 29. *The Global Creative Economy is Big Business*. New York, NY: Bloomberg CityLab. <https://www.bloomberg.com/news/articles/2015-12-28/the-world-s-biggest-creative-economies>.
- Florida, R., C. Mellander, and K. Stolarick. 2011. *Creativity and Prosperity: The Global Creativity Index*. Toronto: Martin Prosperity Institute. https://tspace.library.utoronto.ca/bitstream/1807/80125/1/Florida%20et%20al_2011_Creativity%20and%20Prosperity.pdf.
- Florida, R., C. Mellander, and K. King. 2015. *The Global Creativity Index 2015*. Toronto: Martin Prosperity Institute. <https://budstars.com/martinprosperity/Global-Creativity-Index-2015.pdf>.
- Forbes. 2018. "Best Countries for Business 2018: New Zealand." <https://www.forbes.com/places/new-zealand/?sh=5b11a6305e0a>
- Frater, P. 2021, 13 August. *New Zealand Reacts to 'Shame' of Losing Amazon's Lord of the Rings Mega-Series*. New York, NY and Los Angeles, CA: Variety. <https://variety.com/2021/global/asia/new-zealand-shame-amazon-lord-of-the-rings-1235041077/>
- Grant, K. 2019. "New Zealand Creative Exporters." Report for Export New Zealand. https://www.exporthz.org.nz/_data/assets/pdf_file/0003/181164/CreativeExportersReport_FA3.pdf
- Gray, C. 2019. "Introduction: The New Zealand Game Developers Association." In *Interactive Aotearoa*, 5). Auckland: New Zealand Game Developers Association. <https://nzgda.com/news/interactiveaotearoa/>
- Green, L., I. Miles, and J. Rutter. 2007. "Hidden Innovation in the Creative Industries." [Working Paper].
- Greenway-McGrevy, R., A. Grimes, T. Maliney, A. Bardsley, and P. Gluckman. 2020. *New Zealand's Economic Future: COVID-19 as a Catalyst for Innovation*. Koi Tū: The Centre for Informed Futures. The University of Auckland. <https://www.auckland.ac.nz/en/news/2020/11/11/new-zealand-s-economic-future.html>
- Harper, G. 2011. "Practice-Led Research and the Future of the Creative Industries." *Creative Industries Journal* 4 (1): 5–17. https://doi.org/10.1386/cij.4.1.5_1
- Hesmondhalgh, D., and S. Baker. 2011. *Creative Labour*. Abingdon, Oxfordshire: Routledge.

- Hodgson, D., and L. Briand. 2013. "Controlling the Uncontrollable." *Work, Employment and Society* 27 (2): 308–325. <https://doi.org/10.1177/0950017012460315>
- Hutching, G. 2019. 16 September). *New Zealand's Primary Sector Exports Reach a Record \$46.4 Billion*. Auckland: Stuff. <https://www.stuff.co.nz/business/farming/115831996/new-zealand-s-primary-sector-exports-reach-a-record-464-billion>.
- Huws, U. 2010. "Expression and Expropriation: The Dialectics of Autonomy and Control in Creative Labour." *Ephemera* 10 (3/4): 504–521.
- IRD. 2019, June 16. *Social Sciences, Arts, Humanities, Organisational Design and Management Studies*. <https://loomio.nz/d/OAUxKlFm/social-sciences-arts-humanities-organisational-design-and-management-studies>
- Joyce, S. Hon, and C. Hon Finlayson. 2013. *Review of Government Assistance to the Screen Sector*. <https://mch.govt.nz/sites/default/files/Review%20of%20Government%20Assistance%20to%20Screen%20Sector%202013%20Cabinet%20paper%20%28D-0493018%29.PDF>
- Kestenbaum, J. 2008. "Foreword." In I. Miles & L. Green, *Hidden Innovation in the Creative Industries*. London: NESTA Research Report.
- Lave, J., and E. Wenger. 1991. *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.
- Lock, N. 2014. "Behind the Scene of the Bigger Picture." *NZTECHO, Autumn 2014*, 8–11.
- Malpass, L., T. Manch, E. Taunton, and G. McConnell. 2021, 14 August. *Government Left in the Dark as Amazon Readies to Abandon New Zealand*. Auckland: Stuff. <https://www.stuff.co.nz/national/politics/126070921/government-left-in-the-dark-as-amazon-readies-to-abandons-new-zealand>.
- Manch, T. 2019, September 23. *Census 2018: New Zealand Population is Larger and More Diverse*. Auckland: Stuff. <https://www.stuff.co.nz/national/politics/116005822/census-2018-new-zealand-population-is-larger-and-more-diverse>.
- MBIE. 2018. "Research, Science and Innovation System Performance Report 2018." New Zealand Government, Ministry for Business, Innovation and Employment. <https://www.mbie.govt.nz/dmsdocument/1499-research-science-and-innovation-system-performance-report-2018>
- MBIE. 2019a. *Summary of Amazon MOU*. Wellington: New Zealand Government, Ministry for Business, Innovation and Employment. <https://www.mbie.govt.nz/dmsdocument/13976-summary-of-amazon-mou>.
- MBIE. 2019b. *New Zealand's Research, Science & Innovation Strategy*. Wellington: New Zealand Government, Ministry for Business, Innovation and Employment. <https://www.mbie.govt.nz/dmsdocument/6935-new-zealands-research-science-and-innovation-strategy-draft-for-consultation>.
- MBIE. 2019c. *Growing Innovative Industries in New Zealand: From the Knowledge Wave to the Digital Age. Mai i te ao Mātauranga ki te ao Matihiko Nei*. Wellington: New Zealand Government, Ministry for Business, Innovation and Employment. <https://www.mbie.govt.nz/dmsdocument/5866-growing-innovative-industries-in-new-zealand-from-the-knowledge-wave-to-the-digital-age>.
- MBIE. 2020. *Amazon Series Memorandum of Understanding for the 5% Uplift*. Wellington: New Zealand Government, Ministry for Business, Innovation and Employment. <https://www.mbie.govt.nz/dmsdocument/13943-amazon-series-memorandum-of-understanding-for-the-5-uplift>.
- MBIE. 2022. *R&D Tax Incentive – What to do Next*. <https://www.business.govt.nz/news/r-and-d-tax-incentive-2019/>
- McWha, V., M. Niemi, D. Moore, and R. Harley. 2018. *Evaluating the New Zealand Screen Production Grant*. Sapere Research Group. <https://www.mbie.govt.nz/dmsdocument/1079-evaluating-screen-production-grant-pdf>
- Miles, I., and L. Green. 2008. "Hidden Innovation in the Creative Industries." NESTA. https://www.researchgate.net/publication/318431538_Hidden_Innovation_in_the_Creative_Industries
- Milne, J. 2021, 13 August. "\$33m Penalty as Lord of the Rings Turns its Back on NZ." *Newsroom Pro*. <https://www.newsroom.co.nz/33m-penalty-as-lord-of-the-rings-turns-its-back-on-nz>
- Nash, S. Hon. 2021, April 16. *Screen Industry Secures Landmark Project*. <https://www.beehive.govt.nz/release/screen-industry-secures-landmark-project>

- New Zealand Productivity Commission. 2021a. "Productivity by the Numbers." <https://www.productivity.govt.nz/research>
- New Zealand Productivity. 2021b. "Commission Cut to the Chase. New Zealand Firms: Reaching for the Frontier." <https://www.productivity.govt.nz/assets/Documents/Cut-to-the-chase-final-report-v4.pdf>
- NZGDA. 2019. *Interactive Aotearoa. Driving Growth and Wellbeing through Interactive Media.* <https://nzgda.com/news/interactiveaotearoa/>
- NZ Herald. 2013, December 11. *Census 2013: More Ethnicities than the World's Countries.* <https://www.nzherald.co.nz/nz/census-2013-more-ethnicities-than-the-worlds-countries/3DPCQLMHNFQU7H2ZIPEMC3DC5A/#:~:text=In%20total%2C%2021%20ethnic%20groups,ethnic%20diversity%20has%20been%20increasing>
- NZIER. 2016. *The Evolution of Kiwi Innovation. The Impact and Structure of the Creative Sector in New Zealand.* <https://wecreate.org.nz/wp-content/uploads/2020/11/NZIER-Summary-2020.pdf>
- NZIER. 2017. *The Economic Contribution of the Screen Industry.* <https://www.nzfilm.co.nz/sites/default/files/2017-12/NZIER%20report%20the%20Economic%20Contribution%20of%20the%20Screen%20Industry%2022%20November%202017.pdf>
- NZPC. 2021. *New Zealand Firms: Reaching for the Frontier.* New Zealand Productivity Commission. <https://www.productivity.govt.nz/assets/Documents/Final-report-Frontier-firms.pdf>
- PwC. 2017. *The Value of Design to New Zealand.* <https://mro.massey.ac.nz/bitstream/handle/10179/13020/Final%20-%20PwC%20-%20The%20value%20of%20design%20to%20New%20Zealand%20report%20%2821%20July%202017%29.pdf>
- PwC. 2020. *Rebuild New Zealand 2020.* https://www.pwc.co.nz/pdfs/2020pdfs/PwC_Rebuild_NZ_2020_report.pdf
- Research and Development Tax Credits Act. 2019. *Taxation (Research and Development Tax Credits) Act 2019* (1 April 2020). New Zealand Legislation. <https://www.legislation.govt.nz/act/public/2019/0015/latest/whole.html>
- Roth, S. 1999. "The State of Design Research." *Design Issues* 15 (2): 18–26. <https://doi.org/10.2307/1511839>
- Screen Sector Strategy NZ. 2020. *Aotearoa New Zealand Screen Sector Strategy 2030.* <https://screensectorstrategy.nz.files.wordpress.com/2020/08/aotearoa-new-zealand-screen-sector-strategy-2030-final-august-2020.pdf>
- Skains, R. L. 2018. "Creative Practice as Research: Discourse on Methodology." *Media Practice and Education* 19 (1): 82–97. <https://doi.org/10.1080/14682753.2017.1362175>
- Skilling, D. 2020. *Frontier Firms: An International Small Advanced Economies Perspective.* Singapore: Landfall Strategy Group. https://www.productivity.govt.nz/assets/Documents/frontier-firms/2580acf490/Frontier-firms_David-Skilling.pdf
- StatsNZ. 2016. *Research and Development Survey.* https://datainfolplus.stats.govt.nz/Item/nz.govt.stats/4394653f-7947-487b-b0c7-dd48edb45822?_ga=2.40892261.635850830.1650590065-303722632.1650590065
- StatsNZ. 2018. *Screen Industry: 2016/17.* <https://www.stats.govt.nz/information-releases/screen-industry-201617>
- TIA. 2020. *Quick Facts & Figures.* Auckland: Tourism Industry Aotearoa. <https://www.tia.org.nz/about-the-industry/quick-facts-and-figures/>
- TNZ. 2009. *Pure As. Celebrating 10 Years of 100% Pure New Zealand.* <https://www.tourismnewzealand.com/media/1544/pure-as-celebrating-10-years-of-100-pure-new-zealand.pdf>
- TNZ. 2020, May 27. *Film Tourism.* <https://www.tourismnewzealand.com/markets-stats/sectors/film-tourism/>
- Townley, B., N. Beech, and A. McKinlay. 2009. "Managing in the Creative Industries: Managing the Motley Crew." *Human Relations* 62 (7): 939–962. <https://doi.org/10.1177/0018726709335542>
- Travis, D. 2017. *Why Iterative Design Isn't Enough to Create Innovative Products.* https://www.userfocus.co.uk/articles/why_iterative_design_isnt_enough.html
- United Nations 2008. "Creative Economy Report 2008. The Challenge of Assessing the Creative Economy: Towards Informed Policy-Making." https://unctad.org/system/files/official-document/ditc20082cer_en.pdf

- Up Education. 2021. *Unleashing New Zealand's Creative Economy*. Whitepaper. Auckland. <https://www.up.education/news/action-needed-to-grow-creative-economy-to-support-recovery/>.
- WeCreate. 2019. *Let's Make NZ Creativity Count Together*. Industry-Government Action Plan. Auckland. <https://wecreate.org.nz/wp-content/uploads/2020/11/WeCreate-Action-Plan-Final-270319CONF.pdf>.
- WeCreate. 2020. *Submission to 'New Zealand Firms: Reaching for the Frontier'*. Wellington: New Zealand Productivity Commission. <https://wecreate.org.nz/wp-content/uploads/2020/11/WeCreate-Submission-NZ-Firms-Reaching-for-the-frontier-September-2020FINAL.pdf>.
- Wilson, R. 2020. *Creative Sector Auckland 2020: Industry Snapshot and Trends*. Auckland: Research and Evaluation Unit, Auckland Council. <https://knowledgeauckland.org.nz/media/1981/tr2020-022-creative-sector-auckland-2020-industry-snapshot-and-trends.pdf>.
- WIPO. 2020. *Global Innovation Index 2020: New Zealand*. Geneva: World Intellectual Property Organization. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020/nz.pdf.
- WIPO. 2021. *Global Innovation Index 2021: New Zealand*. Geneva: World Intellectual Property Organization. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/nz.pdf.