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## Apprenticeships and ‘future work’: Are we ready?

### Abstract

The paper evaluates the readiness of apprenticeship systems to cope with five major developments affecting the future of work. The institution of apprenticeship has evolved over time in all countries, gradually adapting to changes in industrial processes, the economy, the labour market and education systems. This paper suggests, however, that recent changes in the economy and the labour market, and their concomitant effects on the likely future of work, have the potential to disrupt apprenticeship systems quite radically worldwide, and/or to make them less relevant in the 21<sup>st</sup> century. The paper draws on data from recent Australian and international research projects undertaken by the author, as well as the author’s engagement in Australian government exercises to discuss the future of apprenticeships. The research found that adaptations of systems and processes were being undertaken at company level and by stakeholders such as trade union or employer peak bodies. They were less frequently apparent, however, in government policy. The paper analyses the data to produce a framework of readiness for ‘future work’, but also queries whether adaptation of apprenticeship systems is necessarily desirable in all instances. While the presence of multiple stakeholders in the system has previously been viewed as a strength of the system, it can also make even minor changes difficult to implement. This could prove to be a major impediment to apprenticeship’s future or could be a means of preserving its essential features.

### Introduction

This paper provides an initial analysis of the capability of apprenticeships to adapt to five new challenges in industry and in the labour market. The paper is based on recent research and other engagement by the author, in Australia and internationally.

In industry, rapid changes to occupations are occurring and will increasingly occur as a result of advanced automation, or what is often referred to as ‘Industry 4.0’. Companies are becoming increasingly global in their operations. In the labour market there has been a long-term shift in employment in most countries from primary and manufacturing industries towards service industries. Migration patterns and new forms of non-standard employment – particularly what is known as the ‘gig economy’ - affect millions of workers.

These five major developments affecting the likely future of work form the basis of the paper. Apprenticeships involve the employment and training of workers, in the context of particular occupations; and generally entail management and oversight by governments. Thus they are likely to be affected more by these new challenges of ‘future work’ than are other forms of employment or of training; and could become an arena for government policy making including regulation as well as the shaping of behaviour by funding. While these five ‘future work’ developments are now being discussed around the world<sup>1</sup> with relation to apprenticeships, there has been little concrete action to date in apprenticeship systems; and yet the developments could be quite disruptive of existing systems.

The paper reports on data from a large international research project on recent developments in apprenticeship in the G20 countries; and from a small-scale project within Australian companies. It

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<sup>1</sup> For example, a 2017 conference organised by the International Labour Organization: ‘Regional Skills Meeting on Skills and the Future of Work: Strategies for an Inclusive Growth in Asia and the Pacific’, October 12-13, Bangkok.

also draws on observations at a series of government-initiated Australian apprenticeship forums, involving the major stakeholders in the apprenticeship system, to which the author was invited as a speaker, panel member and participant. These data sources all date from mid-2017 to mid-2018.

A framework is proposed which outlines the potential of national apprenticeship systems to adapt to the new conditions, using examples of existing initiatives that can assist change; and also identifies the current and potential contributions of employers and governments. Finally the paper poses the question of whether and how far apprenticeship *systems ought to adapt to accommodate* changes which might not necessarily be desirable.

## **Background and literature**

This section examines three issues: apprenticeship as national systems, apprenticeship in Australia; and the developments and practices associated with the term 'future work'.

### **Apprenticeship**

The term 'apprenticeship' can be interpreted in many different ways, but a formal apprenticeship system is generally understood to have the following characteristics (Smith, 2010; Fuller & Unwin 2013):

- A training regime set up by, or with the approval of, governments;
- A combination of off and on the job training;
- The assumption of responsibility by the employer for the development of the apprentice;
- The award of a qualification and/or licence and/or some other recognition that enables an occupation to be practised independently once the apprenticeship is successfully completed and
- A close link to specific occupations.

However, not all countries' systems exhibit these features. The German 'dual' system referring to the inclusion of 'school' or training provider-based learning as well as company learning (Pilz and Li, 2014) is often regarded as the ideal apprenticeship system. In some countries, such as India, however, there is no compulsory off-the-job training, and in other countries, there are large informal apprenticeship systems where there is no formal employment relationship and/or no formal training. The International Labour Organization (ILO) has a large program of work around informal apprenticeships (e.g. ILO, 2011).

The diversity of apprenticeship systems around the world is evidenced in three recent international comparisons: Smith and Brennan Kemmis (2013a), Fazio, Fernández-Coto and Ripani (2016) and Chankseliani, Keep and Wilde (2017). Nine countries were included in two or more of these studies: Australia, Canada, France, Germany, India, South Africa, Turkey, the UK and USA. (Indonesia and Brazil were each only covered in one of the studies).

Diversity is the key feature in the three studies. Smith and Brennan Kemmis's study (2013a) of eleven countries details variability across a number of factors: the presence of a job; the size of the system relative to the working population; whether apprenticeships are open to adults as well as young people; and the policy focus on apprenticeship. They also note the presence of informal apprenticeships in some countries, in both the formal and the informal economy. Fazio et al (2016) report that one or more of the following 'core' features of apprenticeships is lacking in each of the

six Latin American countries that they studied: a job, structured training, off the job training, formal assessment of apprentices' competency. Chankseliani et al (2017), in eight countries, find diversity in financing and learning arrangements as well as in the structural features of the system. Given this diversity in apprenticeships, the responses of apprenticeship systems to the challenges of 'future work' cannot be expected to display a great deal of uniformity.

Apprenticeships are also expected to fulfil multiple functions, and the functions of systems in different countries are inevitably linked to their different nature. Smith (2010) states that the functions of apprenticeships include (but are not limited to) the following: a passage to adulthood for young people, a means of industry and national skill formation, and a means of developing occupational identity in a trade. Naturally, apprenticeship systems are not solely responsible for these functions. Chankseliani et al (2017), for example, warn that apprenticeship cannot necessarily be seen as a panacea for skill formation issues within countries, but nevertheless point out that countries with large and effective apprenticeship systems usually have fewer problems with youth unemployment.

Apprenticeship systems have evolved over time in all countries depending on national priorities and concerns at different times. Change generally occurs through gradual adaptation. The stakeholders at system level are usually regarded as the tripartite 'social partners': government, trade unions and employers. Because of the need to reach agreement amongst a range of stakeholders, systems can be quite conservative and tend to be rule-bound, as exemplified in the Indian system prior to recent reforms (Smith and Brennan Kemmis 2013b).

While apprenticeships perform many useful functions, there is also a darker side; they may be used by interest groups as a means of restricting entry to occupations. In the past, access to apprenticeship as a system of training has been denied to certain groups in some countries. For example Wedekind (2013) notes that black people were not allowed to undertake apprenticeships under apartheid in South Africa. It has also been pointed out by many commentators (e.g. Cockburn, 1981) that there are gender issues; in some countries apprenticeships are confined to a small number of 'trades', and by the nature of those occupations involved, apprenticeships have been available mainly to men.

Quality in apprenticeship is also a concern. Lucas and Spencer (2014) remind us that quality in apprenticeship should primarily relate to the nature and extent of learning, both on and off the job, but this can be forgotten in policy debates, which tend to focus on system-level issues. Concerns seem to be particularly evident when apprenticeship systems are being expanded rapidly, a reasonable concern at such times because new employers and/or new training providers without experience are likely to become involved (Smith and Brennan Kemmis, 2013b). More generally, apprenticeships outside traditional trades are often believed to be of lower quality than those of the pre-expansion period, and there is frequent reference, in this context, in the U.K. for example; where the phrase 'diluting the brand' is used in this respect (Lucas & Spencer, 2014). There are often concerns that apprentices are used as 'cheap labour' as they are generally paid at lower rates than ordinary workers, or not paid at all; this has been a longstanding concern and is a central issue, for example, for trade unions in countries where apprentices receive stipends only (e.g. Smith, 2017). It is generally considered acceptable to trade off lower wages for good training, but not acceptable where the employment or training conditions are of poor quality. The International Labour Organization (2017) has a current campaign on 'quality apprenticeships'; however many of the features in its definition of a 'quality apprenticeship' includes aspects that are not part of systems in

many countries – for example, social protection coverage, formal assessment, both on and off the job learning, and a qualification. Therefore the ILO definition<sup>2</sup> should be seen as aspirational rather than descriptive.

### **Apprenticeship in Australia**

A brief overview of the Australian apprenticeship system follows, since part of this paper reports on Australian research. The Australian apprenticeship system has traditionally been viewed as strong, both in terms of its governance structures and, until recent years, the numbers of workers and employers involved. It utilises a traditional ‘dual’ system of apprenticeship, including both workplace and institution-based training, with a few exceptions. As an advanced economy and a migrant nation, Australia is subject to the five features of ‘future work’. For all of these reasons, it is a suitable case study to examine readiness to adapt apprenticeships.

The formal apprenticeship system in Australia was established soon after the Second World War. Apprenticeship always involves the attainment of a qualification; and is often linked, via the industrial relations system, to pay rates. The system was originally confined to a defined number of craft and manufacturing occupations, mainly undertaken by male manual workers and remained relatively static until the mid-1980s, when ‘traineeships’ were introduced (Knight, 2012). Traineeships expanded apprentice-like arrangements into many occupational areas that had not previously supported the ‘dual’ system of training in Australia, such as retail, tourism, I.T. and hospitality. Traineeships tend to be shorter than traditional apprenticeships, typically one to two years, and are often in industry areas which have not previously had accredited training (Smith, Comyn, Brennan Kemmis and Smith, 2009). In 1997 the traditional apprenticeship and the traineeship systems were brought together into one system, **but retaining their distinctive features in terms of contract length and differentiated occupations**. There has been some controversy around the provision of government funding to traineeships as well as traditional apprenticeships, particularly financial incentives to employers; Schofield (2000) found problems with misuse of incentives leading to quality issues in the early days, which some argue have never been resolved.

At the height of the Australian apprenticeship system, in 2011, there were approaching half a million (449,000) apprentices and trainees in training in Australia (National Centre for Vocational Education Research [NCVER], 2012) with annual commencements running at around 300,000. This constituted 3.7% of the working age population, proportionately on a par with the German system. However, funding cuts since 2012 led to a rapid decline, primarily in traineeships rather than traditional apprenticeships. The funding cuts related both to financial incentives for employers (a national responsibility) and to the hourly rates for training (a State government responsibility) (Guthrie and Smith 2015). As the cuts were targeted to certain occupations they affected traineeships far more than traditional apprenticeships. There was a rapid decrease in apprenticeships from 2012-2016,

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<sup>2</sup> ‘Quality Apprenticeships are a unique form of technical vocational education and training, combining on-the-job training and off-the-job learning, which enable learners from all walks of life to acquire the knowledge, skills and competencies required to carry out a specific occupation. They are regulated and financed by laws and collective agreements and policy decisions arising from social dialogue and require a written contract that details the roles and responsibilities of the apprentice and the employer; they also provide the apprentice with remuneration and standard social protection coverage. Following a clearly defined and structured period of training and the successful completion of a formal assessment, apprentices obtain a recognized qualification.’

with commencements overall falling by 50%, and traineeship commencements falling by two-thirds (Cavallero, 2017).

In all apprenticeships and traineeships in Australia, a training provider is responsible for the off-the-job training (which in some cases may be provided entirely at the workplace) and awards the related qualification. As in many other countries, intermediary organisations, partly funded by government, are also involved in apprenticeships and traineeships. These include 'Australian Apprenticeship Support Network' providers (known by other names prior to 2015), which manage the contractual arrangements between employer and apprentice/trainee and also provide support services to employers and apprentices during an apprenticeship. In about 12% of apprenticeships and traineeships, Group Training Organisations (GTOs) are also involved. These act as the actual employer of the apprentice/trainee, with the employer paying a fee to the GTO to cover wages and administrative arrangements (Bush and Smith, 2007). This removes some of the risk of employing an apprentice/trainee, as the latter can be 'returned' to the GTO if unsuitable or in the event of a business downturn.

### **Future work**

This section examines the five features of 'future work' that have been identified for analysis in this paper. These features have been emerging over some time, but are now increasingly identified as a group in publications on vocational education and training (e.g. ILO, 2015). It should be acknowledged that all five features have multiple causes, and that there is considerable contestation about their relative benefits and disadvantages, and their links to broader political and economic trends. For example, divergent views on the links between neoliberalism and globalisation have been propounded for some time (Quiggin, 1999; Kotz, 2002). The accounts of the five features that follow do not take a position on the trends, their causes or their effects, but, rather, simply present the features as current realities which have implications for apprenticeships.

Innovation and industry 4.0: 'Industry 4.0,' or the 'Fourth Industrial Revolution' (Schwab, 2017), has the potential to change many occupations. The term encompasses improved automation, machine-to-machine and human-to-machine communication, artificial intelligence, continued technological improvements and digitalisation in manufacturing', according to the Australian government which has set up an Industry 4.0 taskforce.<sup>3</sup> Industry 4.0 creates new industries and occupations and also involves radical changes to existing occupations. Soo Bong Uh (2016), for example, provides examples of the use of robotics in medicine and retail, as well as manufacturing. Earlier fears of an overall loss of jobs to technology have largely been displaced by understandings of how automation can enhance most occupations and introduce new ones (Soo Bong Uh, 2016). The main consequence is likely to be upskilling in all occupations; a German research project (e.g. Sui-Ping Yuen, 2017, Dreher 2017) has been examining the ways in which human knowledge can be transferred to robots in certain tasks, and the implications for VET for those workers who will program the automation. Loveder (2017), in an early discussion of potential effects on apprenticeships in Australia, describes the need to attract a higher level of applicant to learn rapidly evolving jobs; and the need to revise qualifications to take account of Industry 4.0 changes. Indeed, in Australia, advanced manufacturing is currently a priority area for national qualifications development and hence for apprenticeships.

Globalisation: It has long been a truism that apprenticeships are locally-rooted and culturally specific (e.g. Deissinger, Smith and Pickersgill, 2006) – yet the economy is increasingly globalised. Many workers are employed in companies whose headquarters are in other countries, and hence their

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<sup>3</sup> <https://industry.gov.au/industry/Industry-4-0/Pages/default.aspx>

employers may or may not choose to participate in the apprenticeship systems of the country of operation. As a greater proportion of companies become global in their operations, the interactions of companies with local apprenticeship systems becomes complicated. Pilz and Li (2014) find two different models of apprenticeship for multi-national companies: one where companies adopt local apprenticeship systems ('divergence') and the other where companies implement the German system as far as possible throughout all countries of operation ('convergence'), but note that there has been little research into the topic.

Structural adjustment: Western economies have for some time been adapting to the move to service industries (e.g. Triplett and Bosworth 2004); other economies are 'leapfrogging' manufacturing, moving directly from agriculture to service industries (e.g. International Labour Organization, 2012). The nature of the occupations covered by apprenticeships becomes an important consideration, as in many countries apprenticeships have been more common in traditional trades and craft occupations. With structural adjustment, or for other reasons, new apprenticeships may be created in occupations which previously were not considered as appropriate for apprenticeship. In the UK, which has experienced a rapid expansion of its system, this has been called the 'apprenticization' of occupations (Marsh, 2016). 'Higher level apprenticeships' have been introduced in England up to university degree level (Bentwood and Baker, 2013) and are currently being piloted on a small scale in Australia. Countries vary in their systems for adding new occupations to the list of those which have apprenticeships; some have formal processes and others are quite ad hoc (Smith and Brennan Kemmis, 2013b). In these processes, stakeholders need to consider which occupations are appropriate for apprenticeships, i.e. their 'apprenticeability' (Lerman, Eyster and Chambers, 2009).

Labour movements: As people increasingly move among countries, whether voluntarily or involuntarily, permanently or temporarily, governments have to make decisions about how this affects their apprenticeship systems. Generally there are three issues which affect apprenticeships. Firstly, in occupations where a completed apprenticeship and/or qualification is required in order to practice, some **form of recognition system may be in place for already-trained workers coming from elsewhere, as in assessment services provided by**, for example, Trades Recognition Australia. **Such recognition is designed to allow people to access work as qualified tradesperson.** Secondly, migrants and refugees may or may not be allowed to undertake apprenticeships; because sometimes full citizenship is required to access either training or government funding for training. Thirdly, some countries are net exporters of labour – for example India and the Philippines (Pernia, 2011) - and their systems may choose to include the training of people through apprenticeships to work in other countries.

New forms of employment and self-employment: The so-called 'gig economy' has led to a rapid increase in western countries of the proportion of people being self-employed, or as Gershon (2017) puts it, the 'worker as business'. This could be characterised as a new informalisation of the economy in developed countries; and is already have a profound effect on the labour market, with, for example, a reported 12% of Swedish workers working in the gig economy and five million UK workers involved in some form of digital-platform based working (Howcroft and Bergvall-Kareborn, 2018).

While the importance and eventual impact of the 'gig economy' is contested (e.g. Healy, Nicholson and Pekarek, 2017) the implications for apprenticeships are undeniable, as all apprenticeship systems currently involve an arrangement with an employer, whether it is a formal employment contract or other arrangement. Where people are engaged in activities such as Uber driving, or in food delivery for companies such as Deliveroo (Howcroft and Bergvall-Kareborn, 2018), there is no

employer as such; individuals operate as sole businesses or contractors, although they may be responsible to a web-based platform. Another matter of relevance is that non-standard forms of employment in general are likely to have a disproportionate effect upon young people (ILO, 2016); while young people are commonly seen as major beneficiaries of apprenticeship systems and policies.

## Research method

The paper draws on three major sources of data. The first two are research projects on apprenticeship – one international and one Australian - managed and undertaken by the author; and the third consists of some outcomes from invitation-only consultations arranged by the Australian government, in which the author was engaged in various capacities. The research question for this paper is 'How far, and in what ways, are apprenticeships adapting, and could they adapt, in order to address the future nature of work?'

The first research project consisted of analysis of responses to a 2017-18 survey of the tripartite partners in the G20 countries<sup>4</sup>. The G20 consists of the world's largest economies and includes developing as well as developed economies. A survey was sent to the relevant government department, the major trade union body, and the main employer peak body, in each of the 19 G20 countries<sup>5</sup>, to chart progress against the Ten Actions in the G20 countries' *Initiative to Promote Quality Apprenticeship*<sup>6</sup>. The initiative grew from a Declaration by the G20 Labour and Employment Ministers, at their Beijing meeting in July 2016: *Innovation and Inclusive Growth: Decent Work, Enhanced Employability and Adequate Job Opportunities*. The survey was devised and distributed by the International Labour Organization, and the responses were analysed by the author and colleagues

Three types of respondent were surveyed: governments, employer peak bodies and trade union peak bodies. Governments were provided with one type of survey, based around the Ten Actions; the surveys for employer and trade unions bodies were similar to each other and were based around five themes: awareness raising; social dialogue roles and responsibilities of the social partners; financing apprenticeships; and inclusiveness. One response was requested from each category of respondent. Overall there was almost a 72% response rate from the 19 countries in the G20, with the lowest response rate being from employer peak bodies. While this project did not focus on 'future work', nonetheless relevant data emerged in the responses, and were tabulated under the five aspects of future work that are the topic of this paper. The data from the survey reported in the paper, however, are confined to responses mentioned in the final report (Smith, Tuck and Chatani, 2018), at the request of the funding body.

The second research project consists of case studies of six companies employing apprentices (and in one instance, trainees) in the State of Victoria in Australia. These case studies were undertaken in 2018 as part of an international project 'Tools for quality apprenticeships' also funded by the International Labour Organization. The case studies were selected to cover a range of industry

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<sup>4</sup> This project was managed and funded by the International Labour Organization, with the assistance of the JP Morgan Chase Foundation.

<sup>5</sup> The other G20 member is the European Union, which was not involved in the survey as an entity.

<sup>6</sup> The Ten Actions (abbreviated) are: Establish national goals to expand and improve apprenticeships; Raise quality of apprenticeships; Provide apprenticeships across the economy; Foster employer engagement; Safeguard worker rights and health; Raise awareness of apprenticeships; Improve access for disadvantaged people; Strengthen partnerships between employers and training providers; Upgrade and facilitate inclusion of informal apprenticeships into the formal economy; Expand apprenticeships globally. See Annex 3 at <http://www.g20.utoronto.ca/2016/160713-labour.html>



areas, and different sizes of employers. Ethics committee approval was gained, interviews were undertaken with senior managers responsible for apprenticeships, and in two cases tours of the workplace were provided. Interviews were taped and transcribed with permission, and follow-up conversations were undertaken by phone and email; documents relating to the management of apprentices were requested and analysed. The focus of the case studies was on ways in which apprentices were managed, not on 'future work'; however companies' practices provided insights into their current adaptation to some aspects of 'future work' and/or their potential adaptability to 'future work'. These aspects of the case studies were analysed against the five themes of this paper.

**Table 1. Australian case studies 2018**

<b>Company name (Pseudonym)</b>	<b>Industry sector</b>	<b>Company size and location</b>	<b>Apprenticed occupations</b>	<b>Qualifications gained by apprentices</b>
Heavy Metal Co	Metal fabrication	Medium (130) <i>Small town</i>	Welder	Certificate III in Engineering (Fabrication)
Pizza-Pasta Restaurant Co	Hospitality	Medium (100) <i>Regional city</i>	Chef	Certificate III in Commercial Cookery
Metropolitan Landscaping	Horticulture	Medium (70) <i>Melbourne – State capital of Victoria</i>	Landscape gardener	Certificate III in Horticulture (Landscape; and Parks and Gardens)
Regional Health Services	Nursing	Large (45,000) <i>Regional city</i>	'Enrolled' nurse	Diploma of Nursing
High End Plumbing Co	Plumbing	Small (8) <i>Regional city</i>	Plumber	Certificate III in Plumbing
Comprehensive Group Training	Group Training Organisation – apprentice 'labour hire' company	Small in terms of own staff, but employing 120 apprentices and trainees via host employers. <i>Regional city</i>	Various	Various

Note: The Regional Health Services case study was a traineeship, not an apprenticeship.

The third source of data consists of observations from the author's invited participation in a number of events held at national (Federal) and State level as part of work to reshape Australia's apprenticeship system, undertaken between late 2016 and mid-2018. Apprenticeship systems in most countries include two or even three tiers of government (Smith, Brennan Kemmis et al, 2013a). Australia is no exception, with the federal government responsible for national policy, oversight of the system, and incentives for employers, and States having responsibility for 'declaring' apprenticeships (i.e. deeming occupations suitable for apprenticeships) in their States, registering apprentices' contracts and funding training providers.

A national stakeholder forum on 'The future of Australian apprenticeships'; and a series of five national forums 'Apprenticeships Post 2020' were convened by the Australian government's Department of Education and Training. The first, stand-alone, national forum in 2016 included around 80 national stakeholders in the apprenticeship system, including national and State

government officials, industry representatives and a small number of researchers. Three ‘essays’ were written to prompt discussions; and a publicly-available report was produced as a record of the event (Couldrey and Loveder, 2017), including these papers as appendices. The series of five forums in 2017-2018, each attended by 40-60 people and held in different States, was managed by a consultancy firm on behalf of the Australian government. These forums included a greater proportion of staff involved in operational aspects of the apprenticeship system, including the intermediary organisations described earlier in this paper. The author was the only researcher invited to these five events, and was a speaker or panel member at three of them. A background paper (Phillips KPA 2017) was written for the first forum and a draft report (PhillipsKPA 2018) was produced for the final forum, and distributed before that event. In addition, the State of Victoria’s Department of Education and Training held a series of expert workshops on ‘Extending the apprenticeship and traineeship system’ in late 2017; the author was invited to one stream of three workshops in this activity. Participation in these federal and State events provide the author with a unique opportunity to observe both the issues which the respective governments wished to be discussed, and the viewpoints and concerns of the organisations involved in the on-the-ground operation of the system.

For this paper, empirical data from the two research projects and the authors’ notes and published papers from the forums and workshops were analysed for evidence of awareness of, adaptations to, and potential adaptations to, the five features of ‘future work’ presented in this paper.

## Findings

In this section, the findings from each source of data are presented. The findings show a relative neglect of the five major developments at policy level; but more positively they indicate the potential of individual workplaces to attend to and incorporate necessary changes.

### G20 survey

The international discussion is based on analysis of data from the survey of the 19 G20<sup>7</sup> countries in 2017, including responses from governments, employer associations, and trade union peak bodies. As noted earlier, the G20 established Ten Actions to promote Quality Apprenticeships in 2016 (G20 Leaders’ Hangzhou Summit Communique 2016, Item 40<sup>8</sup>). Governments were asked specifically about their activity around the Ten Actions. The other social partners were asked questions around five themes which were, as listed previously: awareness raising; social dialogue; roles and responsibilities; financing quality apprenticeships; and inclusiveness.

Table 2 below shows the Ten Actions and the **proportion** of countries involved in activity around each. The descriptions of the Actions are abbreviated, and the full wording is available at the web link provided.

**Table 2: Activity by governments for each of the ten Actions for quality apprenticeships**

	G20 ten agreed actions on quality apprenticeships (abbreviated titles)	Numbers of governments with high activity or detailed plans
1	Establish national goals to expand and improve apprenticeships	High
2	Raise quality of apprenticeships	Medium to high
3	Provide apprenticeships across the economy	Medium

<sup>7</sup> As noted earlier, the EU is one of the G20 ‘countries’ and was not invited to respond as an entity.

<sup>8</sup> [http://www.g20chn.org/English/Dynamic/201609/t20160906\\_3396.html](http://www.g20chn.org/English/Dynamic/201609/t20160906_3396.html)

4	Foster employer engagement	High
5	Safeguard worker rights and health	Medium to high
6	Raise awareness of apprenticeships	High
7	Improve access for disadvantaged people	Medium to high
8	Strengthen partnerships between employers and training providers	Medium to high
9	Upgrade and facilitate inclusion of informal apprenticeships into the formal economy	Medium amongst countries concerned
10	Expand apprenticeships globally	Medium

An significant matter to note is that apart from Action 10 (i.e. globalisation), aspects of ‘future work’ are not specifically addressed in the Ten Actions about which responses were sought. This represents a finding in itself: that the G20 countries were not considering how apprenticeships could adapt to future work. As the Actions were agreed in 2016 this is perhaps not surprising, since they have gained in prominence very recently. It could also be viewed, however, as an example of the innate conservatism of those involved in managing and negotiating apprenticeship systems and the inertia built into systems. The survey did ask about emerging sectors (Action 3), which has some relevance for Industry 4.0; but, of course, all industry sectors now involve or will involve automation. Action 1 included specific questions about higher apprenticeships, which are likely to address future work needs, particularly related to Industry 4.0; and Action 9 has implications for, but no direct link to, the ‘gig’ economy. The surveys for employer and trade union bodies were organised around themes rather than the Ten Actions, and were even less aligned to aspects of ‘future work’.

Some respondents, however, explicitly mentioned ‘future work’ matters when answering other questions. These were analysed and the findings are now discussed using the five features of ‘future work’ discussed earlier in this paper.

Industry 4.0: Specifically, Italy alone reported a specific ‘Industry 4.0 strategy which aimed at apprenticeships in technology and digitization. This did not mean that other governments did not have such strategies, but the questions they were asked did not invite comments about such matters. More generally, nearly 90% of governments had higher apprenticeships in place or were planning to do so, which would be likely to expedite worker and company engagement with Industry 4.0. The UK government, for example, said

*Employers are designing new apprenticeship standards to meet their skills needs. Apprenticeships are currently available at intermediate to post-graduate level – National Qualification Framework Level 2 to 7.*

Additionally, the high level of activity around Action 1 (expansion of systems) and the admittedly only medium level of activity around Action 3 (provision of apprenticeships across the economy) indicates that systems would be able to cope with apprenticeships for new or radically redefined occupations that might emerged with Industry 4.0

Globalisation: The responses to Action 10 indicated that countries co-operated in a number of forums and initiatives, for example the Global Apprenticeship Network of employers. Some countries had bilateral co-operations on apprenticeship. The German GOVET agency is very active in co-operation between overseas companies and bodies and the German dual system. However as there were no questions specifically around the treatment of apprenticeships in international companies within each country, no general conclusions could be drawn and this remains a matter for future investigation.

Structural adjustment: While no responses specifically referred to structural adjustment, many responses indicated the potential to deal readily with changes in the make-up of the economy. Some

countries had very comprehensive occupational coverage – e.g. Germany with 326 occupations. Germany and Canada both reported that they had systems for adding new occupations. Most countries reported some form of Sectoral Skills Councils. The eligible ‘trailblazer’ system in the UK enables new apprenticeships to be created quickly.

Labour movements: When asked about their arrangements under Action 7, improving access for disadvantaged people, several responses mentioned having programs for migrants and refugees. For example, Germany reported a system of ‘welcome mentors’ to encourage employers to take on refugees as apprentices, and a new funding program for refugees, asylum seekers and migrants. Mexico reported special provisions for ‘Dreamers’, those returning from the US where they had been ‘undocumented’ child migrants. In South Africa, the trade unions were campaigning for improvements to policies on apprenticeships for migrants.

‘Gig economy: Again while there was no specific mention of the ‘gig’ economy as there were no questions on this topic. However, those countries with informal apprenticeship systems (Action 9) were already addressing issues which may increasingly emerge in developed countries where the gig economy is informalising the economy. Systems for incorporating informal apprenticeships included credit arrangements into apprenticeship training (India), certification of informal apprentices (Argentina and Mexico), and assistance to small enterprises to develop their workers (Japan). The trade union movement in Indonesia was very active in incorporating informal workers into the formal economy. Other factors mentioned in responses to other questions also indicate the potential for future actions around the gig economy. For example, different forms of legal arrangements were reported in different countries; some countries provided employment contracts only and some provided training contracts only. **As gig workers are not employed, the latter arrangements would not exclude such ‘workers’.** Most countries reported complex funding systems for employers of apprentices, and a smaller number for apprentices themselves, which could potentially be extended to different forms of employment. Argentina reported a particularly flexible system, where, for example, co-operatives are eligible for funding.

Overall then, the evidence gained from the surveys indicated that in some respects countries are already starting to take actions that may be useful in responding to the implications arising from ‘future work’ scenarios, **with the possibility that with more specifically targeted questions more data would have been obtained.** The paper now moves on to consider evidence derived from case studies conducted in Australia.

### Australian company case studies

As noted earlier, ‘future work’ was not a focus of the company case studies, which were carried out according to an interview protocol laid down by the funding body. Nevertheless, once again practices emerged from the case study visits and interviews which made it clear that companies were anticipating the demands of ‘future work’. The discussion below provides an example from each of the six case studies.

The Heavy Metal fabrication works produced very large items of agricultural machinery, and also wood-burning heaters. The company had previously had difficulty recruiting and maintaining a workforce but then began to reconfigure its apprentice workforce and program. The production methods had been increasingly automated and design processes were digital. Training processes also incorporated new technology, with the use of welding simulators. The company now attracted would-be apprentices by showing them these aspects of the business during an annual ‘Boot Camp’

where would-be apprentices worked for two days on-site and attended the local Technical and Further Education (TAFE), the public VET provider, for three days, working closely with the welding teacher at TAFE. Once recruited, the apprentices moved well beyond the requirements of the welding qualification in the work that they performed, typically programming presses and managing robot welders, and the better apprentices also worked in the 'research and design' area where products designed by the engineers were constructed and trialled. While operating within the traditional apprenticeship system, the company had extended it in a way that would readily incorporate further aspects of 'Industry 4.0'.

The Pizza-Pasta restaurant company had a history of recruiting people arriving from other parts of Australia and the world, for example 'backpackers', a common form of itinerant young worker from overseas on a temporary working visa. Many of its front-of-house staff and sous-chefs were recruited from elsewhere and had begun work on a casual part-time basis, eventually in some cases moving on to become apprentice chefs. Some workers left and then returned. The practice of recruiting 'walk-in applicants' who seemed promising allowed overseas workers, and also internal migrants within Australia, to find rewarding work leading to permanent employment via apprenticeships.

Metropolitan Landscaping also recruited workers from overseas. On a fairly regular basis, people came from other countries to work in the company for periods of time as it had an international reputation; the company, for example, exhibited at the Chelsea Flower Show in London. While these visiting staff did not become apprentices, they widened the outlook of the apprentices and by bringing in overseas design concepts into the company, globalised its outlook.

Regional Health Services had adopted an innovative traineeship program for its 'enrolled nurses'. Enrolled nurses have VET-sector Diplomas and are at a lower level than 'registered nurse' who must have a university degree. The Diploma qualification is usually delivered off the job full-time, but Regional Health was dissatisfied with the graduates from the local TAFE course, and also had constant nurse shortages. A number of regulatory and industrial relations obstacles were overcome by Regional Health Services to enable the nursing Diploma to be offered as a traineeship, allowing the health service to have more control over the training. As a traineeship, a wider pool of applicants was attracted, including older people and new migrants who could not have afforded to be without an income while training full-time at TAFE. This is an example of an employer extending the apprenticeship system to an occupation that was not generally covered by the apprenticeship system, and also offering an apprenticeship at higher level.

The High End Plumbing Company worked mainly on new construction, generally government and commercial buildings. Due primarily to immigration, the population locally was increasing rapidly, leading to an increased demand for High End's services; moreover, the population in Melbourne, 120km away, was also growing even more rapidly, leading to constant leaching of local plumbers to the State capital. The company was expanding rapidly and needed to take on apprentices but with minimum risk. For this reason it recruited its apprentices via a Group Training Organisation. The manager knew he was able to return apprentices to the Group Training Organisation if they were not suitable for the company, so that he was relieved from the responsibility of employing an under-performing apprentice.

Comprehensive Group Training provided its services to smaller businesses but also to a small number of major client businesses. The company serviced traditional apprenticed trades and also service industries including healthcare, the most rapidly expanding industry area in Australia. It employed 120 apprentices and trainees currently placed with host employers, with (at that time) 60

additional would-be apprentices and trainees for whom it was seeking employers. Support services were provided for all apprentices and trainees, as well as employers, and there was a heavy focus on disadvantaged people. Each apprentice and trainee was allocated to a Field Officer. In an increasingly regulated environment, the organisation assisted employers in meeting requirements such as workplace health and safety matters. Comprehensive Group Training also liaised with the training providers on behalf of the employers. These two case studies – High End Plumbing and its partner Group Training - together provide an example of a current structure that is potentially able to deal with non-standard forms of employment.

#### Australian national and State policy forums

The policy forums in Australia during 2016-18 were mainly focused on current systems in apprenticeships and how they could be improved. An underlying **government** concern was the drop in apprentice numbers described earlier; low completion rates were also a concern. **This section summarises the issues that emerged during discussions, which were mainly focused on the present day and short term future, rather than addressing future changes in work.**

At the 2016 forum, discussions focused on matters of constant concern in Australia: how to attract young people to apprenticeships at a time when higher education participation was increasing; how to set wage rates to attract mature-aged entrants; and how to retain apprentices at a time of high attrition. An exception to this limited focus was one of the background 'essays' (Lilly, 2017) prepared as pre-reading for participants and published in a final report on the forum by a staff member from a peak industry body, AiGroup. This essay discussed the issues arising from 'Industry 4.0' and argued that apprenticeships could contribute to Australia being at the leading edge of industrial developments, 'to be part of' rather than having to 'chase the future' (Lilly, 2017, p. 26). This could be done, the author argued, through higher-level apprenticeships. At that time, AiGroup was currently piloting a Diploma and Associate Degree in Applied technologies in association with the engineering company Siemens and a university. It is noteworthy that while Lilly (ibid) also mentioned the 'gig economy' and working via digital platforms, it was the issue of higher apprenticeships that was picked up in discussions and therefore mentioned in the final report (Couldrey and Loveder, 2017) The forum report (Couldrey and Loveder, ibid) describes resistance among participants to higher apprenticeships, especially those involving university qualifications Neither labour movements nor industrial structural adjustment were discussed at the forum, despite Australia's large migration program and its economic adjustment towards health and service industries.

The series of five forums in 2017-18 also focused on longstanding issues in apprenticeships. While the initial background paper (Phillips KPA, 2017) did mention changes in employment, these were confined to differential growth in industry sectors, greater participation of women, and a greater proportion of professional jobs in the economy. Technological change was mentioned in relation to its potential effects upon the *numbers* of jobs rather than their *nature*. In two of the series of five forums, higher-level apprenticeships were mentioned by participants during discussion; and the final draft report (Phillips KPA, 2018) referenced technological change, this time within the context of access of apprentices to the latest technology, and the need to update the qualifications on which apprenticeships were based.

The report makes it clear that the prevailing assumption at the forums was that apprentices would continue to be in standard employment relationships; although one participant at Forum 5 did raise the issue of Airtasker, an Australian web platform now providing access to a variety of self-employed 'workers' (Swan, 2018), including those traditionally served by apprenticeships. Aside from this, the national forums did not otherwise consider the 'gig economy'. Group Training Organisations were

discussed, but only within the existing parameters of their operation, rather than considering that they might expand to provide services for workers in new forms of employment relationships such as the gig economy.

At the workshops in the State of Victoria, however, participants were explicitly encouraged to imagine a range of different occupations and forms of employment which could lead to new forms of apprenticeships. ‘Gig-based’ work was raised and discussed by participants, with the consensus being that under this scenario, Group Training Organisations (GTOs) could potentially serve as quasi-employers. Higher-level occupations were also examined for their potential to become apprenticeships. At the same time, an official report was being prepared by the Victorian government on apprenticeships (Office of the Victorian Skills Commissioner, 2017) with a focus on improving quality. While the matters discussed in the workshop were not explicitly addressed, importantly, the initiatives that were announced were inclusive of traineeships as well as traditional apprenticeships, which will enable the system’s extension to occupations not yet served by the apprenticeship system, in line with several of the points raised here.

These sets of workshops indicate that where stakeholders in apprenticeship systems are explicitly encouraged to consider matters of ‘future work’ they will do so, but left without such explicit direction, new thinking is less likely to emerge.

## Analysis

While in the projects and activities reported here, there was little reporting of specific initiatives, there were many existing features that indicated that ‘future work’ developments could be incorporated into apprenticeship systems. The question of whether they *ought* to be is another matter which is discussed later in the paper.

The potential for adapting to changes in work patterns and in industry depends partly on the underlying flexibility of the country’s apprenticeship system. Table 3 below provides an initial exploration of such adaptability, using examples from the research. It is acknowledged that many larger scale and more sophisticated examples of company activities exist and should be systematically researched.

**Table 3: ‘Future work’ and the readiness of apprenticeship systems and companies to make adjustments**

Future work feature	Relevant feature of country’s apprenticeship system ( <i>taken from responses to the G20 country survey</i> )	Relevant company features ( <i>examples from the Australian company case studies</i> )
Industry 4.0	Systems for updating qualifications and adding new qualifications	Providing apprentices with training in technology beyond the requirements of the apprenticeship ( <i>Heavy Metal</i> )
Globalisation	International exchange of information about apprenticeship systems	Augmenting internal training with international examples ( <i>Metropolitan Landscaping</i> )

Structural adjustment	Structured system for adding new occupations	Creating new apprenticeship programs to address rapid skill shortages in occupations ( <i>Regional Health Services</i> )
Labour movements	Specific provisions for apprenticeship programs for migrants, refugees and asylum seekers	Willingness to employ applicants from overseas ( <i>Pizza-Pasta Restaurant</i> )
'Gig economy'	Potential adaptation of 'Third party' employers such as Group Training Organisations (GTOs)	Existing use of GTOs ( <i>High End Plumbing</i> ) could be further developed for non-standard forms of employment

Are we ready? The data reported in this paper and Table 3 suggest that although we are not there yet, we are on the way. The responses to the international survey show that some matters, particularly the integration of migrants and refugees into apprenticeship systems, are already being addressed, and some matters have the potential to be addressed because existing systems have the flexibility to incorporate change. The company case studies provide examples of small steps already being taken within companies that could be adapted elsewhere and progressed into more radical developments. Moreover, the countries in the G20 survey reported very comprehensive systems – TV, other media, leaflets, web sites and social media, and personal visits, for promoting apprenticeships to employers and potential apprentices alike. These provide pre-existing vehicles for disseminating information about availability of apprenticeships in new types of occupation, employment situations, or migration status.

However, apprenticeship systems are essentially conservative (Smith, 2014) and change is not easily negotiated. For example, extending to higher level qualifications, particularly those offered at universities and not in VET providers (Loveder, 2017), would mean that VET was no longer the 'owner' of apprenticeships. Discussion at the apprenticeship forums in Australia showed that those active in the system are proud of apprenticeship's place in VET and may resist a university 'incursion' onto their territory in countries where the two systems are seeing as being in rivalry. On the other hand, the Heavy Metal case study provides an example of how, within one company, apprentices, from a typical school-leaver cohort, are learning and applying higher level skills.

The analysis of the Australian policy forums thus indicates the strength of existing interest groups in apprenticeships; and the difficulty in leading change in such circumstances. The final report of the series of five forums (Phillips KPA, 2018, 22) summarises these issues succinctly:

There is no universal agreement among stakeholders on the best direction for reform of some elements of the system. There are matters on which there is near unanimous agreement and a few where stakeholders hold stridently divergent views, often protecting what might be described as an entrenched stakeholder interest.

Part of the explanation for why some consider that the apprenticeship system is becoming ossified is that these entrenched interests are effectively built into elements of regulation and system governance. This means that they are not easily changed. Some of these cannot be separated from broader issues associated with the functioning of the VET sector.

The main conclusion reached by PhillipsKPA following the five forums is that a substantial effort will be required to reach a new settlement between the various social parties to modernise aspects of the apprenticeships system and make them fit for purpose into the future. The complexity of the task and the large number of significant stakeholders that need to support the required changes is recognised as a major barrier to its future development.



The successful completion of the task will require substantial support across the political spectrum.

The issue of entrenched interests appear to be common across apprenticeship systems worldwide. The embeddedness of apprenticeships into so many economic and social structures is a clear disadvantage as well as an advantage. The collapse of traineeships in newer and service sector occupations in Australia, described earlier, was the result of trade union influence (Smith, 2011). The success of that interest group is a clear sign that groups will fight hard to preserve their status and influence in apprenticeship systems.

### **Conclusion and implications**

It is acknowledged that the major limitation of this paper is that the data on apprenticeships were not gathered with the specific topic of 'future work' in mind. There is no large-scale research on this topic to date. Nonetheless the data provide an overview of where and how governments, employers and other partners are starting to consider their futures and the necessary adaptations that will be needed to equip their workforces and practices for the future. Clearly there is an urgent need for targeted research in this area. Since the adaptations are in their infancy, concrete examples of change are rare. As a starting point, however, the framework developed as a result of the analysis in this paper (Table 3) could be further developed to provide a basis for examination of national systems and company practices alike.

The discussion above indicates that apprenticeship systems have the potential to adapt to all the changes discussed earlier. However, *should* apprenticeship systems necessarily adapt to accommodate all aspects of 'future work'? A discussion follows on this matter, in which it is argued that while two features of future work are less problematic, three potentially pose more difficulty.

The need for apprenticeship systems to adapt to industrial structural adjustment would not generally be seen as problematic. Apprenticeship systems in most countries have been dealing with this issue – i.e. the emergence of new occupations which are candidates for inclusion in apprenticeship systems - since their inception, albeit with varying degrees of success considering the entrenched issues involved. Nevertheless strong opposition does exist in some countries to the availability of apprenticeships in some occupations (e.g. Fuller and Unwin, 2003), even though such occupations are routinely apprenticed in other countries; and there are gender issues involved, for reasons discussed earlier. Similarly, adapting to movements of labour is not a dilemma for apprenticeship systems but an ever-present reality; adaptation needs to be made. The data have shown that some countries are more willing than others to make the adaptation required to include migrants and/or guest workers in apprenticeship systems.

However, the other three features of future work definitely present more fundamental dilemmas for apprenticeship systems, for varying reasons, which are discussed below.

Industry 4.0: A major question emerges about whether aspects of Industry 4.0, particularly in design as opposed to operational tasks, are 'too hard' for apprenticeships? Apprenticeship systems have typically belonged in vocational education and training (VET) systems, where qualifications are at a lower level; and are often designed for school-leavers who are not proceeding to higher education. Expanding systems to routinely include higher education or even upper vocational qualifications could create apprenticeships that would stretch existing systems in ways which might become unmanageable – for example involving and educating new stakeholders such as universities and professional bodies.

Globalisation: It is recognised that companies operating globally face a difficulty in developing both company-specific skills, and skills which are transferable within the country in which an apprentice lives and works. As discussed earlier, Pilz and Li (2014) find two main methods of accommodation, divergence and convergence, but warn of the need for more research. Would it be acceptable for a globalised company to demand that the local country recognised its internal apprenticeship system? Should this occur, what would be the consequences for training providers, and for the apprentice when seeking to change employer within the company?

Gig economy: Apprenticeship depends on regulation of employers; and yet new forms of employment, put employers outside the scope of much regulation, as Rubery, Grimshaw, Keizer and Johnson (2018) point out. As gig workers are not formally employed but are, in essence, sub-contractors, the normal employment conditions do not apply. As well as considering whether apprenticeship *could* accommodate 'workers' in these working situations, the question of whether the gig economy should be legitimised by providing the respectability of apprenticeships needs to be considered. But if it is not, those 'workers' are denied a route for proper training, which Rubery et al (2018) identify as a major issue for people in non-standard forms of employment. The industrial relations literature on the gig economy is still in its early stages and the best guide for apprenticeship systems is probably the literature on informal apprenticeships.

Thus, while flexibility seems at first glance an advantage, too much flexibility may undermine important features of systems, or affect workers' rights. As mentioned earlier, apprenticeship fulfils many purposes, including being a passage to adulthood for young people; a means of company, industry and national skill formation; and a means of developing occupational identity in a trade (Smith, 2010).

To consider the complexities of the developments discussed above, national systems may need to consider whether they wish to rebalance their systems or whether they decide that ultimately some training issues must be resolved outside apprenticeships. The fact that the five features of 'future work' received very little direct attention either in the survey of G20 countries or in the recent Australian discussions indicates that stakeholders may not be ready to discuss them, *or will only discuss them if specifically required to do so*. But the company case studies and the data gleaned from the G20 survey responses indicate that accommodations are already being made and the developments cannot be ignored in policy discussions for much longer. Perhaps more research would enable such discussions to proceed with the benefit of a strong evidence base.

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