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Understanding what we mean by the generic attributes of graduates

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Abstract. One way in which universities have sought to articulate the outcomes of a university education is through a description of the attributes of their graduates. Recent calls for universities to demonstrate the quality of their outcomes and processes have prompted a re-examination of the generic graduate attribute outcomes many Australian universities have espoused for the past decade. As university communities struggle to identify what combination of skills, attributes and knowledge to include in these statements of graduate outcomes, and begin to come to terms with how to develop curricula to effectively achieve these outcomes, the fundamental nature of these outcomes is a vital preliminary question to address. What are these things that universities call generic graduate attributes? This is a more fundamental question than what combination of skills, attributes and knowledge should be included on the graduate 'shopping-list', it is about the nature of the things on the list, and the nature of the list itself. In seeking to further our understanding of the meaning of generic graduate attributes, the research described in this paper used phenomenographic analysis to explore academics' conceptions of generic graduate attributes in the context of contemporary teaching and learning practices at one Australian university. A way of describing the key aspects of the variation in academics' understandings of the concept of graduate attributes is presented. The contribution of discipline background to conceptions of generic attributes is considered and the implications of the observed variation for universities' current curriculum reform initiatives discussed.

Keywords: generic skills, graduate attributes, phenomenography.

Introduction

The nature of universities is changing. In seeking to accommodate new demands and reinterpret the university's purpose and role in the face of society's changing aspirations, universities have attempted to clarify the nature of the education they offer to their students and in doing so, their graduates' potential contribution to society (Barnett 1990). One obvious way in which universities have sought to articulate their role and purpose is through a description of the qualities of their graduates. In Australia, these descriptions have tended to be the products of

individual institutions rather than a national statement of the generic outcomes of the country's higher education system. The particular institution's values and beliefs, as well as the political and social climate in which they exist, colour these descriptions of graduate attributes. In many cases, while apparently anchored in the rich cultural traditions of the institution that produced them, such descriptions arose literally overnight (Clanchy and Ballard 1995). The extent to which the rhetoric of such statements actually represents a shared understanding of the outcomes of a university education is a matter of conjecture. The extent to which present day university teaching and learning processes actually develop such outcomes in graduates is even more contestable.

Background to generic graduate attributes in Australia

Various forces acting on higher education globally have fueled the re-emergence of universities' claims of graduate attributes over the past 20 years. Chief amongst these forces have been calls for universities to produce more employable graduates. In Australia such calls reflected the positioning of education as one of the keys to the nation's prosperity in the new knowledge economy (HEC 1992). The linking of governments' education and economic growth agendas has contributed to the massification of higher education systems around the world. The resultant increased public investment in universities has brought with it demands for universities, as public institutions, to demonstrate that they are efficiently and effectively achieving what are deemed to be relevant and worthwhile outcomes (Woodhouse 1999). This has contributed to the new quality assurance regime currently characterising higher education systems internationally.

In Australia the definition of relevant, worthwhile core outcomes of higher education has been one element of many universities' efforts to demonstrate that they are providing a relevant education. Australian universities are now required, at a minimum, to include in their operational plans a statement of the generic outcomes of a university education, as a condition of funding. The current government has also foreshadowed calls in future quality assurance exercises for evidence that universities are actually achieving these claimed graduate outcomes.

As a backdrop to these contributing factors there has been a renewed interest in the continuing debate within both the university and wider

community as to the purpose and nature of a university education. In Australia this is a broader debate than the employable skills agenda of industry and government, and one that has found its expression in universities' claims of graduate attributes and qualities. This debate reflects the realisation that changes in society, the information explosion and the proliferation of the multiple ways of knowing which characterise the postmodern world, render traditional 'knowledge' based conceptions of the university somewhat obsolete (Barnett 2000). However, the extent to which universities' present day claims of graduate attributes actually meet the challenge of such new conceptualizations is debatable (Barnett 1997).

The current status of graduate attributes in Australian universities

Broadly speaking, in Australia 'generic graduate attributes' have come to be accepted as being the skills, knowledge and abilities of university graduates, beyond disciplinary content knowledge, which are applicable in a range of contexts and are acquired as a result of completing any undergraduate degree. They should represent the core achievements of a university education (HEC 1992).

> Graduate attributes are the qualities, skills and understandings a university community agrees its students should develop during their time with the institution. These attributes include but go beyond the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses. They are qualities that also prepare graduates as agents of social good in an unknown future. (Bowden et al. 2000)

These graduate qualities are described and defined differently in different universities and education systems and a bewildering array of terms has emerged as a result. Such terms include generic, core or key competencies or skills, personal or transferable skills and generic attributes of graduates. Despite the variations in definitions and what would, in other contexts, be considered fundamental differences between outcomes that are 'skills' and outcomes that are, for example, 'attitudes', these terms are used interchangeably in many discussions (Hager et al. 2002).

In Australia the lists of graduate attributes developed by the different universities vary, not only in terms of which attributes are included, but

also with respect to the nature and level of the attributes described. The lists of attributes typically include outcomes that range from simple technical skills to complex intellectual abilities and ethical values. Often these lists of graduate attributes are not well defined, comprising statements such as 'graduates will possess written communication skills'. While there appears to be an assumption of a shared understanding of the terms used, and the place of such 'generic' outcomes amongst the more familiar outcomes of university curricula, the lack of specification often leaves the stated outcomes open to interpretation. Indeed some university's policies suggest that such outcomes should 'be interpreted in the context of the discipline' implying that these outcomes might indeed be somewhat different in different contexts. So while there is an assumption that these outcomes are 'generic' to all undergraduate degrees, they may not be generic at all.

The variation seen in the lists is multiplied by the various interpretations of these attributes presented in academics' reports of curriculum initiatives. Many publications describe a wide variety of very different initiatives targeting the same attribute (see for example Fallows and Steven 2000). The variety of pedagogical approaches (Bennett et al. 1999) might further suggest a similar variety of understandings of the intended outcome.

Despite reports of many individual curriculum initiatives, the overall picture in higher education systems around the world is one of patchy implementation and uptake of such graduate attribute initiatives. In their review of such initiatives in the UK, Drummond and co-authors (1998) concluded that despite considerable funding over a period of several years, when considered from a system wide level, attempts to implement graduate attribute curricula had been remarkably unsuccessful. This was despite the existence of often excellent, but isolated, initiatives. It would appear that typically, graduate attributes initiatives are only instituted where they are supported by an individual or group of people who believe such attributes to represent valuable graduate outcomes, and sometimes in the face of reported apathy and even resistance from colleagues who feel otherwise. Moreover, such initiatives often do not last after the individual leaves or the funding support is withdrawn.

In Australia the development of graduate attributes curricula has not been extensively supported through specific additional government funding schemes as it has in the UK. Instead the expectation has been that the development and implementation of graduate attributes curricula is the responsibility of university teachers. Recent attempts in

some Australian universities to instigate institution wide curriculum reform to address graduate attributes (Bowden et al. 2000; Goldsworthy 2003;Hager et al. 2002) have also noted that such reform is still required despite a decade of universities claiming such outcomes on behalf of graduates.

There is an assumption implicit in much of the literature that academics share a common understanding of the concept of graduate attributes (or its many synonyms) as the 'core achievements of higher education'. However, the diversity of descriptions of graduate attributes, and the variation in the teaching and learning processes of graduate attributes curricula in different disciplines, along with the reported 'patchy' implementation, prompts questions as to the extent to which individual academics vary in their conceptual understanding of what 'graduate attributes' are. Such variations in conceptual understanding might imply, amongst other things, different valuing of the importance and relevance of addressing such outcomes in the context of university curricula and teaching. It would seem likely that the variation in the descriptions of graduate attributes and the variation in curriculum models and individual teaching and learning approaches in academics' classroom contexts, reflect different individual understandings, even if there are shared common features to these understandings. Exploring the way these understandings vary was the central intention of this research.

To date there have been numerous 'lists' of generic skills published and compared in terms of the most 'popular' inclusions (Harvey and Knight 1996). However, despite many calls for such fundamental research (Clanchy and Ballard 1995), there has been a paucity of research which addresses the presumed conceptual basis of the notion of the generic graduate attributes included on these lists (Bennett et al. 2000). Nor does there appear to be any model of graduate skills implicit in the research literature that accommodates the diverse views and policies of different staff and institutions (Fallows and Steven 2000). Researchers around the world are recognising the need to re-examine the underlying concept of generic graduate attributes as an outcome of a university education (Holmes 2000).

What is missing is research which goes beyond the documentation of lists of particular outcomes and asks about the nature of these outcomes, and research which goes beyond the description of different curricula models and asks about the academic's understandings and intentions that inform these curricula.

Methodology: A phenomenographic approach to graduate attributes

Educational research is ultimately based on various different theories of learning and perspectives on the nature of knowledge. One research approach which is proving helpful in the context of teaching and learning in universities is phenomenography (Entwistle 1997). Over the past 20 years, phenomenographic research has provided many useful and influential insights into teaching and learning (Bowden and Marton 1998; Prosser and Trigwell 1999).

Phenomenography is based on the idea that a particular phenomenon can be experienced and understood in a limited number of qualitatively different ways (Marton and Booth 1997). In the context of this study the phenomenon under investigation was graduate attributes and the researcher's focus was on the different understandings of the concept of graduate attributes. Different ways of experiencing and understanding graduate attributes involve different structures of awareness. A particular structure of awareness is made up of a number of aspects of a phenomenon, simultaneously present and related in a particular way. Some aspects are in the foreground and some in the background depending on relevance and context. A different way of experiencing a phenomenon involves more or less aspects of the phenomenon simultaneously present in the thematic awareness and or related in different ways. Commonly phenomenographic research has as its focus an investigation of variation in the process of learning, the process of teaching or a particular concept that is being taught or learned. The focus of the present research was on the variation in academics' conceptions a particular sort of learning outcome (graduate attributes) and related to this, the variation in how academics understood students to develop these outcomes.

Data collection involved the use of individual, in-depth, semi-structured, phenomenographic interviews. Interviewees were drawn from a spread of academic disciplines across a major Australian university. As the research question arose from an interest in the possible variation in how different academics understood or conceptualised generic attributes of graduates, the interview sample was selected with the aim of highlighting such variation. In particular, purposive sampling was employed with the intention of maximising the potential variation in contemporary university teachers' disciplinary backgrounds. Interviewees were selected from a pool of academics who had been involved in contemporary curriculum development at the university over the previous two years. This potential sample was identified from the records of the

university's academic development unit. Invitations were sent initially to three academics in each of the following five disciplinary domains; the Basic sciences (e.g., Chemistry), the Humanities (e.g., History), Professional disciplines (e.g., Engineering), Professional medical disciplines (e.g., Nursing) and the Social sciences (e.g., Sociology). Additional invitations were sent until 15 responses agreeing to participate were received.

All interviews took place in the interviewee's work setting. Each interview lasted between 45 and 70 min. The interviews were tape recorded and transcribed verbatim for subsequent analysis. Prior to commencing the interviews a set of questions and a range of predetermined follow-up probes were designed in accordance with phenomenographic principles. The questions were trialed with two academic colleagues and the questions refined on the basis of this trial. While each interview included a set of key questions (Appendix A), the process of the different interviews varied somewhat depending on the issues raised by the interviewee. This is typical of the phenomenographic interview process. In particular, the follow up probes were adjusted to use the words and terms the respondents offered in their discussion of their understanding of generic graduate attributes.

The intention of the interview was for the respondent to reveal, through her discussion, her conceptions of generic graduate attributes and the interviewee was encouraged to describe remembered examples and elaborate on explanations and understandings to the fullest extent possible. Phenomenography does not seek to impose a model of description determined in advance. So in adopting this approach, the study sought to describe graduate attributes by exploring the nature of the variation that emerged in accounts of individuals' experiences of the teaching and learning of such attributes.

The interview data was analysed according to the principles for phenomenographic analysis outlined by Marton and Booth (1997) and guidelines for reliability (Sandberg 1997). In analysing the transcripts of the interviews, the borders between individuals were initially abandoned and the transcripts were treated as whole, although the pool of statements were coded to identify the individual transcript each statement originated from. The first stage of the analysis was to identify which statements were relevant to the investigation of graduate attributes. That is, relevant utterances were identified on the basis that they expressed a way of experiencing graduate attributes.

The second stage was to identify the first draft categories of different ways of experiencing the phenomenon. This literally involved the

sorting of statements from the transcripts into piles by identifying and grouping the expressed ways of experiencing the phenomenon. The sorting was achieved by focussing on similarities and differences in the meanings expressed about graduate attributes and grouping statements which expressed similar meanings.

As the sorting of the statements occurred there was a concurrent shift in the focus of attention from the separate statements to the emerging groupings of statements. Attention began to be paid to the relationships between the provisional groupings of statements. This process assisted in identifying the groupings and focused the analysis on identifying the key characteristics of the categories into which the statements were being grouped. The focus was on identifying the critical features that differentiated the groups, and the features that were common to different groups in terms of the structures of awareness and associated referential aspects that characterised each category of understandings of graduate attributes (Marton and Booth 1997). The distinguishing features of the categories were examined and refined during the iterative process of identifying the logical relationships between the categories of description. The process of reading and sorting the statements was repeated several times with intervening critiquing of, and reflection on, the robustness of the emerging categories by the researcher, often in conjunction with other researchers. This process of phenomenographic data collection and analysis has been widely reported in the educational research literature over recent years (see Bowden and Walsh 2000 for a helpful overview).

From the phenomenographic perspective, a phenomenon such as the learning of generic attributes can be understood in terms of two interrelated aspects, 'what' the act of learning is aimed at (graduate attributes as outcomes) and 'how' the act of learning is approached (how graduate attributes are taught/learnt). For each of these aspects (the 'what' and the 'how'), a finite number of qualitatively distinct understandings of the concept of graduate attributes can be identified and described in terms of the structural and referential dimensions of each unique structure of awareness (Marton and Booth 1997). The structural aspect identifies what is in the foreground or thematised, and how what is in the foreground relates to the rest of the field of awareness. The dialectically constituted referential aspect identifies the meaning ascribed or how each structure of awareness is understood. The structural and referential aspects determine the logical relationships between the hierarchical categories of description and are used to explain the nature of the variation between the different understandings of graduate attributes.

The results of this sort of phenomenographic analysis are presented as a set of categories of description in an outcome space representing the range of qualitatively different understandings identified in the pooled data set. The first outcome space, which provides the basis for the discussion in the remainder of this paper, describes the observed variation in the group's understandings of graduate attributes as outcomes. The second outcome space arising from the research describes the observed variation in the group's understandings of how graduate attributes are taught and learnt, and along with a consideration of the relationship between the two outcome spaces, forms the basis for a subsequent paper.

Results: The concept of generic graduate attributes

The first aspect of graduate attributes which was investigated in the interviews, and which is discussed in this paper, relates to academics' conceptions of what 'graduate attributes' are (Figure 1). Four increasingly complex, qualitatively distinct understandings or categories of description emerged from the analysis of the transcripts:

1. precursory conception,
2. complement conception,
3. translation conception,
4. enabling conception.

Some academics express an understanding of generic graduate attributes as basic *precursory* abilities students bring to university and which provide a minimum base to which can be *added* the discipline knowledge of a university education. Other academics express an understanding of graduate attributes that goes beyond this to encompass additional general functional abilities and personal skills that can usefully *complement* the discipline specific learning outcomes of a university education. Other academics understand generic attributes to be more than useful additional general skills, rather they are specialized variants of such general skills that are essential in the application of discipline knowledge and the *translation* of university learning to unfamiliar settings thus usefully *transforming* the products of university learning. Some academics express a yet more complex understanding of generic attributes as *enabling* abilities and aptitudes that lie at the heart of scholarly learning and knowledge, with the potential to transform the

	Referential (what is meant)			
Structural (internal and external horizon)			**Additive:**	**Transformative:**
			GGA are discrete from other university learning outcomes	GGA interact with other university learning outcomes
	Irrelevant:	No aspect of GGA in the foreground, they are ignored. The relationship to other learning outcomes is as a backdrop	1: Necessary basic **PRECURSOR** skills but irrelevant as they are a prerequisite for university entry	
	Unrelated:	In the foreground are undifferentiated functional atomistic personal skills that are not related to discipline knowledge	2: Useful skills that **COMPLEMENT** or round out disciplinary learning	
	Application:	In the foreground are clusters of specialised abilities and skills of application relevant to discipline knowledge		3: These are the abilities that let students **TRANSLATE** make use of or apply disciplinary knowledge in the world
	Integral substrate:	In the foreground are inter-woven abilities and aptitudes for learning. These aptitudes shape disciplinary and other knowledge		4: They are the abilities that infuse and **ENABLE** university learning and knowledge

Figure 1. Outcome space of hierarchical conceptions of generic graduate attributes (GGA).

knowledge they are part of and to support the creation of new knowledge and transform the individual.

We can now consider each category of description in more detail and in doing so consider the structural and referential aspects that determine the logical and internally consistent relationships between the categories. The description of each category concludes with an illustrative quote drawn from the interview transcripts.

1: Precursor

Some academics express an understanding of generic graduate attributes mainly as necessary precursor skills and abilities. While graduates should possess such abilities, the expectation is that students will already possess these on entry and that any consideration of such skills at a university level would be remedial only. As such, these attributes are seen as largely irrelevant in the context of the courses these academics teach. While the generic skills might be a necessary precursor to the learning of subsequently taught discipline content, no relationship between the attributes and the resultant discipline knowledge acquired through a university education is apparent in this conception.

In effect no aspect of generic graduate attributes is in the foreground in this conception, they are understood as largely irrelevant in the context of university learning and are essentially ignored in the context of thinking about learning outcomes at university level. Instead, disciplinary knowledge is in the foreground. Generic attributes are relegated to the margin of the field of awareness as precursory abilities only and are not thematised in the context of university learning. The only relationship to other university learning outcomes is as low level skills that permit acquisition of content.

The referential aspect, or the meaning ascribed to this conception of generic graduate attributes, is as learning outcomes that should pre-exist in university students. These pre-existing skills are present in graduates *in addition to* disciplinary learning outcomes acquired during a university education.

> The three R's – reading writing and arithmetic – and some basic technology and library skills – the sorts of things we used to be able to reasonably expect any student who had completed high school to have. I think that it is cynical of the university to say that it teaches students such skills when we clearly don't. We expect students to

already have them before they come to university. Of course often they don't these days and those students that need to should be able to access extra help however, I think it is unrealistic to expect academics to try to do that.

2: Complement

Some academics express an understanding of generic attributes as useful additional skills that complement or round out graduates' discipline knowledge. They are generic skills acquired as the result of a university education and are therefore, understood to be outcomes that are part of the university syllabus but separate and secondary to the learning of disciplinary knowledge.

What are in the foreground of this structure of awareness are functional, atomistic, personal skills that are quite discrete from other university learning outcomes. As such generic attributes are present and can be thematised in academics' general understandings of university learning outcomes. This is a key difference between the first level Precursor and second level Complementary conceptions.

The referential aspect of this conception is similar to that of the first category described, in that graduate attributes are understood to be learning outcomes that may exist *in addition to* other university learning outcomes. The defining feature of this *additive* referential aspect is that generic graduate attributes do not alter or interact with disciplinary knowledge in any way. Rather they are understood to sit alongside and separate to, other learning outcomes. So, while present in the foreground of the structure of awareness of this conception, generic graduate attributes continue to be understood as being discrete abilities or skills which exist in graduates in *addition* to discipline knowledge.

In this conception, generic attributes are still seen as additional learning outcomes independent of disciplinary learning outcomes however the structural aspect of this conception is different to that of the previous category of description. Rather than only being important as precursor skills, generic attributes are conceived of as valuable learning outcomes in their own right, which can complement other, albeit more important, university learning outcomes. Unlike the previous conception, generic attributes are foregrounded in the structure of awareness and seen as relevant in the context of university learning.

In this conception, the personal skills and functional abilities that are foregrounded in the structure of awareness are undifferentiated by the discipline knowledge. That is, they are essentially the same in all disciplines. They are independent of, and neither change, nor are changed by, the discipline content. However, while undifferentiated, different skills are understood to be more or less relevant to the discipline knowledge. As such, in this conception there may be particular prioritised attributes that complement the content of particular disciplines.

> Generic attributes are the sorts of all-round skills that any graduate should have … they are useful additions to the disciplinary knowledge and expertise.

3: Translate

Some academics express a conception of generic attributes as abilities that let graduates make use of or apply disciplinary knowledge, thus potentially changing and *transforming* disciplinary knowledge through its application. The attributes are learning outcomes which graduates possess in partnership with discipline knowledge. The generic graduate attributes are closely connected with, and parallel, discipline learning outcomes.

In this structure of awareness, what are in the foreground are clusters of linked personal attributes, cognitive abilities and skills of application. These clustered abilities are particularly relevant to discipline knowledge and in this structure of awareness there are strong connections between the generic attributes and the content knowledge of the discipline. This is a key difference between the structures of awareness in the Complementary and Translation conceptions. In the complementary conception the personal and functional skills that are in the foreground are seen to be separate to, and independent of, the discipline knowledge that makes up the rest of the field of awareness. In this third category of description, while still separate to disciplinary learning outcomes, there is a mutual relationship between the thematised generic attributes and other disciplinary learning outcomes in the field of awareness. The nature of the theme-field relationship is that the attributes are essential in allowing the translation and application of discipline knowledge in the real world. Without generic attributes, abstract or context specific

discipline knowledge cannot be applied or used. In this conception the application of disciplinary learning to real tasks beyond the classroom is dependent on the generic attributes.

In this structure of awareness the theme-field relationship can be characterised as interactive or mutual. As well as allowing application of abstract knowledge, the attributes themselves are differentiated dependent on the nature of the disciplinary knowledge. In this conception the generic attributes developed by students are discipline specific by virtue of their close connection to and mutual relationship with disciplinary knowledge. That is, in this conception generic graduate attribute learning outcomes are actually not generic at all. Rather they are a specialized and differentiated form of underlying generic abilities developed to meet the needs of a specific discipline or field of knowledge context.

In the previously discussed second level, Complementary conception, the relationship between the thematised generic attributes and discipline knowledge was one of separate yet associated learning outcomes. Dependent on the nature of the discipline or field of knowledge, different generic attributes were more, or less, relevant, in the context of university learning in that particular field. However while different attributes may have been more or less important, the attributes themselves remained essentially 'generic'. Different 'sets' of the same attributes complemented different disciplines and fields of learning. This is not the case in the third level Translation conceptions.

In the Translation conceptions the relationship between the thematised generic graduate attributes and other university learning outcomes is more intimate and the two types of learning outcomes are interconnected rather than separate. Generic attributes are 'tailored' to mesh with the learning outcomes of different fields of study and the contexts of different disciplines. In this third level of the hierarchy of conceptions, generic graduate attributes are adapted to the specific discipline or field of inquiry or application and the structure of awareness is such that it encompasses disciplinary differentiation rather than generality, in generic graduate attributes.

In the Translation conception, generic graduate attributes are perceived to be an important outcome of university learning – on a par with the discipline content knowledge. They are perceived to be an integral and essential inclusion amongst the learning outcomes of the university curriculum as they allow the application of abstract disciplinary knowledge to actual contexts and the translation of disciplinary knowledge to new contexts or situations.

Unlike the previous two conceptions where the referential aspect was *additive*, in the Translation conception, graduate attributes are understood to be abilities which allow learners to change or *transform* discipline learning outcomes. Rather than being useful skills that sit alongside and independent of disciplinary knowledge, in this conception graduate attributes are connected to, and interact with, disciplinary knowledge. The understanding of generic graduate attributes as *transformative* rather than additive marks a significant difference between this third category of description and the previous two.

> Well they are the sorts of skills that change abstract knowledge into a form that is useful in the world of work or inquiry. If a student can't exercise abilities like ethical judgement and creativity, and balance these against scientific method in their research then they aren't a professional scientist.

4: Enable

Some academics expressed a conception of generic attributes, not as separate or parallel learning outcomes, but rather as abilities that infuse and enable all scholarly learning and knowledge. These abilities are seen as integral to disciplinary knowledge rather than being learning outcomes that sit alongside, (either as independent or linked outcomes) discipline knowledge, as in the previous three categories of description.

What are in the foreground of the structure of awareness are interwoven abilities and aptitudes for learning. There is an intimate relationship between the thematised graduate attributes and the learning outcomes and knowledge that constitute the remainder of the field of awareness. Graduate attributes are not seen as discrete learning outcomes, instead they infuse and are part of all learning. In this conception, graduate attributes are an integral substrate of discipline knowledge and are the core of all scholarly knowledge and learning.

Unlike the preceding level three, Translation conception, in the Enabling conception, the attributes are not simply connected with other learning outcomes of the discipline or field of study, they are integral to such outcomes. In this structure of awareness, generic attributes are the core or 'skeleton' that provides both form and function to disciplinary knowledge and the learning of that vvknowledge. In this structure of

awareness, the embedded attributes provide the building blocks for discipline knowledge and are more long lasting and important than the discipline knowledge they support. In this conception, once developed graduate attributes are perceived to provide a reusable framework that enables students/graduates to acquire and shape new knowledge as required – even in the context of other disciplines. In this conception, generic attributes are seen as transcending disciplinary boundaries even though they are initially developed within disciplinary contexts.

The foregrounded abilities in this fourth structure of awareness are not atomistic (level 2) or clustered (level 3) skills and abilities. Rather what is present is an interwoven and holistic world-view and aptitude for learning. The relationship to other disciplinary knowledge and university learning is also different. Unlike the previous category, the foregrounded aptitudes do more than translate disciplinary or other knowledge; they are part of this knowledge. In this conception graduate attributes provide a framework for the development of knowledge which shapes both learning outcomes and learning processes in university and other contexts. In the structural aspect of this conception, the relationship between the foregrounded aptitudes and the rest of the field of awareness encompasses more than just a relationship to the disciplinary knowledge acquired in the course of a formal university education. The relationship goes beyond that of the previous category and takes in links to a broader range of non-disciplinary learning outcomes. Rather than being relegated to the margin, learning outcomes related to more general life and world experiences are present in the field of awareness in this conception. This is not a feature of the structural aspects of the previous three categories of description.

The referential aspect of this conception is again transformative as graduate attributes are understood to shape and transform knowledge to meet new challenges and contexts. However, the structure of awareness of this conception means that this transformative understanding extends beyond merely translating, applying or adapting abstract or theoretical knowledge learnt at university to solve real world problems (level 3). It encompasses the reshaping of existing knowledge and the construction of new knowledge in contexts far removed from that of the original discipline in which the university studies were based. The transformative potential extends to other domains of knowledge and fields of study. Thus in this conception, generic attributes are understood as abilities that are the keys to inquiry and learning in many aspects of life, not just formal study.

> They are the sorts of abilities that are about intellectual and personal development. Which means they are more than just the tools of knowledge – like communication and literacy – they are part of knowledge – the way we interact and communicate about texts is part of what we know about texts. Using such specialised communication and critical reading skills to learn and interact with knowledge in an academic way is part of the product and process of academic thought.

A hierarchy of conceptions

The outcome space is hierarchical and conceptions in each increasingly complex category subsume and extend upon the preceding lower level understandings. A higher level, or more complex conception, can also incorporate elements of lower level conceptions of generic graduate attributes. For instance level one and two understandings can be subsumed in a level three understanding as in the following illustrative example, derived from the interview data, of the learning outcome of 'communication skills' for graduates of a biology degree:

- level three – translation: specific technical laboratory report writing skills to communicate scientific findings to a specialist audience;
- level two – complementary: general essay writing skills to construct a integrated argument – which may provide the basis for developing specific technical writing skills;
- level one – precursor: basic written English language literacy skills as a precursor to a formal writing task.

However a lower level conception does not encompass higher level understandings. To provide another simplified exemplar based on the interview data, consider computer literacy skills:

- level one – precursor: basic computer literacy skills as a precursor to using computers;
- does not include an understanding of computer literacy as required to use computers to conduct an internet search (level two – complementary);
- nor does it include the level of computer literacy required to search a specialized database of research publications (level three – translation);

- nor does it encompass an understanding of computer literacy as including the ability to refine an online search to obtain relevant information from a range of sources and to evaluate the merit of the information obtained from different online sources using the internet (level four – enabling).

It should be remembered that this illustrative example is a simplified one and no short extract from the interview data could carry all aspects of the variation between categories. The hierarchy is multidimensional in that categories of description vary on several dimensions, for instance the type of skills (atomistic personal skills to integrated and holistic capabilities) and the relationship to disciplinary knowledge and the way this relationship is understood (the additive or transformative dimension).

Contextualising the observed variation

We can now consider the way the observed variation within the pooled data (categories of description) was realized in individual academic's accounts of their understanding of generic graduate attributes in the context of these interviews. In the initial phenomenographic analysis the interview data from the 15 academics was pooled and treated as a whole. The categories of description that emerged from the pooled data set represented the variation observed in the group. In such a phenomenographic analysis, the identity of the individual respondents is not considered and the authorship of the quotes used as data for the analysis is largely ignored. In the following section, the individual is the focus of analysis and we will turn our attention to a consideration of the conceptions expressed by the individuals interviewed.

For the purpose of this second level of analysis each transcript was reconstituted and read in its entirety. The transcript was then classified using the categories of description previously presented. The outcome spaces presented in the previous section are hierarchical and an individual can express conceptions representing more than one category of description, that is individuals are seen as bearers of fragments of the different understandings described by the categories of descriptions (Marton and Booth 1997).

The fifteen individuals interviewed in the present study held disparate understandings of the concept of graduate attributes. These

understandings represent qualitatively different understandings of the phenomenon of graduate attributes. Why do these individuals have different understandings? From the phenomenographic perspective individuals come to experience the world in these qualitatively different ways, in part as a result of the previous experiences they bring to any situation.

Discipline variation

One aspect of the previous experiences of the individuals who participated in this study, which might have a bearing on their experience of the phenomenon of graduate attributes, is the disciplinary background these individuals brought to the situation. It is reasonable to ask if the qualitatively different understandings of graduate attributes simply reflect different underlying disciplinary knowledge bases or dominant ways of knowing in particular disciplines.

The academics interviewed in this study represented fourteen different disciplines across five broad fields of study or cognate groups: (1) Basic Sciences, e.g., Chemistry, (2) Humanities, e.g., History, (3) Professional, e.g., Architecture, (4) Medical Professional, e.g., Nursing, and (5) the Social Sciences, e.g., Psychology. There were two academics with identical disciplinary backgrounds (Engineering) in the Professional group.

After classifying each transcript in terms of the highest level of conception consistently expressed, the classification did not simply reflect the discipline backgrounds. Discipline differences alone could not be responsible for the variations in understandings as even the two academics in the cognate group of Professional disciplines who shared the same discipline background (Engineering) expressed qualitatively different conceptions of what graduate attributes are. These understandings were quite distinct, with one individual holding a conception of graduate attributes as Precursor (level 1) Outcomes and the other holding a conception of graduate attributes as Enabling (level 4) outcomes. These conceptions represent different extremes of the variation in understandings observed in the group. While this was the only pairing of common discipline backgrounds in the sample, similar variations are seen if the conceptions expressed by individuals are compared within the cognate groups. Consider for example the three individuals from the humanities disciplines. Individuals in this cluster expressed conceptions

of graduate attributes as outcomes that ranged from general skills which were unrelated to discipline knowledge (level 2) to abilities that were the core of discipline knowledge and learning (level 4).

Individuals from very different discipline backgrounds were also found to express quite similar understandings of graduate attributes: for example an individual from History understood graduate attributes in much the same way as an individual from Engineering.

The spread of conceptions across the disciplines and cognate groups would suggest that discipline background alone does not account for the observed variation. However, a sample size of fifteen is not sufficient to determine if some conceptions occur more frequently in particular disciplines. This is an area for future research. The initial in-depth qualitative phenomenographic analysis reported here might provide the basis for further exploration through a larger scale investigation using a questionnaire based on the conceptions identified in the present study. Our understandings of phenomena are based in our prior experience of the phenomena and other relevant experiences. Understandings of graduate attributes are not unrelated to other understandings of university education and it seems likely that disciplinary differences in understandings of, for example, the nature of knowledge are likely to be relevant, as are broader understandings about the nature of learning, to our conceptions of graduate attributes. However, the results of the present study would suggest the interplay between such disciplinary conceptions and conceptions of graduate attributes is not likely to be causal rather it might be thought of as relational.

Discussion: Implications and applications

The finding of qualitative differences in academics' understandings of the concept of graduate attributes suggests that as an academic community, we are not all talking about the same thing when we talk about graduate attributes. Indeed, this research would suggest that the definition of graduate attributes as 'the skills personal attributes and values which should be acquired by all graduates regardless of their discipline or field of study, and representing the central achievements of higher education as a process' (HEC 1992, p. 20), could mean different things to the different people charged with developing and delivering a university education. Given such variations in academics' understanding of the concept of graduate attributes, it is not surprising that at an

institutional and system wide level, uptake and implementation of graduate attributes curriculum initiatives has been variable. While policy statements claiming such outcomes have proliferated, attempts to implement strategies to achieve such outcomes have been patchy. From the perspective offered by the findings of this research, this inconsistency is understandable, particularly given the influence of individual teachers' understandings of the intended course and degree outcomes on what is actually taught and assessed in university courses (Prosser and Trigwell 1999). In the current climate of accountability and quality assurance, many Australian universities are seeking to institute widespread curriculum reform focussed on developing (and demonstrating) the particular attributes of their graduates. Typically these initiatives involve strategies such as mapping existing lists of graduate attributes onto existing course curricula, or developing additional common course units or developing standard assessments of generic skills. However it seems unlikely that such curriculum reform will be successful unless it first takes into account and addresses the variation in academics' understandings of the very nature of these graduate attributes, particularly their understanding of how these 'central achievements of a university education' relate to disciplinary knowledge.

If we consider how academics holding each of the conceptions might respond to calls to develop graduate attributes in the context of the courses they teach, some barriers to curriculum reform are immediately apparent. Clearly if an academic understands graduate attributes in terms of either Precursor (level 1) or Complement (level 2) conceptions then she is unlikely to prioritise the development of such attributes over discipline content. For an individual holding a Precursor conception the teaching of such attributes is not even understood to be part of the university curriculum:

> I don't see how I can be expected to be a remedial English teacher when my job is to teach science

Holding a Complement (level 2) conception might make an academic more receptive to calls to develop graduate attributes. However in an already crowded curriculum typically dominated by content, the fostering of such learning outcomes will always be secondary to the teaching of discipline knowledge. As such any curriculum innovation will be inherently vulnerable to displacement by curriculum pressures to prioritise disciplinary content. Moreover, calls for the inclusion of such outcomes amongst the learning outcomes of the course will be seen as an imposition of additional work by academics. In this conception

graduate attribute learning outcomes are essentially bolt-on learning outcomes which might be added to the usual course learning outcomes. As an additional curriculum this implicitly requires additional time (staff and student), support and resources. The prioritisation of additional secondary learning outcomes is unlikely to be sustained in the present university climate (see Barrie and Jones 1999 for a discussion of the curriculum design factors associated with the sustainability of graduate attributes curricula).

> I think it is important that students graduating from university can write well. I offer an extra seminar session on basic academic writing, you know essay structure and things like that … I run the session at lunchtime because the tutorial sessions are all allocated to the lecture topics.

In the Translation (level 3) conception, calls for courses to address graduate attributes are more likely to be well received since graduate attribute learning outcomes are understood to be an integral component of the learning outcomes of a university degree. Academics understanding generic attributes in this way would perceive such outcomes to be valuable products of university learning by virtue of the transformative features of this conception. Holding this conception would provide fertile ground for curriculum reform to address graduate attributes.

> I think it is important that students develop an appreciation of principles of diversity as well as the basic medical issues… the case studies I use in the lectures incorporate aspects of equal opportunity, discrimination and broader socio-cultural issues in health.

The Enabling (level 4) conception provides a still more powerful argument for the integrated development of such attributes in the context of university courses. In this conception graduate attributes are at the very heart of university learning outcomes and it would be almost inconceivable not to include them as core outcomes of curricula. However this central positioning of graduate attributes brings with it a different set of problems. In this conception the graduate attributes may not be explicit, that is they may be so embedded that they are rarely articulated or made explicit as course learning outcomes. This poses a particular challenge for assessment. However the transformative and highly integrated nature of these outcomes means that they are likely to be readily accepted by academics as worthwhile, if they can be made explicit and articulated.

> Well abilities such as scholarly thinking, reasoning and scientific inquiry are really part of the subject, they are the principles that underpin the body of knowledge … so even though they might think the course is about genetics it is as much about the process of inquiry in science and the discovery of new knowledge.

In addition to possibly helping explain the variable uptake and mixed reaction of some academics to calls for curriculum reform to address graduate attributes, the hierarchical nature of the conceptions of graduate attribute outcomes provides a potentially powerful tool for approaching the task of systematic institutional curriculum reform. One dimension of the structural aspects of the hierarchy of increasingly complex conceptions provides a framework for articulating increasingly complex levels of ability. Each conception builds on and extends the preceding conception in much the same way as the Structure of Observed Learning Outcomes (SOLO) taxonomy (Biggs and Collis 1982) describes increasingly complex learning outcomes. Graduate attribute outcomes of the type described in the lower level conceptions may provide a basis for the development of the higher level outcomes. Indeed it seems unlikely that graduates could develop the sort of scholarly attributes described by enabling (level 4) conceptions of graduate attributes in the absence of the basic abilities encapsulated in Precursor (level 1) conceptions. However it is important to note that the interwoven and clustered abilities of level 3 and 4 conceptions are more than the sum of these component atomistic skills (see Hager et al. 2002 for a discussion on the holistic nature of competence). While the idea of staged development of generic attributes is not new, the hierarchy may provide a framework within which the various curriculum initiatives targeting different types and levels of outcomes might be integrated and organised. The categories of description provide a way of recognising and valuing the contribution of initiatives targeting lower level outcomes, to the development of increasingly complex graduate attribute outcomes. For example, a support program for students with English as a second language could be recognised and valued, as might an introductory course on basic academic writing skills run by the university's learning support unit, while still encouraging academics to develop in their courses, level three or four transformative, integrated outcomes such as the 'ability to use written language as a tool for communicating and learning new knowledge'. The hierarchy of increasingly complex outcomes might also contribute to the development of frameworks to assess increasing competence in such abilities. Indeed the increasingly

complex conceptions of graduate attributes identified of this empirical study have parallels with the competence based assessment framework proposed by Bowden et al. (2000) and the two studies lend each other mutual support in the potential application of such frameworks to the challenge of assessing graduate attributes.

By articulating the key differences and similarities in understandings, the categories of description identified in this study can bring to the surface and make explicit the limiting nature of some understandings of graduate attributes in the context of today's universities. As such the primary use of the findings of this study is in opening up a dialogue by highlighting the critical aspects of variation between different understandings of the concept of graduate attributes. By becoming aware of these key aspects of variation, members of the university community become aware of how other members understand the concept, and in doing so are positioned to develop more complex conceptions themselves (Bowden and Marton 1998).

Conclusions

This study has described the qualitatively different ways academics understand the concept of graduate attributes. In doing so it has highlighted the fact that the academic community does not share a common understanding of graduate attributes as the 'core outcomes of university education'. The nature of the variation in understandings would suggest that some academics are unlikely to be receptive to calls for a university education to address the development of such attributes and provides an insight into some of the reasons that may underlie the inconsistent implementation of graduate attribute curricula.

The findings of this study may prove helpful in the context of the present re-examination of the purposes of a university education and the articulation of these purposes in claims of graduate attributes (Barnett 2000). This is timely given the increasing demands for universities to define and demonstrate the quality of the education that they provide. The conceptions identified provide a tool to support the members of the university community in engaging in a dialogue as to the nature of the attributes they espouse for their graduates. Before identifying which particular attributes might be the focus of a university education the university community, staff students, employers government and the wider society need to consider the fundamental nature of such graduate attributes and qualities, in

particular how such outcomes relate to discipline knowledge. Such a dialogue and consideration would provide the basis for a clearer understanding of the particular attributes identified by the university. Despite the assumption of a shared understanding, the present lists of graduate attributes appear to mean very different things to the individuals charged with developing such outcomes. Bringing the variation in understandings of graduate attribute outcomes into the open, where they can be debated and discussed, would seem to be an essential element of the process of agreeing on these attributes, and a vital precursor to successful curriculum reform to facilitate the achievement of such outcomes. It is hoped that the descriptions of the qualitatively different understandings identified in the present study will prove useful in the context of such discussions.

Appendix A

As the interview sought to situate academics' understandings in the context of contemporary teaching practice the interviews initially established this context using probes to expand on the following stem question:

- Which of the units of study you teach at the moment do you think best represents contemporary teaching and curriculum in your discipline? Can you give me a short description of that unit of study?

Once this context had been established the interviews sought to explore academics' understandings of graduate attributes in this situated practice:

- Thinking about the unit and teaching you have just described: Can you explain to me what you understand by the term 'generic attributes of graduates'?

A range of follow up probes were used dependent on the academics' responses to this initial question. These included prompts such as

- Can you explain that a bit more?
- Can you tell me a bit more about what you mean by that / 'X'?
- So what sorts of things / outcomes are they?
- So what sorts of things are those skills/attributes examples of?
- Can you explain that in the context of your own course?

- Can you explain a bit more about how generic graduate attributes fit into your own course?
- How are those sorts of things part of your course?
- Can you tell me why you think that?

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