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An Assemblage of Knowledge: Novices, Experts, and Expertise in Universities

Zachery Spire

From medieval universities in Italy, France, and England to contemporary universities across Australia and the United States, authors challenge us to revisit and research what being a university has meant across history. Recently, the changing funding regimes, monitoring schemes, and sharp changes in cost-sharing of university education by states and individuals have compelled many to consider a more open, emergent, and complex approach to understanding the forms, functions, stated purpose, and the role of universities in society (Bengtsen & Barnett, 2018). Universities are emergent and complex institutions, operating at the intersection of knowledge creation and reformation. These institutions of higher education are places where space is purposefully and intentionally made for novices and experts to congregate and contribute to knowledge of 'self' and 'other' within a larger social context (Barnett, 2007). A university has its roots in the assembling of a set of scholars, pursuing knowledge in a number of forms, across disciplines and fields, acting and interacting at

Z. Spire (✉)
University College London, London, UK
e-mail: zachery.spire.14@ucl.ac.uk

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institutional, local, regional, national, and international levels (Barnett & Jackson, 2019). Barnett and Jackson (2019) explore this more closely by examining the ideas of learning ecologies. They highlight how, in a liquid modernity, what counts as knowledge and truth is often reflective of a moving and often fluid conceptualization of expertise, the position of experts within a social context, and the degree to which living purposefully is considered a strength and a limit of knowledge.

Today universities face many challenges. For one, the demand for student placement over the last 20 years in the United States and United Kingdom (the two largest higher education sectors at the time of writing this chapter) has frequently outpaced the ability of place-based universities (i.e., residential universities) to accommodate the number of prospective students (Marmot & Spire, 2019). This influences a growing managerial and business approach to the organization and operations of universities that is made more complicated by the rights, responsibilities, ethics, and political interests operating across universities. The supply of post-compulsory education across the United States and the United Kingdom creates boundaries for demand and provision of place-based and virtual learning environments. Supply and demand for post-compulsory education raises a debate about post-compulsory education as a 'market' and/or a common good (Marginson, 2018), as well as the growing role of information as a consumable good (Baudrillard, 2010), but not necessarily a common good (Marginson, 2018). Moreover, universities struggle to champion active, engaged teaching, learning, and research in the face of information and performativity that ignores a knowledge framework (Barnett, 2015). What is needed are ways of addressing long-standing and short-term concerns over the formulation, function, purpose, and ownership of knowledge in universities and society more generally.

This chapter explores those concerns by taking up what expertise looks like in universities and then presents assemblage theory (Bacevic, 2018) as a way to frame expertise, experts, and novices within institutions of higher education. Assemblage theory creates space for reconsidering whether, and how, institutions remain present and utilize internal processes, practices, and expertise to continuously revisit policy, practice, and provision (Deleuze & Guattari, 1988). Programs from two

universities, Stanford University's Institutional Research & Decision Making Support (Stanford IR&DS), and, the University College London (UCL) Arena Centre for Research Based Education (UCL Arena) situate a broader discussion about the potential of expertise, experts, and novices in universities.

Universities as Sites of Expertise

Educational historians like John Dewey (1923) describe education as a translational and transformational set of processes within which students are adopted and socialized in and across a set of life-stages (birth to youth and onward into adulthood). He goes on to highlight economic (e.g., manufacturing of material life, production of knowledge, or job creation) and political drivers (i.e., social class, political party) that are set against a thesis of education as social transmission. Thus, education is a mechanism to structure social relationships and human social activity. More recently Robert Brenner (2003) explores how education and universities parallel changes in social conditions brought into and about by economic competition in and between nation-states. If an employer and employee are situated in a game of fragmented global competition, education serves as a mechanism to inform and influence the forms, functions, stated purpose, and outcomes of that game for the individual and their related social spheres of learning. In this view, education is a personal interest, situated within the context of wider national interests. As such, educating an individual citizen becomes part of a national strategy for remaining competitive in an increasingly global, competitive, and precarious social environment.

These definitions of education highlight the social nature of universities. At their core are the people, places, policies, and practices that shape the university space where teaching, learning, and research are undertaken. Physical spaces often mediate the social and personal spaces by which students and staff define and develop knowledge. However, knowledge continues to be the outcome of human social activity. The activities of institutions, staff, and students are continuously influenced (and influencing) internal and external measures of teaching, learning, and research.

From time to time debate over expertise in universities resurfaces. This might be because expertise is a driver of universities as it can serve to operate and organize university activities, policies, and outcomes. In universities expertise is created and legitimized as individuals and groups advance their personal and shared knowledge. Thus, expertise acts as a driver of university activities, that is part process and part outcomes. This debate reminds us that what expertise looks like and what it means to be an expert or a novice in a university is not found in a simple answer.

Expertise in Universities

Although expertise is frequently defined across a spectrum of objective and subjective items in scales, Grenier and Germain (2014) note that definitions for expertise often give primacy to what some have called objectively measurable attributes and knowledge. In this way human expertise can be defined as "displayed behavior within a specialized domain and/or related domain in the form of consistently demonstrated actions of an individual that are both optimally efficient in their execution and effective in their results" (Herling, 2000, p. 20). For example, content-specific knowledge about specific subject matter and related procedural knowledge about processes related to a subject (Chi, Glaser, & Farr, 2014). Primacy is given to whether (or not) an individual can demonstrate knowledge related to specific content, such as measured within examinations for university courses (i.e., final exams). Expertise in universities is often defined and measured across a number of metrics and key performance indicators (KPIs) of objective measures including student-staff engagement, student satisfaction, teaching quality, and research productivity.

Measuring teaching, learning, and research outcomes through instruments like surveys is a way of organizing, evaluating, and assessing staff and students' academic and non-academic outcomes as they engage in their learning environments (Astin, 1975; Pace, 1984). In universities, subjective measures might include satisfaction with courses, availability of academic and non-academic student services, ease of obtaining counseling and guidance for a course of study. Subjective measures have

defined expertise through content-specific knowledge about a certain subject matter, as well as necessary procedural knowledge related to executing appropriate responses, at appropriate times, and under appropriate conditions.

Experts and Novices in Universities

An additional consideration for understanding expertise in universities is addressing what it means to be a novice and an expert. Luntley (2009) posits that such a starting point is common in the education literature, especially professional education, where 'teacher' and 'student', are considered interchangeable with 'expert' and 'learner'. One approach for identifying novices and experts in a university is the application of the model from Dreyfus and Dreyfus (1980). The model sees novices and experts along four binary qualities, including: recollection (non-situational or situational), recognition (decomposed or holistic), decision (analytical or intuitive), and awareness (monitoring or absorbed). The model as represented in Table 7.1 includes skill level/mental function across a set of five types: novice, advanced beginner, competence, proficient, and expert (Dreyfus & Dreyfus, 1980, 2004).

While the model has been adopted widely, it has also been heavily critiqued. Gobet and Chassy (2009) argued for an alternative theory of intuition in relation to movement in and across levels and between a novice and an expert. The authors contended that there was no empirical evidence for the presence of stages in the development of expertise. Indeed, being a novice involves understanding the different levels of expertise around any topic or issue. This means that the level of domain-specific knowledge and experience is deployed and understood between experts and novices alike. While Gobet and Chassy (2009) note that experts leverage analytical thinking in what the authors have characterized as 'slow' problem solving, their taxonomy situates expertise along a continuum from novice to expert. It is also helpful when considering what it means to be an expert in a university to apply Schon's (1984) concept of 'reflection in action', which emphasizes concepts of 'knowing in action' and the role of 'know-how' in describing expert performance as

Table 7.1 Five-stage model of the mental activities involved in directed skill acquisition

Skill level/mental function	Novice	Advanced beginner	Competence	Proficient	Expert
Recollection	Non-situational	Situational	Situational	Situational	Situational
Recognition	Decomposed	Decomposed	Holistic	Holistic	Holistic
Decision	Analytical	Analytical	Analytical	Intuitive	Intuitive
Awareness	Monitoring	Monitoring	Monitoring	Monitoring	Absorbed

similarly influential (p. 357). Luntley (2009) posits that what distinguishes an expert from a novice is what is known and how what is known is applied. Categories reflect a defined and measured understanding and awareness of a domain of knowledge, and, perhaps importantly, the expert's application of knowledge and skill in the world. Although how experts are defined is key in university contexts, so is the level of expertise that can be demonstrated. From beginner to advanced, titles like professor or provost are important, but experience is crucial. For Luntley (2009), expertise is developed through practice as they engage in a process of developing existing expertise (from beginning to advanced). Because of this the tradition of university titles and categories is an insufficient signifier of an expert. Instead, what matters is demonstrating expertise and continuously working to refine their understanding, knowledge, and skills.

Universities as Assemblages of Knowledge

Although one can think of experts and novices and the expertise found in and created from universities as discrete entities, universities might be better positioned as assemblages of expertise. This is particularly useful given the current challenges faced in higher education as they struggle to transform in ways that address "the new economies, ecologies and geographies of knowledge production" (Bacevic, 2018, p. 2). Bacevic (2018) notes that the forces of capital and technology, including the rapid growth in technology-mediated teaching, learning, and research (i.e., Zoom, ICT, Virtual Learning Environments) have destabilized our orthodox and traditionalist views of universities as the center of knowledge-based societies and economies. Today, universities are shaped and reshaped to reflect fractures and fissures in the forms, functions, and stated purpose of knowledge and knowledge institutions.

Defined as complex, co-created, and co-constructed teaching, learning, and research environments, assemblages of knowledge serve to position experts and novices in a relationship.

Universities, as assemblages, exercise a degree of agency through their particular composition and characteristics (i.e., admissions, professional

programs, physical environment, specialist activities, or position within the educational field), for example, the assembly of individuals and groups of individuals who are considered legitimate experts in their respective fields and disciplines. The physical and social milieu of a university is a medium upon and through which otherwise disparate experts of varying levels of experience and expertise (from novice to advanced expert) are assembled and whose activities are coordinated in relation to the physical, social, and personal spaces and places that make up what we define as a university (Barnett, 2017; Temple, 2018). From art to science and engineering to mathematics, universities (general and specialized) are formed around the expertise of their related experts (faculty, administrators, students, visiting scholars, and guests). Bacevic (2018) asserts "assemblages, in this sense, exercise agency not by the virtue of their internal composition, but because of the way in which their composition interacts with their environment" (p. 3). These assemblages become "irreducible social wholes composed of heterogeneous elements. Some of these elements are persons, but some are buildings, machines, trees, animals, etc... Rather than being a stable or bounded entity, an agent can thus be thought of as a network or 'bundle' of objects, persons, and relations, which change over time" (Bacevic, 2018, p. 11).

Because universities continuously reconfigure themselves in relation to various pressures (Bacevic, 2018) an assemblage of knowledge approach can offer a means for knowing thyself and others in order to distribute authority and deploy expertise in the institution. However, respective of the level of expertise an expert and a novice may maintain, an alternative starting point to expert-novice relations reveals a need to accept that, for both categories and parties, a liminal space is opened up when we consider how little can be known about the level of expertise of experts and novices. Such a view foregrounds the emergent and complex nature of expertise and how, especially in educational environments, the differential and often asymmetric power relations within the environment shape what is expected and allowed for by either experts or novices.

This does not mean that experts and novices are always operating within asymmetric power relations at all times. Instead the nature and habitus (Bourdieu, 1989) of the educational environment can mean that the 'capitals' (i.e., expertise, reputation, expectations) of experts and

novices become interdependent. Notions of capital are situated and rest on whether and how both experts and novices operate in relation to expertise. The consequence of positioning expert and novice in relation to expertise is a result of co-constructed platforms. Being a novice, like being an expert, is co-constructed and co-created around individual and group relations to what has been defined here as expertise. Expertise infuses/imbues the expert and novice with varying levels of authority to speak on a subject. The expert is defined more by their ability to coordinate and organize the table, so to speak, at which experts and novices sit together. In some settings and contexts, experts and novices are focused on shared understanding of knowledge. It is clear that if knowledge and expertise are to win the day, it cannot be a matter of who presumes/assumes based on asymmetrical power and authority relations the individual(s) as expert(s). Rather, it is not the loudest and presumptive who wins in expertise, but at least to one degree or another, the expert is one who is capable of shaping and guiding both experts and novices through quality questions and epistemic rifts in order to arrive at a space in place where the idea(s) and expertise are co-constructed and co-created and made to be the central concern of all parties involved. Simply said, let the best ideas be the guiding aim and objective of experts and novices. Acknowledge that experts and novices rely on each other to understand the contextual, situated, and contingent nature of their expertise. And, be aware that a number of implicit and explicit power, authority, and bias operate in the work of experts and novices together and define the quality both experts and novices derive from their interactions.

An assemblage of knowledge approach can also serve to emphasize expertise in universities as socially and culturally constituted. Bacevic (2018) notes:

> …the processes by which elements become parts of emergent totalities are culturally and socially constituted, which means that they have to be understood in specific political and historical contexts. Rather than assuming a 'natural' or morally preferable fit between processes of teaching and research, this allows us to ask how is it that these activities became essential to a specific concept of what a university is, and what work does treating them as such perform. (p. 4)

Through this position, universities, experts, and expertise are emergent and culturally and historically constituted. Rather than an end result of study and practice, expertise is embedded in the pursuit of knowledge—the social processes of teaching, learning, and research. In the emergent and complex space of the university, the constant work of universities is to be comfortable with the unknown, to explore and evidence activities through assembling individuals of various types and levels of expertise to extend existing knowledge. As Bacevic (2018) posits, using assemblages of knowledge to reframe universities changes how we think about knowledge production in higher education institutions. She states, this reframing allows for "... a more variegated ecology of knowledge and expertise, in which the identity of particular agents (or actors) is not exhausted in their position with (in) or without the university, but rather performed through a process of generating, framing, and converting capitals" (Bacevic, 2018, p. 11).

Seeing universities as assemblages of knowledge is not simply an imaginary possibility. The following are two cases where the assemblage of knowledge approach has been applied in universities. Universities have come under rising pressure to demonstrate awareness and alignment between policy, practice, and provision of higher education. Coordinating institutional efforts to align policy and practice, universities, such as Stanford University and University College London have adopted internal research and decision-making support to harness expertise.

The Stanford University Institutional Research & Decision Support (Stanford IR&DS) is described as a department charged with providing integrated analysis and research needed by university decision-makers; publishing reports that provide insight into the performance of the institution; assessing and evaluating Stanford's academic and co-curricular support programs; building data collections and facilitating access to data, including providing training and tools; and disseminating and facilitating best practices in the collection, use, and interpretation of data and advocating for data quality and integrity (Stanford University, 2020). To accomplish this, Stanford IR&DS accesses, utilizes, analyzes, and reports on data from all of the major administrative systems at the university including student, faculty, course, research, and financial data (Stanford University, 2020).

The Stanford IR&DS focuses on decision-making and administrative support. In their electronic resources, the Stanford IR&DS describes the diffusion of its responsibilities and activities across a set of teams who aggregate and share knowledge across departments, faculties and the institution more generally (Stanford University, 2020) that mirror an assemblage of knowledge. These teams position their work as a provider of "timely, high-quality, accessible management information and analysis for informed decision-making" at Stanford. Stanford IR&DS performs and facilitates complex analyses for both departments and central offices, including collaborating with other universities to provide comparative data, and proactively publishing management reports. This means their work is integral and ecological, focusing on fostering an environment where cogent, contextualized, and insightful information is provided to decision-makers across the institution.

Similar to Stanford IR&DS, University College London deploys an evidence-based approach to defining and developing a research-based educational strategy. University College London founded and developed the Arena Centre for Research-Based Education as a consortium of scholars from across UCL faculties whose mission is to examine the teaching, learning, and research resources across the institution in order to inform and influence research and education integration at the university (UCL Arena, 2020). This materializes in one instance through the UCL Education Strategy 2016–2021. The strategy aims to personalize student support, put research and enquiry at the heart of learning, improve assessment and feedback, develop student engagement and leadership, revitalize postgraduate taught education, create a teaching estate to meet our needs, enrich digital learning, and prepare students for the workplace and the world (UCL Arena, 2020).

The strategy harnesses UCL expertise to create, develop, and apply a "framework for the improvement to UCL teaching and learning, putting teaching on par with research" across the institution (UCL Arena, 2020). In doing so the assemblage of knowledge draws on a holistic, cross-departmental, and institution-wide approach using interdisciplinary expertise and internal and external strategy to inform the institution's undergraduate and graduate teaching and learning, as well as research initiatives.

As Stanford and UCL note, generating feedback from institutional stakeholders on teaching, learning, and research is not a new phenomenon (Stanford, 2020; UCL Arena, 2020). However, trust in the approaches, outcomes, and recommendations of institutional assessment is enhanced when individuals see their expertise applied to institutional policy, planning, and practice. Furthermore, internal and external stakeholders benefit from work to evaluate and assess teaching, learning, and research outcomes against clear rubrics for student and institutional teaching, learning, and research outcomes. Thus, these holistic approaches that reflect the spirit of an assemblage of knowledge honor all forms of expertise and experience from multiple stakeholders to connect institutional strategy to internal and external assessment exercises and frameworks.

Shaping educational strategy, research, teaching and learning outcomes have become central to university governance. The Stanford IR&DS and the UCL Arena Centre for Research-Based Education act as sites for creating, funding, and supporting an institutional framework that shapes the teaching, learning, and research practices at their universities. But they are not the keepers or creators of the expertise needed to achieve their missions. The Stanford IR&DS and UCL Arena Centre provide a baseline for key institutional activities like teaching, learning, and research, and university departments develop and contribute research, decision-making, and strategy. These departments are part of a broader institutional ecology related to devolved and shared decision-making and responsibility for university outcomes.

Additionally, the work of the Stanford IR&DS and the UCL Arena Centre conveys a cultural value for circling back to institutional work and exploring whether and how the institutions' understanding, and intentions actually materialize in the realities of the institutions. It is key that, insofar as universities are assemblages of experts and expertise in a number of domains and fields, their activities and actions of organizational departments such as the IR&DS and the Arena Centre at UCL are not perceived as simply 'tick-box' exercises. Feedback must be intentional in its generation and implementation. Staff and students will quickly pick up on whether or not feedback that is generated in such departments is influencing the organizational structure and cascading into the daily life

of staff and students. If feedback becomes an exercise for the sake of stating that an educational institution is concerned but not bothered enough to affect change based on stakeholders' feedback, this might have a damaging influence on stakeholders' trust and long-term care for the respective institution. Universities rely on the expert knowledge of their stakeholders, which makes a sense of connection and valuing the individual in any capacity and across every level key to institutional success.

Stanford IR&DS and the UCL Arena Centre highlight how even when an assemblage of knowledge is desired, the performative nature of universities often requires a mechanism to track and archive institutional decision-making, strategy, and outcomes from policies and university practices. Even still, these examples illustrate the role these centers provide in creating clear threads of study and information gathering upon which key stakeholders and critical institutional decision-makers define their work. In this way the idea and ideal that universities value expertise and are interested in and compelled to respond to stakeholder feedback on critical activities are attended to.

Conclusion

At the core of universities is their ability to generate and contribute new knowledge. This chapter explored the concept of expertise in universities, including how expertise, experts, and novices are situated within universities and how these can come together as assemblages of knowledge. Moving from framing expertise, novices, and experts to positioning universities as emergent and complex institutions with the possibility of acting as assemblages of knowledge was viewed through the organizational governance of two institutions, Stanford University and University College London. These cases illustrated how expertise was provided from the level of the individual (novice and expert), group (department), and across the institution (universities), with IR&DS and the Arena Centre for Research-Based Education acting as internal platforms to evaluate, assess, and synthesize university expertise. These examples illustrate points made in this chapter.

Addressing different approaches to defining and understanding expertise, experts, and novices are important in the university setting. What defines experts from novices goes beyond objective and subjective knowledge. Ronald Barnett (2017) proposes that expertise is a field where experts and novices are situated and positioned by time, energy and attention devoted to a subject of study. Expertise is the drive and outcome of co-created and co-constructed knowledge among novices, experts, and universities. Such a holistic and ecological approach is part of a present trend aimed at providing opportunities for participatory governance to shape the forms, functions, and stated purpose of the institution, accounting for internal and external stakeholder feedback. These approaches have been adapted by institutions and have generated varying degrees of governing success. It is crucial that participation, representation, reflection, and reflexivity are integrated into the forms, functions, and stated purpose of institutional practice.

Universities are uniquely positioned to create possibilities for experts and novices to develop individual and social knowledge. The result is the opportunity to serve the self, public, and common good. The definition of universities as territories and the influence of deterritorializing the forms, functions, and the stated purpose of universities across history (Bacevic, 2018) help to make sense of the shifting social attitudes toward higher education, as well as the forms, functions, and stated purpose of these institutions (Tight, 2011). The growing complexity of universities requires a consistent commitment by experts and novices to learn and influence the teaching, learning, and research aims and objectives of universities.

In this chapter, assemblage theory offered an opportunity to create new possibilities for understanding expertise as knowledge is created and disseminated and stakeholders are consulted. These assemblages of experts are key to addressing challenges and how universities deploy their expertise through the collaborative, co-constructed, and co-created work of novices and experts. Works by novices and experts develop new pathways of knowledge, and modes and methods of study. Such assemblages of knowledge inspired participatory governance and modeling such as those adopted by Stanford and UCL. Assemblages of knowledge attend to a need for access, participation, recruitment, and retention of expertise in

universities and contribute to the local and specific nature of how expertise is applied at an organizational level. The aim of expertise in such contexts is to generate meaning and value for the institution and its stakeholders through coordination of efforts to create safe, supportive, and inclusive environments internal to and beyond the academy. In this view expertise offers the opportunity to put creativity and experimentation at the center of the work of universities. The assemblage of knowledge can liberate scholars (novices and experts alike) to pursue new knowledge pathways and generate new opportunities and to develop socially constructed insights from experts across various fields and disciplines of study.

Assemblage theory and expertise generate possibilities for scholars to be at the leading edge of creation of new technology, thought, creativity, and exploration. First, from science, technology, sociology, economics, to art history and dance, the pursuit of knowledge for its own sake and the chance to emerge from study as a reflective and self-reflexive practitioner should be central to novices and experts who are connected to the values, aims, objectives, and beliefs of their universities. Expertise forms the connective tissue between novice and expert. In adopting what you might call an *expertise as an intermediary approach*, a space opens up. In this space, what is important is not so much assumed and implicit authority and power, rather it is the assemblage of university expertise to tackle emergent and complex projects that are influenced by while also influencing both novices and experts. Taking up such an approach could cement universities as institutions whose expertise contributes to knowledge at both a personal and social level.

Concepts covered in this chapter also raise the call for longer and more elaborate study of the contemporary political economy (and ecology) of knowledge production, which would need to take into account multiple other actors and networks from the more obvious, such as Twitter, to less 'tangible' ones that these afford such as differently imagined audiences for intellectual products. Lastly, universities must not lose sight of the importance of trust: trust in people, in processes that are co-created. Expertise as discussed in this chapter needs adequate representation. Feedback is important, but a strong assemblage of knowledge aims for generating participation and representation in and across the university. Participation and representation must be an integral component of institutional

decision-making and practice. This reflects an underlying belief that participation and representation generate a connection between staff, students, and administrators as connected to the institution. This is complex, but by adopting a feedback driven, participatory framework staff, students, and administrators are connected into a wider ecological approach to the institution and its organizational expertise.

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