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Ergonomics in the Future World: Perspectives from Australia and New Zealand

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Abstract.
BACKGROUND: The International Ergonomics Association is a professional association for human factors and ergonomics (HFE) professionals. Australia and New Zealand are two of 52 Federated Societies within the IEA.
OBJECTIVE: This paper describes an Ergonomics and the Future World (EFW) workshop held at the IEA Triennial Congress in 2018 (IEA2018), and reports the findings of the Australia / New Zealand (Southern Cross) Cluster (SCC).
METHODS: Four questions were developed by the IEA EFW committee to evaluate the ergonomics state-of-play in various world regions. Southern Cross delegates ($N = 17$) participated in a 90-minute workshop discussion at IEA2018 (45% participation rate for SCC delegates). A summary was presented during the IEA2018 closing ceremony and as a written report for the IEA.
RESULTS: Three themes emerged from the SCC discussions: (i) the impact of technology advances on HFE professional practice;(ii) communication with internal and external stakeholders; and (iii) HFE education.
CONCLUSIONS: The workshop findings are similar to issues raised at local discussions in Australia and New Zealand over past decades and mirror comments and opinions published by authors in the HFE profession. They provide a benchmark for current SCC opinion and may provide direction for future discussion of these recurring issues.

Keywords: IEA, professional association, marketing, communication, education

1. Introduction

Professional societies and associations provide members with a sense of belonging, the opportunity to associate with like-minded individuals, and the opportunity to exchange ideas and gather/extend knowledge to inform professional practice. Societies may also set and regulate professional standards and codes of practice for members, which in turn may benefit other organisations and workplaces by improving the quality of professional practice of its members [1].

The International Ergonomics Association (IEA) is a professional association for human factors and

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ergonomics (HFE) professionals. It was founded in 1959 [2] and comprises 52 federated HFE societies [3], of which Australia and New Zealand are two members. Australia and New Zealand are approximately 2000 km apart and separated by the Tasman Sea. A joint ergonomics society was formed in 1966 (Ergonomics Society of Australia and New Zealand) but in 1986, split to form two separate societies [4]: the Ergonomics Society of Australia and the New Zealand Ergonomics Society, now known as the Human Factors and Ergonomics Society of Australia (HFESA) and the Human Factors and Ergonomics Society of New Zealand (HFESNZ). Despite their independence, the close geographic location has spurred some collaborative activities between the two societies, such as co-hosting the IEA Triennial Congress in Melbourne, Australia, in August 2015. In May 2019, the HFESA had 518 members and the HFESNZ had 95 members.

The IEA initiated a Future of Ergonomics Committee in 2010 who were tasked with creating a position paper, which would outline "*strategies for the future of the HFE discipline and profession*"]5]. The paper was presented at the IEA Triennial Congress in Brazil in February 2012 and included a call for each federated society to evaluate how they can "*(1) Strengthen the demand for high-quality HFE . . . (and) . . . (2) Strengthen the application of high-quality HFE*", taking into account local cultural issues and constraints [5]. Many federated societies took up the challenge set by Dul and co-authors [5], including Australia who conducted a workshop at the HFESA Annual Conference in December 2012 [6]. Two themes emerged from the Australian discussion: "*Individuals need to be better at explaining HFE to non-HFE persons and (2) Individuals should develop case studies illustrating projects or other work which have HFE benefits, and communicate these to business and the broader community.*" [6].

More recently, a working group was appointed by the IEA to initiate and coordinate similar self-reflective workshops at the IEA Congress in Florence, Italy in 2018. The Ergonomics and the Future World committee (EFW@IEA2018) (hereafter referred to as "the committee") invited clusters of federated societies to evaluate the ergonomics state-of-play in their own regions and then report to the committee at the IEA2018 Congress. The intention of the coordinated exercise was to understand issues that were common (and different) across the international ergonomics world. There were five geographical regions and two economic cultural groups represented (referred to as "clusters"), each drawn from Federated Societies within the IEA (see Table 1). Australia and New Zealand formed one cluster called the Southern Cross Cluster (SCC).

Table 1
Clusters of federated societies who participated in EFW@IEA2018. There were two types of clusters: Geographical and economic/cultural. Some Federated Societies participated in both geographical and economic/cultural clusters

Cluster / region	Countries represented
Europe	Portugal, Italy, United Kingdom, Ireland, Switzerland, Spain, Greece, Netherlands, Belgium, France, Austria, Germany, Nordic Countries, Latvia, Croatia, Russia, Serbia, Slovakia, Czech Republic, Hungary, Poland, Ukraine, Turkey*, Iran*, Israel*
USA and Canada	USA, Canada
Southern Cross	Australia, New Zealand
Asia	Singapore, Indonesia, Hong Kong, South Korea, Taiwan, Thailand, Japan, Philippines, Malaysia, China
Africa	Tunisia, South Africa, Nigeria
Latin Cultures	Colombia, Ecuador, Peru, Venezuela, Argentina, Uruguay, Chile, Brazil, Mexico
BRICS (BRASIL, RUSSIA, INDIA, CHINA, SOUTH AFRICA)	China, Russia, India, Brazil, South Africa

*The Federated Societies from Israel, Iran and Turkey were not present at the EFW@IEA2018 workshops.

This paper reports some of the key findings of the SCC discussion in August 2018. The purpose of this paper is to provide a benchmark of how the Australian and New Zealand HFE community perceives the HFE profession in 2018. This information can be used as a platform for future interventions and discussions in the HFE community in Australia, New Zealand, and internationally.

2. Methods

2.1. Process

The committee designed the process so that it could learn about the challenges faced by IEA federated societies in a structured way, according to a predefined schema. This would enable the committee to more easily make comparisons between the responses of individual societies. The committee posed four questions for consideration and discussion:

1. What are the most promising opportunities for RESEARCH and DEVELOPMENT in HFE?
2. What is needed to make HFE PRACTICE more actionable/operational on the field level?
3. What are the needs (issues, topics) to be included in HFE initial and professional TRAINING curricula?
4. The future of HFE and the future of work are interlinked. Given that, what do you recommend for the IEA, its member societies and networks for working closer than now with the main actors in the world of work, namely workers and unions, employers' organizations, governments, and the International Labour Organization?

The process for exploring opinions across each of the clusters comprised four stages.

Stage 1: Preliminary data capture

The committee sent the four questions to each cluster in July 2018 to initiate local discussion (see Table 2). In the SCC, this was completed by a Skype discussion between the cluster chairperson (Dr Jennifer Long) and Ms Marion Edwin, then-chair of the HFESNZ, and by email discussion with Dr Margaret Cook, then-President of the HFESA. Their responses to the questions were compiled into a 3-page summary. Ms Edwin and Dr Cook confirmed that the responses correctly represented their answers to the questions.

Stage 2: Workshop

Seven parallel sessions were scheduled during the IEA2018 congress programme (28 August 2018) for members of the HFE societies to meet with their cluster and discuss their responses to the questions. There were 180 participants across all clusters, including delegates of national ergonomics societies and practitioners, who took part comprehensively in the parallel workshops.

Time was scheduled during the IEA2018 Congress programme (28 August 2018) for members of the HFE societies to meet with their cluster and discuss their responses to the questions. The SCC held a 90-minute interactive workshop and brainstorming session with 17 participants ($n = 4$ from New Zealand and $n = 13$ from Australia). There were 38 delegates at the conference from Oceania [3], which means that the workshop had an Oceania participation rate of 45%.

The SCC workshop consisted of small group discussions and one large group discussion. Key discussion points were captured on a whiteboard by a scribe. The responses from Stage 1 (3-page summary) were presented by the cluster chairperson to the participants at the end of the workshop to check concordance with the workshop responses. Overall, the knowledge captured during stage 2 was similar to that captured during stage 1.

Stage 3: Putting the results into an international context

Cluster chairpersons met with the committee chairperson (Dr Giulio Toccafondi) on 29 August 2018 to discuss the workshop findings. This helped the chairpersons understand the similarities and differences between the cluster responses. The process also assisted some cluster chairpersons to identify key points from their data that could be presented to the IEA community in an oral presentation in stage 4.

Stage 4: Presentation of findings

The workshop findings were communicated to the IEA in two ways. Firstly, each cluster chairperson presented a short (5-minute) presentation summarising the key findings to delegates at the IEA2018 closing ceremony on 30 August 2018. Secondly, the cluster chairpersons prepared a written report for the committee based on the responses recorded by the scribe during the workshop. The SCC response was submitted in October 2018 and is summarized in Table 2.

2.2. *Post-workshop analysis of findings*

The workshop responses and written report were reviewed again by Dr Long in March 2019, 6 months after the oral and written presentation given at IEA2018. Three themes were identified in the data by Dr Long (see section 3 of this paper), and were confirmed by checking that each workshop response (collected in Stage 2 of this process) could be allocated to at least one of the themes. The thematic analysis (as presented in section 3 of this paper) was sent to several workshop participants to confirm that the content was consistent with the discussion that took place during the IEA Congress workshop.

3. Results and discussion

A summary of the SCC responses to the EFW@2018 questions is given in Table 2. The main priorities discussed by the SCC can be divided broadly into three themes:

Table 2
Questions posed to initiate discussion for the EFW@IEA2018 project, together with a summary of the Southern Cross responses

Question	Southern Cross Response
What are the most promising opportunities for RESEARCH and DEVELOPMENT in HFE?	The key opportunities are: 1. Technology is advancing rapidly. We need to understand how to best interact with it. 2. Technology has disrupted many of our work patterns and has led to precarious employment. We need to understand the implications for how we work; e.g., precarious employment, psychosocial issues. 3. Industry is very interested in HFE – when it is presented as a benefit. We need to develop ways to portray HFE as relevant and useful for business. Other issues discussed include: • The ageing population, workforce ageing, and aged care. • Gender and work. • Developing lead indicators for productivity/quality. • Generating behavioral change through system design.
What is needed to make HFE PRACTICE more actionable/operational on the field level?	In an ideal world, HFE would be embedded in society as a philosophy and taught to children when they are at school; e.g., how to set up and correctly work with digital devices. Since it is not an ideal world, the SCC has identified 2 strategies for making HFE practice more operational in the field: 1. Increased marketing and awareness of HFE to stakeholders so that HFE principles are integrated into work systems. 2. Better communication and relationships between researchers and practitioners so that research findings are better integrated within practice. Other issues discussed include: • The need for HFE branding so that HFE is not only perceived as “chairs and workstations”. • Developing cost-benefit / marketing materials that show the value of HFE. • Ensuring that HFE advice is given by qualified personnel. If people provide ergonomics advice, then they should recognize their own limitations and refer work to others if the work is outside of their own expertise. • How to encourage membership of the HFE societies. • HFE professional representation in high-levels in management and in strategic government agencies. • Practitioner access to current research.
What are the needs (issues, topics?) to be included in HFE initial and professional TRAINING curricula?	The SCC perceives a need for: 1. HFE professional education across physical, cognitive, and organizational ergonomics domains. 2. HFE education integrated within other professional disciplines such as architecture, industrial design, engineering, medicine, and management. 3. Online courses for providing HFE education. Have other countries have already done this? Should this be coordinated at an international level? Other issues discussed include: • Non-technical (“soft”) skills; e.g., communication, leadership, situational awareness, teamwork, and collaboration. • Ethics. • Awareness of research design and execution for practitioners AND researchers. • Greater awareness of the variety of HFE tools and methods. • Subject matter that will enhance HFE research and practice, such as HCI principles; design process; cognitive engineering; risk management. • The cultural context for HFE.
The future of HFE and the future of work are interlinked. Given that, what do you recommend for IEA, its member societies, and networks for working closer than now with the main actors of the world of work, namely workers and unions, employers’ organizations, governments, and the International Labour Organization?	Our recommendations for HFE and the future of work are: 1. Employing an IEA executive officer who can increase the profile of HFE among other actors in the world of work. We believe that there is currently not enough volunteer capacity to do this in an effective and strategic manner. 2. Developing position statements on a range of HFE issues. These could be used as a resource to provide to industry or to journalists in response to press enquiries. The HFESA has developed a position statement for sedentary work [36], but there are a wide range of HFE issues that could be developed into position statements. Can we pool our resources internationally to develop position statements? 3. In this world of social media, we have influencers who influence public opinion. Can we develop a similar approach and collaborate with workplace influencers so that HFE becomes embedded in work culture?

1. The impact of technological advances on HFE professional practice. How can we (HFE professionals) develop evidence-based HFE advice for working with new technologies, such as artificial intelligence, automation, and new types of human machine interfaces? What are the implications for how people work?
2. Communication. How can we communicate HFE to business in a way that is relevant and useful for business? How can we improve communication and relationships between researchers and practitioners to enhance the relevance of HFE research to practice? How can we improve the way evidence-based research is incorporated into practice?
3. HFE education. How can we provide quality HFE education to train HFE professionals so they can provide sound advice to clients? How can quality HFE education be integrated into other professional disciplines such as architecture, industrial design, engineering, medicine, and management so that these professionals can include sound HFE principles into their sphere of work?

3.1. The impact of technological advances on HFE professional practice

Workshop participants viewed new technologies as a promising opportunity for research and development in HFE. This aligns with the history of the HFE profession and with views published by members of the HFE community over the past 30 years. For example, Chapanis described HFE input into the development of space flight and computers in the 1950s and 1960s, and mused that by 1990 HFE conference topics had broadened to include decision-making in large-scale systems, designing better interfaces for users, and organizational adaptation to computing systems [7]. In 2005, Karwowski [8] argued that HFE should no longer limit its focus to local human-machine interfaces (for example, how an individual interacts with a single computer) nor simply take a reactionary approach to technology developed by others (for example, only providing post-manufacture critique of design). He challenged the HFE profession to have greater interactions with other professions, such as designers and managers, in order to gain their perspectives of modern technology [8]. In 2012, Dul and co-authors [5] described some of the opportunities for HFE specialists to contribute to the design of new types of work systems; for example, virtual systems where collaboration and communication is via technology. More recently, there has been discussion about the role of HFE in the development and use of autonomous vehicles, and whether HFE is in 'catch-up mode' because this technology has already been developed largely without HFE input [9, 10]. Waterson argued that there are examples of successful implementation of complex technologies within healthcare and that instead of focussing on the disadvantages of new technologies, the HFE profession should focus on positive aspects of technology and automation in order to facilitate better collaborative relationships with other professions and disciplines [11].

Debate about the impact of technological advances in modern society is not confined to HFE circles, but has also been discussed at government levels in Australia [12] and New Zealand [13]. For example, the New Zealand Government's terms of reference [13] ask:

> "*What are the current and likely future impacts of technological change and disruption on the future of work, the workforce, labour markets, productivity and wellbeing? How can the Government better position New Zealand and New Zealanders to take advantage of innovation and technological change in terms of productivity, labour-market participation and the nature of work?*"

There is a clear opportunity for the HFE profession to contribute to these discussions since the questions asked by government are at the core of HFE practice. However, the HFE profession in Australia and New Zealand are not generally consulted for such matters. It is beyond the remit of this paper to problem-solve the issues raised by the SCC during the EFW@IEA2018 workshop, but it is worth noting that possible reasons for the lack of HFE representation at high-level government discussions could be related to HFE communication strategies with stakeholders, and small numbers of HFE professionals in Australia and New Zealand. Both of these issues will be discussed in the following sections. There are also arguments (such as those put forward by Thatcher and co-authors in their article discussing ergonomics and global issues [14]) that although the scope of HFE practice includes analysis of complex and dynamic systems, the research supporting it has been "*weak, largely theoretical and uncoordinated*" and that ergonomists (internationally) are rarely trained to apply the concepts "*to systems larger than a single organisation.*" [14]. This is not to say

that there are no HFE professionals engaged in this type of work. Rather, the HFE profession, as a whole, is not seen as actively working at a broader (macro) level within the emerging technology arena.

The application of emerging technologies creates a niche for HFE professionals. Although there are estimates that 40% of current jobs will be replaced by automation within 10 to 15 years [15], there are predictions that it will be a core requirement for emerging workers to have non-technical skills such creative problem solving, communication skills, and an ability to manage information [15, 16]. HFE professionals typically use these skills to perform their work, and non-technical skills was discussed during the EFW@2018 workshop in the context of training curricula for future HFE professionals. Previous IEA President Ilkka Kourinka's vision for the HFE profession in 1990 appears to be uncannily pertinent today:

> "*Ergonomists will become systems specialists who can give advice on how to master and control technical and organizational change. Mastering the change is an integral part of systems ergonomics, and if correctly understood and implemented, it can give new prestige to ergonomics and ergonomists.* " [17].

3.2. Communication

3.2.1. External communication

SCC participants perceived communication with external stakeholders as a promising opportunity for research and development in HFE, and essential for making HFE practice operational in the field. Challenges with communication have vexed the international HFE community for many decades. For example, some authors have described how the profession has historically had difficulty defining what a HFE practitioner does [18]. Consequently, HFE is not clearly understood by those in business who may require the services of HFE practitioners [19], or HFE may be perceived as only related to musculoskeletal issues [19]. Such is the HFE community's interest in the need for better communication with stakeholders about the HFE profession that in 1989, the Ergonomics Society of the Netherlands and the Ergonomics Group of the University of Twente convened a conference on the topic "Marketing Ergonomics" [18], from which 59 papers were published within three volumes of the journal *Ergonomics* in 1990. More recently, Dul and co-authors identified a pressing need for the HFE profession to communicate with all stakeholders (not only system actors such as employees and product users), build partnerships with them, and educate them so that they are aware of the scope of HFE and its value to business [5]. A recurring message throughout these publications is that the HFE community needs to develop case studies that provide practical examples of what a HFE practitioner does, and learn how to present the value of HFE to the business community using relevant language; for example, in terms of a cost-benefit analysis (for example; [5, 18, 20, 21].

In this historical context, it is unsurprising that the SCC identified the communication of HFE to external stakeholders as a priority action item. The perceived need for marketing materials and a higher profile among business stakeholders is an unresolved issue in Australia (a similar conclusion was reached by participants in a conference workshop in 2012 [6]) and also voiced as a need by the New Zealand participants in the current study. Discussion during the workshop also centred around developing marketing skills to effectively communicate the HFE message, with the suggestion that this task may be beyond the scope and capacity of a volunteer organisation such as the IEA and its Federated Societies. This sentiment was expressed by Catteral and Galer [22] who observed that ergonomists may not have the skill set to effectively market the profession and should set aside a budget for a professional marketing strategy; and by Dul and co-authors [5] who ventured that there may be a need for the IEA to reconsider its own organisation and to allocate sufficient resources for strategic projects.

3.2.2. Communication within the profession

A second communication topic raised by SCC participants was more inward-focussed: how can communication be improved between HFE researchers and practitioners so that HFE research has more relevance to practitioners and can be can be translated into practice? This concern has also been a discussion topic in HFE circles in Australia and internationally over several decades. For example, Howie and co-authors lament how it is difficult for practitioners in consultancies to communicate their work in scientific journals because they don't have the same opportunities as researchers for follow-up or for longitudinal studies [23], Koch expresses concern about the difficulties getting practitioners to read and integrate research findings into their practice and suggests that research could be made more relevant to practitioners

if researchers were to partner with practitioners [24], while Caple describes strategies that were explored by the IEA during his tenure as International President from 2006–2009 to transition research findings into practice [19].

The perception of less-than-ideal communication between researchers and practitioners is contrary to the work of Chung and Williamson which shows the research-practice gap within HFE actually decreased between 1960 and 2010, there was an increase in applied research published in three ergonomics journals (Ergonomics, Applied Ergonomics and Human Factors), and there was an increase the number of collaborative authorships between researchers and industry [25]. It is unclear why there is a disparity between the views of the SCC participants (which included both researchers and practitioners) and the evidence published by Chung and Williamson. This warrants further exploration, particularly since it has implications for maintaining high quality standards within professional practice, which in turn has implications for developing and promoting the HFE discipline and profession [5].

3.3. HFE education

There were two concerns raised by the SCC which relate to HFE education: (1) How can quality HFE education be provided to HFE professionals so they can provide sound advice? and (2) How can HFE education be integrated into other professional disciplines?

The first concern stems from the fact that over the past decade some HFE courses have closed in Australia and New Zealand and there are small numbers of qualified HFE practitioners, some of whom are now approaching retirement age. The HFE profession is also not regulated in Australia and New Zealand, which means that any person can call themselves an ergonomist. This creates a risk for the profession: if there are insufficient numbers of qualified practitioners, then untrained people may provide HFE services to fill the void. If untrained people do not have a solid understanding of HFE principles and subsequently provide incorrect advice, then this can reflect poorly on the HFE profession. Similar sentiments were expressed by Wilson in his paper reflecting on the HFE profession in 2012 [26]. Paradoxically, these supply-demand imbalances could be exacerbated if HFE marketing efforts (as described in section 3.2) are successful.

Human factors and ergonomics courses have closed for a variety of reasons, including the fact that HFE programs are generally small compared to other programs offered by universities [26], university budgetary constraints [26, 27] and a poor appreciation by key university stakeholders as to the value of a multidisciplinary program such as HFE [27]. In New Zealand where the population is relatively small, Legg and Stedmon propose that HFE teaching could be incorporated into multiple teaching programs and then allow students the opportunity to gain qualifications through a single cross-university national masters degree [27]. Other strategies that were discussed by the SCC include accessing HFE education through online courses based locally or overseas. One example presented as a paper at the IEA2018 congress is the development of a human factors Masters course in aviation based in the UK but which can be undertaken by students anywhere in the world [28].

To mitigate the issue of non-qualified practitioners providing HFE advice, the IEA promotes the development of certification programs, whereby individual federated societies may develop and implement certification programs for their members, and upon application to the IEA, have the program endorsed by the IEA [29]. Although certification does not prevent unqualified people practicing HFE, it does confirm an individual's competence to practice HFE and give the individual permission to call themselves a Certified Professional Ergonomist (Australia) or a Certified New Zealand Human Factors Professional/Ergonomist. These certification programs include a requirement for HFE education.

The issue of education and certification is not unique to HFE, but has also been described by the occupational health and safety profession in Australia [30]. In New Zealand, an umbrella health and safety association was established in 2014 (Health and Safety Association of New Zealand (HASANZ)) [31] to raise professional standards of practice across all health and safety disciplines with the goal of reducing workplace harm and fatalities. Anecdotal reports indicate that this is creating stronger recognition of the value of HFE, stimulating business demand for skilled and certified HFE professionals, driving HFESNZ members to seek Professional Membership and creating new interest in HFE education. In Australia a similar umbrella organisation known as Australian Associations of Safety and Health Professionals (ASHPA) has been in place since 2012. The HFESA is a member of this organisation, along

with the safety and occupational hygiene associations. Two of the key strategies identified by ASHPA include improving professionalism and engaging with stakeholders. It is of note that this organisation has no funding from government or other external bodies and that this has been identified as a barrier to progress.

The second concern raised by the SCC was how to integrate HFE education into other professional disciplines. This appears to be at odds with the first concern, and raises the question: should HFE only be practiced by those trained to do so, or should HFE be embedded within society as a philosophy and practiced by everyone in all disciplines?

This conundrum is not new, and was flagged as an issue by Bullock (an Australian academic) in her article about harmonizing professional standards in ergonomics [32]. In the article, Bullock points out that in the early days of the HFE profession (1930s to the 1950s) graduates interested in "humanising technology" and who had an "orientation to ergonomics" "*saw themselves as contributing to ergonomics.*" [32]. Similarly, Kuorinka observed that there are more professionals from other disciplines who incorporate ergonomics into their work than there are professional ergonomists and that many of these "non-ergonomists" produce good work which could withstand professional scrutiny [17].

Actively integrating HFE into other university disciplines requires acknowledgement by key stakeholders of HFE's strategic value; this is in a climate where curricula may be already congested and cross-disciplinary university collaborations may be difficult to facilitate [33]. Nevertheless, this challenge is not insurmountable. In Australia and New Zealand ergonomics education is a component within numerous engineering, design and safety undergraduate courses. In some professions, such as optometry, it is a core competency for registered optometry practice in Australia [34]. To that end, there have been efforts within Australia for joint professional development between the HFE community and optometrists to share ergonomics best-practice knowledge and to foster better working relationships between the two professions [35].

3.4. Limitations

There are two chief limitations of this work. Firstly, it only represents the opinions of those who attended the IEA2018 workshop. If the broader HFE communities in Australia and New Zealand had been surveyed, then it is possible that other issues and topics may have been raised. On the other hand, the president/chair of the HFESA and HFESNZ both contributed to the discussions and it could be assumed that they would be aware of the main issues facing members within their respective countries.

The second limitation is that it only presents the perspective of the HFE community, not that of external stakeholders who may potentially access HFE services. A user perspective of HFE services is beyond the scope of this paper, but is essential for helping the HFE profession understand what business wants and needs from the profession. Future research is required to understand the opinion of stakeholders, and this knowledge could help address the HFE profile and education issues raised in this paper.

4. Conclusion

The SCC response to the Ergonomics and the Future World committee represents the views of a group of Australian and New Zealand HFE academics and practitioners. These views and opinions are similar to those raised at local discussions in Australia and New Zealand over the past decades, and mirror comments and opinions published by Australian and international authors within the HFE profession. As Wilson observed in his paper, many issues for the HFE profession and the IEA are recurring issues [26].

The workshop outcomes documented in this paper may be used by the HFESA/HFESNZ as a platform for developing practical and strategic directions for the HFE discipline in Australia and New Zealand. The outcomes, as framed in this paper within a historical context, could also be potentially valuable to the HFE community and provide direction for future discussion of these recurring issues.

An unexpected, but welcome, outcome of participating in the EFW@IEA2018 workshop has been the opportunity for Australian and New Zealand HFE professionals to meet, discuss their views, and discover that the two societies have much in common. This presents an opportunity to foster closer working relationships between the HFESA and HFESNZ, and assist in the promotion of the HFE discipline in the Southern Cross region.

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Conflict of interest

None to report.

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