THE HAMISH OGSTON FOUNDATION HERITAGE BUILDING SKILLS PROGRAMME IN ENGLAND

HAMISH OGSTON VAKFI MİRAS YAPILARI İÇİN USTALIK PROGRAMI, İNGİLTERE

Makale Bilgisi | **Article Info**

Başvuru: 13 Haziran 2022 | Received: June 13, 2022
Hakem Değerlendirmesi: 31 Haziran 2022 | Peer Review: June 31, 2022
Kabul: 06 Temmuz 2022 | Accepted: July 06, 2022

DOI : 10.22520/tubaked2022.25.006

Sophie NORTON*

ABSTRACT

This short article explains the rationale for the development of the Hamish Ogston Foundation Heritage Building Skills Programme, a major in-work training programme enabled by the largest one-off investment ever awarded to heritage construction training in England. After briefly introducing the evidence for skills shortages in heritage conservation and the growing area of retrofit, it draws on literature and policy relating to building crafts, heritage conservation, and vocational education and training (VET) in England to establish the context for addressing them. In a wide-ranging discussion, it examines various social and practical constraints, before explaining how the Hamish Ogston Foundation Heritage Building Skills Programme proposes to make a difference.

Keywords: Hamish ogston foundation heritage building skills programme, crafts, trades, skills, heritage, buildings.

* PhD, Sector Skills Manager, Historic England, UK.
e-posta: Sophie.Norton@HistoricEngland.org.uk ORCID: 0000-0002-1833-3888

DOI: 10.22520/tubaked.2022.25.006

ÖZET

Bu kısa makale, şimdiye kadar İngiltere'de miras inşaat eğitimine verilen en büyük bir defalık yatırımla sağlanmış temel bir iş içi eğitim programı olan Hamish Ogston Vakfı Miras Yapıları için Ustalık Programı'nın geliştirilmesinin gerekçesini açıklamaktadır.

Makalede, mimari miras korumadaki ustalık eksikliklerine ilişkin veriler ve büyüyen yapı güçlendirme alanı kısaca tanıtıldıktan sonra, bunlarla ilgili bağlamı oluşturmak için İngiltere'deki yapı zanaatları, mimari mirasın korunması ve mesleki eğitim ve öğretim ile ilgili yazına ve politikalara değinilmektedir. Geniş kapsamlı bir tartışmada, Hamish Ogston Vakfı Miras Yapıları için Ustalık Programı'nın nasıl bir fark yaratmayı önerdiği açıklanmadan önce, çeşitli sosyal ve pratik kısıtlamalar incelenmektedir.

Anahtar Kelimeler: Hamish Ogston Vakfı Miras Yapıları için Ustalık Programı, zanaatler, ticaretler, ustalıklar, miras, yapılar.

INTRODUCTION

The shortage of skills needed to conserve historic buildings in England is longstanding. It is often thought to have developed because building conventions changed substantially in the 20th century, when they became dominated by construction methods like cavity walling, double glazing and synthetic barriers that make a building vapour impermeable. In contrast, buildings built prior to this – a nominal date of 1919 is generally used (British Standards Institute [BSI] 2013) – were built to 'breathe'. This means that mostly natural materials were brought together without any vapour barriers, so that the structure of the building absorbed and released moisture (Historic England 2018). When vapour barriers like cement renders, insulation, and damp-proof courses are applied to historic buildings, they prevent the moisture from escaping, causing damp, condensation and related problems such as mould. Over time, such measures not only accelerate the decay of significant fabric, they can diminish a historic building's comfort and general liveability.

Shortages of 'architects, technicians of all kinds, specialized firms and skilled craftsmen to respond to all the needs of restoration' were first officially identified at a European level (Council of Europe 1975). Since then heritage skills have been explored from a labour market perspective (National Heritage Training Group 2005; 2008; Pye Tait 2013) and as living cultural heritage in themselves (Heritage Craft Association 2021). The findings show that challenges amongst professional and skilled roles endure, with both groups lacking knowledge and skills in traditional building materials and methods. Although it is true that the education for both groups focuses on conventional construction and rarely deals with the performance characteristics of historic buildings (Pye Tait 2013; Houses of Parliament Restoration and Renewal Delivery Authority [HoPR&R] 2021a), this paper argues that there are other, perhaps more important, contributing factors. It will focus particularly on the impact on education of the relatively recent decline in the professional position of craft and trade roles in England's construction sector (Hanson 2003; Price 1980).

This special issue of Tuba-Ked is ideally timed to focus on education and training in cultural heritage. In England, a recent resurgence of interest in the skills challenge has been noted in professional literature (Attwood 2021; Chartered Institute of Building [CIOB] 2020; Prowse 2020). These authors share concern about the pipeline of skilled people to work on impending major projects (HoPR&R 2021b). In addition, finding the skilled people to retrofit England's 5.5 million pre-1919 buildings – 20% of its building stock (Pye Tait 2013) – is seen as a major barrier to the country upgrading its building stock in time for the 2050 net zero target (Construction Industry Training Board [CITB] 2021; House of Commons Environmental Audit Committee [HoCEAC] 2021).

This article from Historic England's Sector Skills Manager, Sophie Norton, accepts that there is compelling evidence for skills shortages in the heritage construction sector. It therefore discusses causes of the shortages in some depth before explaining how the Hamish Ogston Foundation Heritage Buildings Skills Programme could present a viable and expandable model for beginning to address the challenges being faced.

EVIDENCE OF STRUCTURAL WEAKNESS

As mentioned above, evidence of heritage skills shortages is available in varied forms. The labour market intelligence and opinions of professionals with lived experience (cited already) make very resounding cases, which are often presented numerically, in terms of skilled people needed to meet an economic need. It follows that these people need training that deals with the performance characteristics of historic buildings, but the nature of that training is unclear. Should the sector focus on attracting more new people or incentivising current workers to upskill? Can the skills they are learning be taught academically or is vocational training more effective? And is there a place for online learning methods? Questions like this assume that with more resource and minor alteration, England's construction and education sectors could function together to resolve heritage construction's skills challenges. However, literature from the mainstream construction sector suggests that the problem is so deeply rooted that more fundamental solutions will be required.

Tellingly, the challenge around heritage construction skills is not unique. Longstanding shortages in the mainstream construction sector have been brought into focus recently by a predicted loss of migrant workers (Association for Consultancy and Engineering [ACE] et al 2019; CITB 2019; Construction Leadership Council [CLC] 2019) and the anticipated skills needed to retrofit England's substantial stock of existing buildings, 20% of which were built before 1919 (CITB 2021; HoCEAC 2021). These reports identify several important factors that contribute to shortages across the construction sector. These can be summarised as follows:

Interface between professional and trade roles

In England, the boundaries between professional and trade roles and responsibilities in construction are tightly drawn. The design of every aspect of the work is the responsibility of a professional like an architect or a building surveyor, while tradespeople are responsible for executing these designs. Conceptually, this can often even apply to even very small but important details such as the extent of replacing a particular timber in a heritage

DOI: 10.22520/tubaked.2022.25.006

conservation project or the choice of replacement bricks. However, there is evidence to suggest that this is not only impractical because it is 'almost impossible to effectively plan [complex construction sites] in advance and manage at a distance' (Thiel 2012, 10), but that there are advantages to skilled tradespeople having more autonomy and understanding of their work. Indeed, tradespeople that learn about their work as part of an integrated building system are more likely to develop the technical and interdisciplinary expertise required for heritage conservation (Norton 2018). Further, Historic Environment Scotland (HES) (2021) has found that where tradespeople are recognised for their skill at higher level, they are more likely to be remunerated above the mean national wage.

There is also growing recognition of the need for cross-disciplinary expertise in retrofit, particularly in relation to tradespeople understanding the impact of their work on the building as a system (CITB 2021; Clarke et al 2020). This is because the building system is weakest at the 'corners, junctions and edges' (PAS 2035, 2019), which if not detailed flawlessly can cause defects like thermal bridging. Like in much heritage conservation therefore, successful whole house relies on the detail and workmanship.

The English Government's current response to this has been to create the new professional role of Retrofit Co-ordinator (BSI 20129a) to oversee domestic retrofit works from beginning to end, ensuring that all details are designed and executed effectively. The CITB (2021) has also called for a reinstatement of the Clerk of Works role, a job traditionally held by experienced tradespeople that has 'been eroded over recent decades'. However, this falls someway short of providing 'the theoretically broader and deeper, more technical and interdisciplinary expertise needed' (Clarke et al 2020, 651).

Composition of the construction sector

In 2019, the CLC found that the dominance of small and medium-sized enterprises and the self-employed (SMEs) in the construction supply chain was impeding skills development within the sector. To reverse the current situation where the largest and most profitable employers had 'no vested interest' in training their staff, CLC (2019, 18) recommended that a 'sustainable employment environment where increasing numbers of people are directly employed' should be established. Indeed, Clarke et al (2020) have noted that not only does productivity reduce when the construction workforce is fragmented into SMEs, but vocational training starts to 'decline'. The only English example of construction tradespeople being able to progress within their craft without taking on a supervisory role is through the Cathedrals' Workshop Fellowship, which as partnership of the nine cathedrals with their own directly employed workforce, has established a foundation degree in applied conservation and repair for their tradespeople.

Image of jobs in construction trades

Recruitment into construction trades is hampered by the sector's image (Harlow Consulting 2020). In some trades, the majority of people undertaking specific full-time training 'do not transition into the industry' (CITB 2018). As a result, the sector has an aging workforce that it's difficult to replace (Harlow Consulting 2020; Pye Tait 2013; HoPR&R 2021b).

Therefore, in addition to the lack of relevant content in mainstream training, the heritage construction sector in England is affected by these three overarching challenges that also afflict construction. Rather than being mutually exclusive, the three are linked. The first can be seen as a direct effect of a deeply entrenched cultural position that accepts the mind-body dichotomy and, following, that thought-based and motor-based work are distinct. The second and third challenges can be seen as an effect of that (Fig. 1), as discussed in the section on VET below.

THE MIND-BODY DICHOTOMY, EMBODIED COGNITION AND WORKMANSHIP

The source for the dualistic classification of the mind and body is the 17th-century philosopher Rene Descartes, who understood the divine and immaterial mind to transcend and dominate the physical body. Since the idea was seminally challenged as 'absurd' by Gilbert Ryle (1973, 22-29), it has been called into question by several authors that are interested in skilled work. Risatti (2007) saw that it elevated fine arts over mechanical forms of production, while it is difficult to reconcile with Shapiro's (2014) view of embodied cognition as intelligence acquired through multi-modal interactions. Similarly, Adamson (2018), Ingold (2013), Marchand (2008; 2010; 2016) and Sennett (2008) have all shown that making through crafts and trades is intelligent work. This very finding is incompatible with the mind-body dichotomy.

Acknowledging the existence of embodied cognition and the impact it has on industry and VET in England is central to addressing heritage construction skills shortages. If we accept that the most skilled workers acquire knowledge in their mind and body through 'sensory and motor-based experiences' (Norton 2018, 33), then it follows that they should be able to problem-solve and perform their roles autonomously. Although Theil's (2012) ethnographical study reveals that autonomy on building sites is likely the norm, construction management is often still based on the alternate premise that professionals perform the thought-based tasks of designing and managing physical work, while trades and craftspeople merely execute it. An example of this definition being inappropriate is an architect's specification that reads 'replace as necessary' about the timbers in a historic roof. The extent of

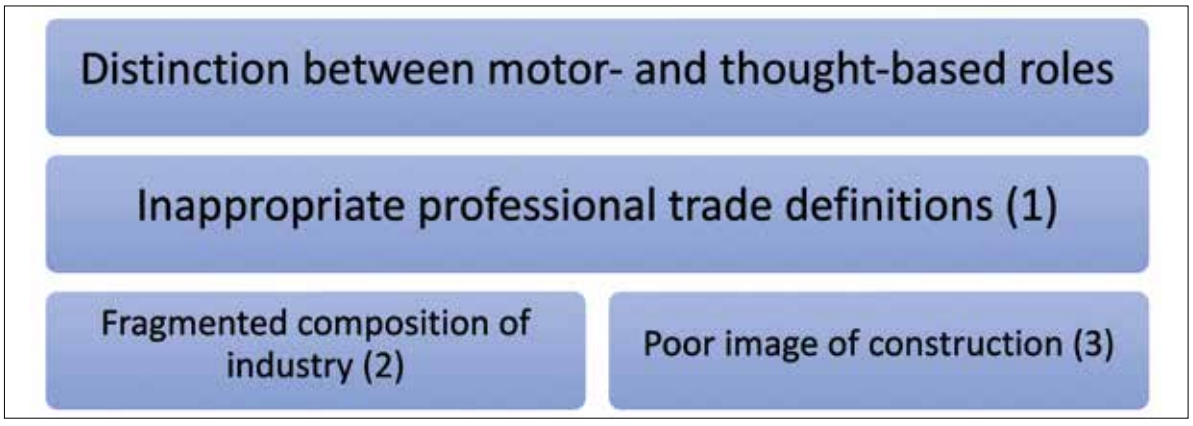

Figure 1. Illustration of the direct link between the mind-body dichotomy and the way that professional and trade roles are defined as distinct. Construction's fragmentation and poor image can be seen as an effect of that. / *Zihin-beden ikilemi ile profesyonel ve ticari rollerin farklı olarak tanımlanma şekli arasındaki doğrudan bağlantının gösterimi. İnşaatın parçalanması ve kötü imajı bunun bir etkisi olarak görülebilir*

replacement necessary will only be understood when the building is being worked on and in most cases will be decided by the tradesperson or builder. Similarly, much retrofit will involve incremental works like insulating plaster and new windows. This maybe designed by an architect but will be commissioned by a homeowner and undertaken by a tradesperson with very little or no specialist supervision. That the tradesperson has to manage their own work and ensure it is compatible with the building as a system is irrefutable.

The practice of construction management critiqued by Thiel only became commonplace in the 19th-century (Colvin 1973; Ingold 2013, 49) and is especially unsuited to the unpredictability of existing and older buildings (Norton 2018). This is because previously unknown information about the its condition, performance or significance may only be revealed once on-site and should then inform repair (Burra Charter 2013). Inflexible management processes that prevent this disregard craftspeople's 'inalienable relationship' with material (Jones 2010; Jones and Yarrow 2013), thereby contradicting heritage conservation as a value-led discipline (Norton 2018). There are therefore economic, technical and conservation-based reasons why tradespeople should be recognised for managing their work. Fortunately, there are signs that the construction industry is beginning to appreciate the craft-based idea that workmanship as well as material creates technical excellence and reliability (Pye 2015). It has been brought into focus by the net zero challenge relying on tradespeople knowing 'why they're doing what they're doing and the impact of not doing it correctly' (CITB 2021, 63). This simple statement represents a positive blurring of lines between professional and trade roles, necessitated by increasingly complex building systems that make workmanship all the more 'critical' (Hunt and Suhr 2013).

The importance of installers understanding their work is implied in the BSI's (2019b) best practice guidance on domestic retrofit projects, which compels them to check the designs they receive for their suitability. Although the term 'installer' is somewhat lacking (like 'operative' it is suggestive of the damaging mind-body dichotomy), the formal recognition that multiple parts of the supply chain can benefit from shared expertise is extremely positive. It means that there is greater than ever rationale for delivering multidisciplinary, inclusive training that is suited to conservation's 'interdisciplinary' practices (Djabarouti and O'Flaherty 2020; International Council on Monuments and Sites [ICOMOS] 1993; Joliffe 2021). However, any training that exists in England currently is rarely accessible to installers, who have little incentive to undertake it. The Scottish Government (2021), in recommending that both professional and skilled elements of the supply chain complete training in pre-1919 buildings in order to retrofit them, is slightly more advanced in this area. However, this would arguably have little impact on the skills shortages faced in England, because construction training fails to recognise expertise learnt through embodied cognition in any way. A more thorough review of VET and our appreciation for it is required.

VOCATIONAL EDUCATION AND TRAINING (VET) IN ENGLAND

The second section of this paper identified 3 major themes that underly skills shortages in heritage construction and construction more generally. It implied that they all perpetuate and are perpetuated by a cultural attitude towards craft and trade skills, a situation that is itself maintained by employer-led vocational training that aims for investment is skills to meet an immediate economic need. This is in direct contrast to academic training, where individuals are encouraged to develop critical skills for the benefit of their own personal growth (Clarke and Winch 2007).

DOI: 10.22520/tubaked.2022.25.006

VET in Britain is perhaps uniquely constrained by the state's 'paradoxical' approach to intervening in VET policy while being laissez-faire about delivery (Clarke and Winch 2007; Wolf 2016). This means that much vocational training, including apprenticeships, rests entirely on employers setting out the skills their workforce needs and then delivering vocational opportunities accordingly. The idea that VET should fulfil employer need emanates directly from Adam Smith's *Wealth of Nations,* which 'ascribed England's economic growth to its ever-finer division of labour' that meant 'with strong managerial coordination, masses of unskilled workers could replace individual craftsmen' (Clarke and Winch 2007, 13).

We have already seen that Thiel (2012) showed that these industrial methods of management simply did not work. Rather, they encouraged workers to act subversively and indulge in 'pilfering' and 'time-banditry'. Though this is in stark contrast to the conservation sector's tradespeople overcompensating by providing free advice (Norton 2018) as part of the necessary interdisciplinary cooperation (Djabarouti and O'Flaherty 2020), the sector's VET continues to be influenced by the dominant culture within the construction industry. As such the employer-led development of vocational qualifications reflects this.

Even the recognition that England's low productivity is linked to its skills and vocational training has not improved this situation. In recent years, employed-led groups have developed new apprenticeship standards in construction as part of a wider vocational reform. In many cases, the idea that tradespeople do exactly what professionals design is so deeply ingrained that many of the standards involve less understanding of the context of their work than before. An apprenticeship in stonemasonry has recently been downgraded from a level 3 to a level 2, which is seen as equivalent the qualification that 16-year olds complete in school. By contrast and like the Cathedrals' Workshop Fellowship students, a *Meister* stonemason in Germany would typically achieve a level 5 qualification and be considered a highly skilled individual culturally. They are recognised and remunerated for controlling their own work (Clarke and Winch 2007), VET developed by employers reflects this, direct employment of tradespeople is more sustainable (fewer people are employed in SME models) (Clarke 2020), and the industry is more cohesive and productive. In contrast, construction trades in England are dogged by the idea that they are unthinking jobs. This plays directly into the employer-led development of standards, which means VET itself is locked in a cycle of decline (Fig. 2).

So far this article has made the case that heritage construction skills in England are an effect of a false cultural idea that there is a distinction between thought-based and motor-based work. It has shown that though this has proven not to function in favour of the interdisciplinarity needed in high standard heritage conservation and retrofit work, the culture prevails to

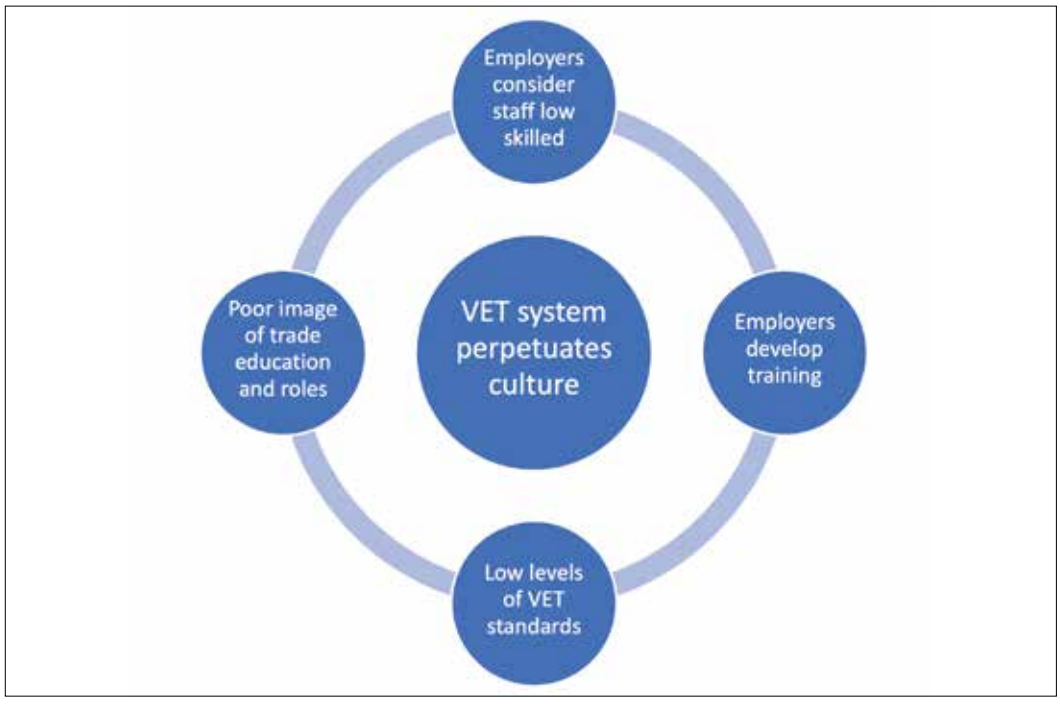

Figure 2. Demonstration of how the employer-led model of VET development in England perpetuates the damaging mind-body dichotomy, which itself prevents skilled people from being recognised for expertise learnt through embodied cognition. / *İngiltere'deki yetenekli kişilerin biliş yoluyla öğrenilen uzmanlık için farkedilmesini engelleyen işveren liderliğindeki Mesleki Eğitim ve Öğretim geliştirme modelinin nasıl zararlı zihin-beden ikilemini sürdürdüğünü gösteren şema.*

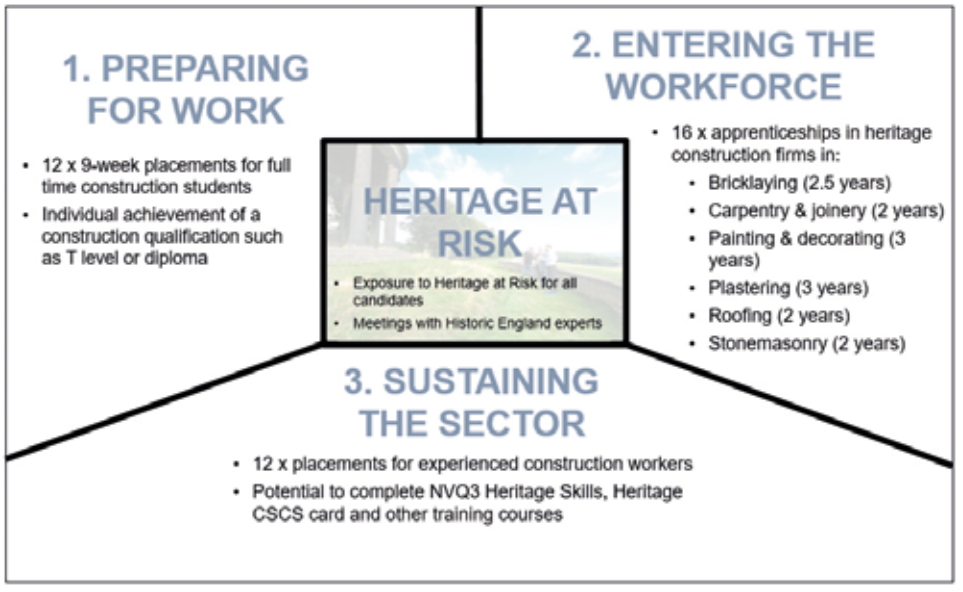

Figure 3. Illustration of the structure of the programme; 3 tiers of training at different levels, in different subjects and with different qualification outcomes. The importance of their working across disciplines is conveyed at annual summer schools at Heritage at Risk sites (depicted in the centre of the diagram). / *Farklı seviyelerde, farklı konularda ve farklı yeterlilik sonuçlarına sahip 3 kademeli eğitim programının yapısını gösteren şema. Disiplinler arası çalışmanın önemi, Risk Altındaki Miras alanlarındaki yıllık yaz okullarında aktarılmaktadır (şemanın ortasında gösterilmiştir).*

the extent that it affects educational attainment within trades. This in turn affects the way trade roles are viewed, ensuring that too few people want to join the workforce. At Historic England, our work with the Hamish Ogston Foundation intends to address many of the issues raised here. The rest of this article will explain how.

THE HAMISH OGSTON FOUNDATION HERITAGE BUILDING SKILLS PROGRAMME'S RESPONSE

Historic England has been working with the Hamish Ogston Foundation on this Programme (the HOF Programme) since 2020. The programme represents the largest one-off investment ever awarded to heritage construction training in England. The 4.325 million given by the foundation will support at least 40 participants in the North of England to receive skills and training in heritage building skills, through an innovative programme of apprenticeship, placements, training courses and hands-on experience at Heritage at Risk sites. Paid vocational training is at the heart of each of the 40 opportunities. This acts on the success of previous work-based training schemes (Ecorys n.d) and the Centre for Economics and Business Research's (2019) conclusion 'that investment into vocational education to directly train the appropriate skills that the labour force is lacking would benefit both [heritage] employees and employer'.

A recognition of progression with trades is embedded in the 3-tier arrangement of the opportunities, as follows and illustrated in figure 3:

- 'Prepare' for working in the heritage sector. For the HOF Programme, these are 9-week placements ring-fenced to people already studying construction in college but that have not yet considered heritage as a career. We will deliver 12 'prepare' placements over the 5-year programme.
- 'Enter' the heritage sector workforce. The HOF programme is delivering 16 apprenticeships in the 6 core construction trades of bricklaying, carpentry and joinery, painting and decorating, plastering, roofing and stonemasonry. These are aimed at people who are committed to a career in heritage construction, but that have not yet had an opportunity to join the sector before.
- 'Sustain' the heritage sector workforce. These 12 placements are more flexible, allowing us to deliver in trades that don't have enough of a critical mass to warrant an apprenticeship standard, but that the heritage sector needs. We have recently recruited tier 3 trainees in millwrighting and mosaic conservation.

DOI: 10.22520/tubaked.2022.25.006

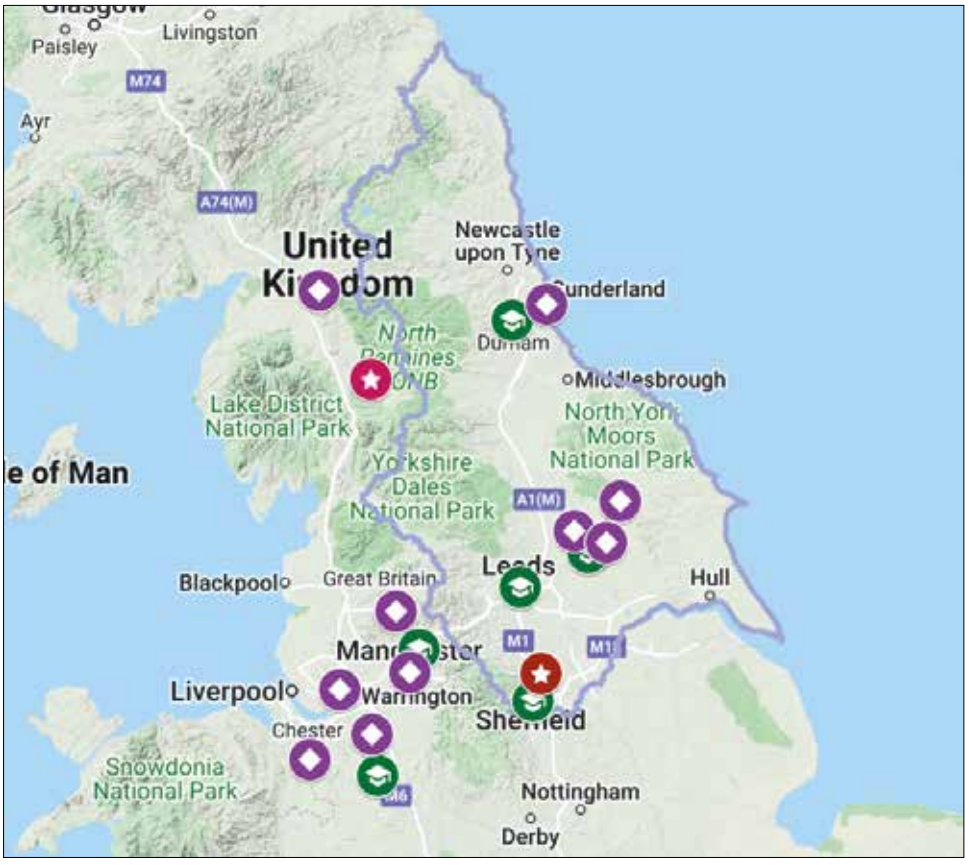

Figure 4. The location of the host firms (purple), training providers (green) and Heritage at Risk (red) sites involved in delivering the HOF Programme. / *HOF Programının uygulanmasına dahil olan ev sahibi firmaların (mor), eğitim sağlayıcıların (yeşil) ve Risk Altındaki Miras alanlarının (kırmızı) yerleri*

The diagram in figure 3 illustrates how the model for programme hangs together. Trainees are recruited competitively by Historic England and the relevant host organisation. Although they are then appointed by Historic England, they work alongside other tradespeople to learn according to vocational tradition, in a workplace setting underpinned by qualification delivered by a training provider or Further Education College. The trainees are spread across the North of England, in a variety of employers ranging from one mand bands, craft specialists, larger, multi-trade construction firms and even some non-traditional construction employers like cathedrals (Fig. 4).

The HOF Programme adds value to this set-up by bringing the normally dispersed individuals together to work on Heritage at Risk projects supported by Historic England. Trainees will come together at annual summer school events where they will learn underpinning knowledge; about conservation as a value-based process of assessing and managing significance through interdisciplinary activity (Fig. 5). Crucially, they will have the opportunity to meet and work alongside Historic England experts, other conservation professionals and each other.

Figure 5. HOF Programme trainees on-site at the first annual summer school training event in 2022. / *2022'deki ilk yıllık yaz okulu eğitim etkinliğinde HOF Programı'nın alandaki kursiyerleri.*

CONCLUSION

By building on academic and applied research, as well as the successes of the past, the HOF Programme aims to provide a sustainable model for heritage building skills training in England. The direct employment of trainees by a central organisation, in this case Historic England, means that many of the resource intensive activities associated with direct employment are manged outside the heritage construction employer, which can dedicate its capacity to passing on skills to a new generation. In the first year of the programme, Historic England used its expertise to run a successful recruitment campaign, which in attracting 295 unique applicants to 20 opportunities, directly responded to employer's concerns about recruiting to positions (Harlow Consulting, 2020). Our ongoing relationships with the apprentices and trainees mean we can support them in their qualifications and assessments, again ensuring that their employers can spend their time passing on the skills we desperately need.

The programme also provides crucial opportunities for progression and interdisciplinary training for tradespeople to learn underpinning knowledge about the impact of their work on the building's system. Although the former of these two ambitions is fairly informal at the moment, we are working with the Institute for Apprenticeships to address this by developing a higher technical qualification for heritage construction specialists. Our research and experience in developing the HOF Programme has put as at the forefront of higher technical qualifications in England, where still very few tradespeople are recognised for having higher level skill.

The key to attaining this higher level is in developing underpinning knowledge that complements and informs trade skills. This involves tradespeople understanding significance-based conservation, reasons for conservation approaches (such as like-for-like repair, reinstating original features, and adapting historic features for modern day requirements), and the impact of work on the building system's performance, including other materials and elements. The HOF Programme aims to support trainees in developing this underpinning knowledge at annual summer schools at Heritage at Risk sites, where trainees join together to rescue heritage while learning about heritage conservation as an interdisciplinary activity. We hope that this model will in future provide the much-needed space for new people to learn about conservation in a way that is both interesting and thought-provoking, so that they develop the critical skills required to support the heritage conservation and the sector's growth.

REFERENCES

Adamson, G. (2018).
"Thinking Through Craft", London: Bloomsbury Visual Arts.

Association of Consultancy and Engineering, BuildUK, Civil Engineering Contractors Association, Chartered Institute of Building, Construction Products Association, Federation of Master Builders, Highways Team Maintenance Association and National Federation of Buildings. 2019. *"Shortage Occupations in Construction: A cross-industry research report",* published online.

Attwood, A. 2021.
"Let's make 2021 the year of the craftsperson", London: Building.co.uk.

British Standards Institute. 2013.
"BS 7913:2013 Guide to the conservation of historic buildings", London: BSI Standards Limited.

British Standards Institute. 2019a.
"Publicly Available Specification 2035:2019. Retrofitting dwellings for improved energy efficiency – specification and guidance", London: BSI Standards Limited.

British Standards Institute. 2019b.
"Publicly Available Specification 2030:2019. Specification for the installation of energy efficiency measures in existing buildings", London: BSI Standards Limited.

Burra Charter. 2013.
"The Illustrated Burra Charter", published online.

Centre for Economics and Business Research. 2020.
"Skills gaps/needs in the heritage Sector", published online.

Chartered Institute of Building 2020.
"Future Skills for Traditional Buildings", conference.

Clarke, L. and Winch, C. 2007.
"Vocational Education: International approaches, developments and systems", London: Routledge.

Clarke, L. et al. 2020.
"Transforming vocational education and training for nearly zero-energy building". *Buildings and Cities*, 1(1), pp. 650–661.

Colvin, H. J. (ed), 1973.
"A Historic of the King's Works volume VI 1782 – 1851, London: Her Majesty's Stationary Office.

Construction Industry Training Board. 2019.
"An Industry Action Plan: Building After Brexit", London: CITB.

DOI: 10.22520/tubaked.2022.25.006

Construction Industry Training Board. 2021.
"Building Skills for Net Zero", London: CITB.

Construction Leadership Council. 2019.
"Future Skills Report", London: CLC.

Council of Europe. 1975.
"European Charter of Architectural Heritage 1975", Paris: ICOMOS.

Djabarouti, J. and O'Flaherty, C. 2020.
"Architect and craftsperson: project perceptions, relations and craft" in International Journal of Architectural Research, 14(3), 423-438.

Ecorys. n.d.
"Evaluation of HLF Skills for the Future Programme: a report to the Heritage Lottery Fund", published online.
Hanson, B. 2003, *"Architects and the Building World: From Chambers to Ruskin",* Cambridge University Press.

Harlow Consulting. 2020,
"Research into the capacity of heritage construction employers to provide work-based training (in the North of England)", unpublished report.

Historic England. 2018.
"Energy Efficiency and Historic Buildings. How to improve energy efficiency", published online.

Historic England. 2022.
"Conservation Accreditation for Professionals", published online.

House of Commons Environmental Audit Committee 2021.
"Energy Efficiency of Existing Homes", London: House of Commons.

Heritage Craft Association. 2021.
"The HCA Red List of Endangered Crafts 2021", published online.

Historic England 2018.
"Energy Efficiency and Historic Buildings", published online.

Historic Environment Scotland 2021.
"Training in construction trades", Published online.

Houses of Parliament R&R Delivery Authority 2021a.
"Skills Assessment Research Digest P3. Training and provision in construction and heritage", published online.

Houses of Parliament R&R Delivery Authority 2021b.
"Skills Assessment Research Digest. P1. Skills for the heritage construction sector", published online.

Hunt, R. and Suhr, M. 2013.
"Old House Eco Handbook: A Practical Guide to Retrofiting for Energy-Efficiency and Sustainability", London: Francis Lincoln.

Ingold, T. 2013.
"Making: Anthropology, Archaeology, Art and Architecture", London: Routledge.

International Council on Monuments and Sites. (1993).
"Guidelines for Education and Training in the Conservation of Monuments, Ensembles and Sites", published online.

Joliffe, E. 2021.
"How traditional building crafts could help tackle the climate crisis", published online.

Jones, S. 2010.
"Negotiating Authentic Objects and Authentic Selves: Beyond the Deconstruction of Authenticity" in Journal of Material Culture, 15(2), 181 – 203.

Jones, S. and Yarrow, T. 2013.
"Crafting Authenticity: An Ethnography of Conservation Practice" in Journal of Material Culture, 18(3), 3 – 26.

Marchand, T. H. J. (2008)
"Muscles, Morals and Mind" in British Journal of Educational Studies, 56:2, 245 – 271. London: Ashgate

Marchand, T. H. J. (2010).
"Embodied Cognition and Communication: Studies with British Fine Woodworkers" in Making Knowledge: Explorations of the Indissoluble Relation between Mind, Body and Environment, edited by T. H. J. Marchand, 95 - 114. Malden MA: Wiley-Blackwell.

Marchand, T. H. J. (2016).
"Craftwork as Problem-Solving: Ethnographic Studies of Design and Making", London: Routledge.

National Heritage Training Group. 2005.
"Traditional Building Craft Skills: Assessing the Need, Meeting the Challenge", London: NHTG.

National Heritage Training Group. 2008.
"Traditional Building Craft Skills: Reassessing the Need, Addressing the Issues", London: NHTG.

Norton, S 2018.
"Heritage Conservation and the Building Crafts: a Qualitative Study of Yorkshire Craftspeople", published online.
Price, R. 1980.
"Masters, Unions and Men: Work control in building and the rise of labour 1830 – 1914", Cambridge University Press.

Prowse, H. 2020.
"Mind the conservation gap", London: constructionmanagermagazine.com.

Pye, D. 2015.
"The Nature and Art of Workmanship", London: Bloomsbury Academic.

Pye Tait. 2013.
"Skills Needs Analysis 2013: Repair, Maintenance and Energy Efficiency Retrofit of Traditional (pre-1919) Buildings in England and Scotland", published online.

Risatti, H. 2007.
"A Theory of Craft", The University of North Caroline Press.

Ryle, G. (1973).
"A Concept of Mind", Middlesex: Penguin Books Ltd.

Scottish Government. 2021.
"Energy Efficiency, Zero Emissions and Low Carbon Heating Systems, Microgeneration and Heat Networks for Homes – Skills Requirements: Consultation, published online.

Selincourt, K. 2018.
"Disastrous Preston retrofit scheme remains unresolved", published online.

Sennett, R. 2008. *"The Craftsman",* London: Penguin.

Shapiro, L. 2014.
"The Routledge Handbook of Embodied Cognition", Oxford: Routledge.

Thiel, D. 2012.
"Builders: Class, Gender and Ethnicity in the Construction Industry", London: Routledge.