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DISCIPLINES THAT INFLUENCE TOURISM DOCTORAL RESEARCH: The United States, Canada, Australia and New Zealand

ABSTRACT

This paper examines the disciplinary influence and the extent of multidisciplinary doctoral research in tourism in the United States, Canada, Australia and New Zealand. Dissertation databases were mined to identify 1,888 tourism-focussed doctoral theses completed between 1951 and 2010. Abstracts were analysed to determine disciplinary influences, differences between countries, and changes over time. The growth in tourism-focussed doctoral research has been exponential. Overall, psychology, environmental studies and anthropology have informed the greatest number of doctoral dissertations. The influence of some disciplines has declined proportionately over time, most notably economics. The dominance of single disciplinary based research particularly in Australia and New Zealand suggests the need for initiatives to foster multidisciplinary research.

Keywords: doctoral, thesis, dissertation, disciplines, multidisciplinary

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1. INTRODUCTION

The last century has witnessed the emergence of economies dominated by the service sector, including tourism (Cali, Ellis & Willem te Velde, 2008; Gallouj, 2002; Gershuny & Miles, 1983). This, combined with the increasing importance placed on higher education qualifications, has led to exponential global growth in the tourism and hospitality education sector (Huyton, 1997; Ruhanen & McLennan, 2010; Stuart, 2002; Yu, 1998). In parallel with this trend towards higher levels of undergraduate and postgraduate education, the interest and participation in tourism research including doctoral studies has increased dramatically in university institutions globally (McKercher, Law & Lamb, 2006).

Scholars assessing and reporting on the growth, breadth and maturity of tourism research have drawn on a variety of information sources, including the numbers of tourism academics working in universities, peer-reviewed journal publications and authors, and educational programs producing tourism graduates with research capabilities (Downward & Mearman, 2004; Faulkner, Pearce, Shaw & Weiler, 2003; Goeldner, 1999; Sheldon, 1990, 1991; Weiler, 2001). One measure of "the level of sophistication of research" (Faulkner et al., 2003, p. 304) in a particular field or discipline has been to look at the existence and number of postgraduate research theses or dissertations, particularly at the doctoral level (Adams & White, 1994). Of course, judging a field of research by the quantity of input (number of programs, researchers, research funding) or output (number of journal papers, graduates, dissertations) presents an incomplete and arguably a superficial perspective. At the same time, finding appropriate indicators of research quality is also problematic, as many measures such as journal rankings, citations and impact factors are highly contested (Kim, Savage, Howey & Van Hoof, 2009; McKercher et al., 2006).

While the extent to which a distinct body of theory has been established is sometimes seen as a measure of depth of maturity of a field of study (Jafari, 1990; Spear, 2007), it can be argued that in areas of study such as tourism that are inherently interdisciplinary, judgement on this basis may not be entirely appropriate. For Adams and White (1994, p. 573), the worst-case scenario is a field of study that promotes "mindless empiricism" that is devoid of theory and fails to develop on the theorising of established disciplines. Moreover, Spear (2007) and others have argued that all professions borrow from other fields of study and that genuine evidence of disciplinary breadth and multidisciplinarity are indicative of a field's level of research maturity. Many have lauded multidisciplinary research as being the future of social

science research, including tourism (Graburn & Jafari, 1991; Laing, Lee, Moore, Wegner & Weiler, 2009). Multidisciplinary research implies a maturation of a field of study in that two or more disciplines are being used, often to facilitate the synthesis of philosophies and techniques of multiple disciplines, including allowing for the emergence of a new discipline (Leiper, 1981).

With this in mind, the aim of this paper is to analyse the disciplines that inform doctoral-level tourism research as an important indicator of the growth and theoretical maturity of tourism research. In particular, this paper examines the use of theory from disciplines other than tourism to inform tourism-focussed doctoral theses or dissertations (the terms thesis and dissertation are used interchangeably in this paper). While the academic evolution of any field can be assessed in a number of different ways, doctoral dissertation research provides a useful measure for gauging the intellectual health of a body of research (Das & Handfield, 1997). This is because higher degree research students are generally considered to have the knowledge and skills necessary to comprehend and critique theoretical models, to judge the applicability of theory from other disciplines, and to apply theory and research to tackle complex and in-depth problems (Alexander, O'Neill, Snyder & Townsend, 1986). Moreover, application of theory in order to make a substantial and original contribution to knowledge is a common criterion upon which doctoral theses are examined.

Thus, this paper has two key objectives. The first objective is to examine the disciplines that inform doctoral-level research in tourism, including differences between countries and changes over time. The second objective is to examine the extent to which doctoral dissertations in tourism are, in fact, multidisciplinary. In this paper, multidisciplinarity is determined by whether a particular thesis is informed by theory from more than one discipline, as opposed to the extent to which tourism research is collectively multidisciplinary. While not a key objective, this paper also identifies the contribution of individual educational institutions to doctoral research output.

2. DISCIPLINARY INFLUENCES OF DOCTORAL-LEVEL TOURISM RESEARCH

2.1 Previous Studies

Anecdotally, the number of doctoral dissertations completed in tourism has increased dramatically. This study continues in the vein of a number of similar studies which first

emerged more than 20 years ago analysing dissertation research in tourism (Jafari & Aaser, 1988; Hall & Pedrazzini, 1989; Meyer-Arendt & Justice, 2002). The methods and findings of these studies are discussed in detail below in order to outline important conceptual and methodological improvements made for the current study, particularly with respect to identifying the disciplines that *inform* doctoral research in tourism as opposed to identifying the disciplinary *context* of the research (i.e. the school, department or administrative unit in which the research was housed). While determining disciplinary influence by analysing abstracts has not been undertaken in tourism research to date, this approach has been used in studies in other fields of research and is considered to be an established and rigorous method of assessing the interdisciplinary nature of a particular field of research (Adams & While, 1994).

Jafari and Aaser (1988) assembled a dataset of 149 American doctoral dissertations relating to tourism over the period 1951 to 1987, with 1951 being the year of the first tourism dissertation to be identified by their search of the *Dissertation Abstracts International* (DAI) online computer database. Jafari and Aaser (1988) found that growth over this period "was neither continuous nor at a certain rate" (p. 410), but that the overall trend was positive from the early 1970s–1987. The discipline which granted the degree was tracked over time, and it was found that most tourism dissertations were in the field of economics (26%), closely followed by anthropology (16%), geography (15%) and recreation (15%). Those institutions granting the degree were also noted, with two universities issuing 17% of the doctoral degrees: Texas A&M University and the University of Michigan. Jafari and Aaser (1988, p. 414) highlighted the need for their study to be replicated in other parts of the world so that the comparative data could be used "as an indication of the present status of tourism on doctoral campuses and its likely future".

Meyer-Arendt and Justice (2002) conducted a similar study of American and Canadian doctoral dissertations from 1987–2000. Their study, which sought to examine how patterns had changed since Jafari and Aaser (1988), revealed that recreation (97) had far surpassed economics as the discipline granting the greatest number of tourism-focussed doctoral degrees, followed by (as in the earlier study) anthropology (50) and geography (50). Other disciplines that figured prominently included education (29), business administration (29), history (28) and economics (26). Disciplines that emerged as producers of tourism doctorates during this period were American studies, environmental studies, psychology and literature (Meyer-Arendt & Justice, 2002). Universities producing a large number of tourism-focussed dissertations in the United States (US) included Texas A&M University (29), Michigan State

University (17), Pennsylvania State University (14), and George Washington (13). In Canada, the University of Victoria (6) was the top institution for tourism dissertations and was fourteenth on the overall list.

Other studies on postgraduate tourism research have been conducted in other parts of the world. Hall and Pedrazzini (1989) undertook a study of Australian higher degree theses in tourism, recreation and related subjects. As Hall (1991, p. 520) noted, this study emerged as a "direct response to the call of Jafari and Aaser (1988, p. 415) to [replicate] their study". The Hall and Pedrazzini (1989) study used a combination of paper-based and online searching via the catalogue of the University of Tasmania Library, including their *Union List of Higher Degree Theses in Australian Libraries Supplement*. Unlike the North American studies, they included "all touristic dissertations produced at the postgraduate level" (Hall, 1991, p. 520). The bulk of the 28 dissertations they identified were produced for Masters Degrees (86%), with only three PhDs and one Bachelor of Letters thesis identified for the period 1968–1988. In a short report of this 1989 study and acknowledging that the small sample made it difficult to make generalisations about rates of growth and trends, Hall (1991) noted that, like the Jafari and Aaser (1988) study, "the annual submission of tourism dissertations was highest in the late 1970s and in the mid-1980s" (p. 521).

Following the lead of Hall and Pedrazzini (1989), Weiler and Laing (2008) explored trends in postgraduate tourism research in Australia from 1969–2005. They found an uneven distribution of postgraduate tourism research, both geographically and with respect to discipline, with a noticeable emphasis on dissertations with a disciplinary base of business, management or marketing (47%). Three universities in Australia—Victoria University (17%), Griffith University (12%) and University of Queensland (11%)—led in producing doctoral-level tourism theses. In terms of trends over time, Weiler and Laing (2008) found there have been periods of slow growth, rapid growth and, toward the end of their study period, a slight decline in the numbers of postgraduate tourism theses.

In addition to studies undertaken on North American and Australian doctoral research, Botterill, Haven and Gale (2002) undertook an analysis of doctoral dissertations in the United Kingdom (UK) and Ireland. The data collected in their study identified 149 theses completed between 1990 and 1999 at 51 universities. Of the total, 37 were completed in roughly equal proportions at two universities: Strathclyde and Surrey. In contrast, 24 universities in the survey recorded just one relevant doctoral completion over the decade. In this study, rather than looking at the disciplinary context, the authors analysed the subject matter studied. Tourism development and impacts (46), tourist/visitor behaviour (21), tourism management at

the level of the industry/firm (19) and tourism planning and policy (17) were the subject areas most often identified in tourism theses.

Most recently, a study of doctoral dissertations in China by Huang (2011) found economics (47) to be the discipline engaged in the largest number of doctoral tourism theses, followed by geography (41), management (33), tourism management (17), forestry (17), history (13), and ecology (11). These findings reveal that the disciplinary context of doctoral-level tourism research in China is similar to what was in the US and Canada in the earlier period of the 1970s and 1980s. However, a major difference was the lack of dissertations in China housed in the disciplines of anthropology and recreation. Huang (2011) attributes this to the prevailing perception of tourism as primarily an industry or business endeavour rather than as a part of the social sciences/humanities fields. The findings from these previous studies provide some indication of the disciplines that most often provide the study context for doctoral-level tourism research. However, these disciplines have been determined largely by identifying the departments or schools in which the research was undertaken. While Hall (1991) argued that this would give the best possible indication of the discipline of research, this approach has two important limitations. Firstly, it does not account for the fact that research undertaken in schools such as business that are inherently interdisciplinary often draws on theory and methods from a range of other disciplines. Secondly, the approach forces allocation of each thesis to a single discipline, thus eliminating the potential to assess the extent to which an individual thesis is informed by multiple disciplines.

As stated at the outset, genuine evidence of disciplinary breadth and multidisciplinarity are seen as indicative of a field's level of research maturity and point to where theoretical development may be present and absent. Thus, in view of the limitations of previous studies and the aim of the present study, this study applies the method of Adams and White (1994) who determined the disciplines that influenced dissertations in public administration and five other fields by analysing the abstracts of the theses.

To assemble a list of the disciplines that potentially influence doctoral-level tourism research, the present paper turned to Jafari and Ritchie (1981) and Goeldner and Ritchie (2006). Jafari and Ritchie (1981) identify a list of 16 disciplines that provide the foundation for tourism and hospitality education programs globally. Goeldner and Ritchie (2006) subsequently added the five disciplines of entrepreneurship, architecture, history, gaming and kinesiology, thus bringing the total to the 21 key disciplines as displayed in Table 1. It is acknowledged that the labelling of many of these fields of study as "disciplines" is contentious, particular the newly-added ones. Indeed, there has been much debate in the

literature surrounding the disciplinary status of tourism (Echtner & Jamal, 1997; Leiper, 2000; Tribe, 1997, 2000). Nonetheless, the works of Jafari and Ritchie (1981), and Goeldner and Ritchie (2006) provide a useful point of departure for the initial analysis of the dissertations in the present study to determine the disciplines that have influenced doctoral-level tourism research, and to ascertain the extent to which multiple disciplines have informed individual theses.

* please insert Table 1 about here

2.2 Study Methods

In recent years, the tools for identifying and cataloguing postgraduate research have increased in sophistication and power. Dissertations from around the world can be searched using several electronic databases, and provide detailed bibliographic data including full abstracts in most cases, making it possible to undertake a more rigorous and thorough analysis than has previously been possible. For the present study, four online databases that catalogue and inventory doctoral research in the US, Canada, Australia and New Zealand (NZ) were mined for tourism-focussed theses. These four countries were selected on the basis that they are important players in both tourism generally and tourism research and scholarship within the Western-world, as evidenced by the economic significance of tourism in these countries, the number of PhD completions, and the number of scholarly outputs being produced. Dissertations Abstracts International (DAI) was used for identifying American and Canadian theses, and Amicus was also used for Canadian Digital Theses (ACDT). For Australia and NZ, the Australasian Digital Thesis Database and the New Zealand National Libraries catalogue were used.

To develop a comprehensive database of all tourism-focussed theses that have been completed in these four countries, a number of search terms were identified from previous studies (Hall & Pedrazzini, 1989; Meyer-Arndt & Justice, 2002; Weiler & Laing, 2008). In order to ensure that any thesis focusing on tourism was not overlooked the search terms included *hotel*, *hospitality*, *leisure*, *tourism*, *tourist*, *travel*, *tour*, *recreation*, *holiday*, *vacation*, *guide*, *trip* and *heritage*. By searching each of these keywords, a total of over 20,000 dissertations were assessed for inclusion in the study. Approximately 18,000 of these were then excluded based on the information included in the abstract, which was determined by

researcher judgement and cross-checking by two other researchers. It is important to note that any thesis that was *not* focused on tourism was excluded at this stage. After deleting irrelevant dissertations, a new customised database of those deemed to be in the field of tourism was created using Microsoft Office Excel 2007.

From each of the four online databases, the same data were systematically collected for each valid thesis and entered into the newly created Excel database. This included the author, year of completion, title, academic department, faculty, university, country, subject area, abstract, keywords and number of pages. In instances where the dissertation was listed on the database but not all the data were available electronically, the dissertation was accessed from the individual university's electronic library to fill any gaps in the dataset. This was necessary for obtaining abstracts of approximately 3% of the theses in the database.

In total, data from 1,888 valid doctoral dissertations from the US, Canada, Australia and NZ were identified and the relevant data inserted into the Excel database for coding. To achieve the aim of the present study, one of the authors analysed the thesis title, full abstract, list of subject areas and keywords of every thesis in the database in order to extract information about the disciplines which informed each thesis and to discern whether the thesis was multidisciplinary. Both theories and concepts discussed in each of the abstracts were used to assign theses into disciplinary categories. An inter-coder reliability test was performed by having an independent researcher review the coding of every twentieth dissertation as well as a selected list of approximately 10% of abstracts that were deemed difficult to code. There was substantial agreement on more than 80% of the abstracts and, following Adams and White (1994), differences on the remainder were discussed at some length with a third independent researcher until a consensus was reached.

Although determining disciplinary influence by analysing abstracts has not been done in tourism before, as already noted this approach is viewed as an established and rigorous method of assessing the interdisciplinary nature of a particular field of research (Adams & White, 1994). The 21 disciplines listed in Table 1 were used for this analysis, along with two additional codes: "tourism" (to capture theory considered to be specific to the study of tourism) and "other" (to capture new disciplines that emerged during the coding process). By coding in this way, the disciplinary orientations of the theses were allowed to emerge, rather than being pre-determined by the researcher or the context in which the thesis was undertaken. Moreover, this enabled a more thorough investigation regarding the extent of multidisciplinary research in the dataset, since any thesis that, based on its use of theories and concepts, drew on more than one discipline was captured as multidisciplinary. In contrast, a

search of the title, abstracts and keywords using the terms *multidisciplinary*, *interdisciplinary*, *cross-disciplinary* and *trans-disciplinary* (including various spellings with and without hyphens) critically underreported multidisciplinarity, as this search identified only 47 theses as being multidisciplinary.

Following coding, the data were transferred to STATA v.11 for cleaning and analysis. A new variable was created to capture which theses were based on single disciplines and which were multidisciplinary. The data were tabulated, summarised and analysed using descriptive statistics, pair-wise correlations and t-tests at the 95% significance level ($\alpha = 0.05$). Given that the data are a census of the population and not a sample, underlying assumptions required for these statistics were deemed to have been met (Cameron & Trivedi, 2009; Wooldridge, 2006). Tabulations by year were transferred back to Excel for graphing and trend lines were fitted to determine growth curvature.

There are some limitations associated with the methods. First, it is possible that not all tourism dissertations produced in a particular country are listed in the relevant theses database. In particular, recent theses may be missing due to the time lag of institutions uploading their dissertations. Second, while the keyword search identified over 20,000 abstracts that were read, some tourism dissertations could still have been omitted from the database if none of the 13 keywords was ascribed to them. Third, the selection of keywords, which is presumably a decision of the author of the thesis, may not accurately reflect the thesis itself, or may not necessarily indicate a tourism-focussed thesis (e.g. “travel”, “heritage”, “guide” and “trip”) which explains in part why so many theses from the initial database of around 20,000 were discarded from the study. Fourth, the abstracts themselves vary widely in length (from one to six pages) and quality, and the analysis of their disciplinary context is thus influenced by this variability.

As an aside, researchers in other fields (Adams & White, 1994) have undertaken ambitious analyses of the “quality” of dissertation research using indicators such as the use of theoretical frameworks, the existence of flaws in the thesis, the extent to which the findings of the research inform theory and practice, and the importance of the topic, albeit on a database of just one year’s worth of dissertations. Given the range of issues associated with these measures, this paper draws from a much wider database but uses a narrower range of criteria and methods. There is certainly potential for further analysis of the *quality* of selected subset(s) of the tourism-focussed doctoral dissertation database that has been assembled for this paper, replicating Adams & White (1994); however this is beyond the scope of the present paper.

2.3 Findings: An Overview of Sixty Years of Tourism-Focussed Doctoral Research

Of the 1,888 doctoral theses compiled from the four databases, 1,188 (63%) were undertaken in the US, followed by 446 (24%) in Australia, 136 (7%) in Canada and 118 (6%) in NZ. As with growth in tourism research generally (Amoah & Baum, 1997; Barron, 2004; Barron, Watson & McGuire, 2005), growth in doctoral-level tourism research in the US, Canada, Australia and NZ has been exponential (see Figure 1), with more than 100 doctoral theses completed each year for most of the past decade. In 2004–2005 the number of doctoral theses declined, a trend that was consistent in each of the four countries examined in this paper. The trend returned to growth after this. Although tourism theses had been written earlier, growth in tourism-focussed doctoral research did not gain momentum in the US until the 1970s (see Figure 2), with an even more rapid jump in the number of tourism theses produced in the US being experienced in the decade following the turn of the 21st Century, peaking at nearly 100 per year in the US alone in 2001 and 2009. Growth in doctoral-level tourism research commenced in Canada in the late 1970s and grew throughout the 1980s. Although tourism theses had been written earlier, growth in tourism-focussed doctoral research really commenced in Australia and NZ in the 1990s (see Figure 2), peaking in Australia at nearly 50 per year in 2005 and 2007.

* please insert Figure 1 about here

* please insert Figure 2 about here

A total of 230 universities across the four countries were found to have generated tourism-focussed doctoral theses. Tourism theses were completed at 157 universities in the US, 39 universities in Australia, 25 universities in Canada and nine universities in NZ. That said, 10 universities in the US, Canada, Australia and NZ produced 26% of all tourism-focussed doctoral theses. Twenty universities were responsible for 40% of the output (see Table 5). Overall, the three universities with the largest doctoral-level tourism research output were the University of California (80 theses), Texas A&M University (71 theses) and the University of Queensland (55 theses). As illustrated in Table 2, the extent to which doctoral-level tourism research is driven by a handful of universities varies between countries. Five universities in the US accounted for 23% of tourism theses, while the same number of universities accounted for 44% of tourism theses in Australia, 54% in Canada and 86% in NZ.

At the lower end of the scale, 38 universities recorded only a single tourism-focussed doctoral thesis over the 60-year data collection period. This suggests that in all four countries some universities have focused on tourism and may be gaining a reputation as having tourism as a research strength, while others have not.

* please insert Table 2 about here

Objective 1 Findings: Differences in Disciplinary Influences Between Countries and Over Time

For the remainder of this paper, the list of disciplines has been collapsed by combining those disciplines that were marginal in the results (i.e. informing fewer than 70 theses over the 60-year period) into a single "other" category. This "other" category includes agriculture, architecture, entrepreneurship, gaming, kinesiology, law, transportation, and theses that drew only on tourism theory. Overall, of the remaining fourteen disciplines the three disciplines used the most often in tourism-focussed doctoral research were psychology (289), environmental studies (270) and anthropology (254) (see Table 3). As Table 3 illustrates, with the exception of business, the rank order of disciplines in the US largely reflects the overall rank order. However, a country-level analysis reveals notable differences in the other three countries with respect to disciplinary influence on tourism-focussed doctoral research. The three disciplines in the US that informed the greatest number of doctoral-level tourism theses were anthropology (192), psychology (183) and history (173). In Canada, the top three disciplines were geography (43), environmental studies (27) and urban and regional planning (20). Australia's doctoral-level tourism research was most often informed by environmental studies (80), psychology (77) and business (55). Environmental studies informing doctoral-level tourism research grew dramatically in Australia, with an average of six theses each year after the year 2000 drawing on this discipline, compared to only one Australian tourism thesis every two years prior to 2000. Finally, NZ's top three disciplines were psychology (20), political science (17) and anthropology (14).

* please insert Table 3 about here

As shown in Table 4, the earliest tourism thesis was informed by geography, completed at Clark University in the US in 1951. Tourism theses soon emerged drawing on

the disciplines of urban and regional planning, and parks and recreation in 1963. Not surprisingly, all disciplines have increased in the degree to which they inform doctoral-level tourism research, however some have increased more dramatically than others. One way of illustrating this is to compare which disciplines informed doctoral research pre- and post-2000 (see Table 5). Growing from a small base, the greatest growth between 1950 and 1999 compared to 2000–2009 was hotel and restaurant administration. Environmental studies also grew rapidly, with 213 theses drawing on this field of study between 2000 and 2009. Indeed, if ranking the disciplines for the period 2000–2009, environmental studies was the discipline that informed the greatest amount of tourism-focussed doctoral research. The discipline with the lowest growth between these periods was economics. Proportionately, economics significantly (p=0.000) declined as a discipline used in tourism theses after 2000. This decline was prominent in the US and Australia, where economics had originally been a founding discipline. However, there was no significant change in the number of tourism theses using economics as a discipline in Canada and NZ, perhaps due to the fact that the base from which they started was low.

* please insert Table 4 about here

* please insert Table 5 about here

Objective 2 Findings: The Multidisciplinarity of Doctoral-level Tourism Theses

Coding the theses by disciplines allows for a count of the number of disciplines used for each thesis. This information was then used to determine whether a thesis could be considered a single discipline or a multidisciplinary thesis. Overall 1,137 (60%) of theses used one discipline, 665 (35%) used two disciplines, 83 (4%) used three disciplines and three (0.2%) used four disciplines. Thus in total, approximately 40% of tourism theses from the US, Canada, Australia and NZ were multidisciplinary theses. There is no significant difference between the US and Canada in terms of the number of disciplines used, nor is there a difference between Australia and NZ.

As illustrated in Figure 3, the proportion of multidisciplinary theses changed very little in the first 50 years of doctoral-level tourism research, although the gap has closed somewhat in the past decade between the number of single and multidisciplinary theses. A similar pattern is evident at the individual country level. Since 2000 there were significantly more

multidisciplinary theses in the US (p=0.000) and Australia (p=0.002). However there is no significant difference for Canada (p=0.067) and NZ (p=0.719) in terms of how many disciplines were used. Approximately 68% of theses from Australia and NZ used a single discipline, while 57% from the US and 54% from Canada used a single discipline. This difference is significant ($F(1, 1888) = 20.98$, Prob > F = 0.000) and may be due to the US and Canada having more mature PhD programs than those found in Australia and NZ. A point of interest is that theses that drew on anthropology and history had approximately equal proportions of single discipline and multidisciplinary studies. Tourism theses informed by all other disciplines were significantly more likely to be multidisciplinary than single discipline-based.

* please insert Figure 3 about here

In looking at how disciplinary influences are brought together in individual theses, the discipline of psychology is significantly negatively correlated to economics (p=0.000), geography (p=0.000) and anthropology (p=0.000), meaning these disciplines were unlikely to be connected via multidisciplinary research. Anthropology is also negatively correlated to economics (p=0.000), as well as environmental studies (p=0.000), parks and recreation (p=0.001), and urban and regional planning (p=0.004). History is negatively correlated with economics (p=0.001) and with psychology (p=0.000). Business is significantly negatively correlated with anthropology (p=0.009) and history (p=0.027). Political science is negatively related to psychology (p=0.001). Environmental studies is negatively correlated to marketing (p=0.000) and history (p=0.001). Marketing is significantly negatively correlated with sociology (p=0.007) and anthropology (p=0.005), but positively correlated with psychology (p=0.000). Hotel and restaurant administration is significantly positively correlated with education (p=0.008). From the results it is evident that more disciplines are negatively correlated than positively correlated. Put another way, while 40% of doctoral-level tourism theses are multidisciplinary, there is little evidence that particular combinations of disciplines are consistently informing the research. Notable exceptions appear to be doctoral theses that draw on a combination of marketing and psychology, and theses that draw on a combination of education and hotel/restaurant administration.

3. DISCUSSION AND CONCLUSION

The stated aim of this paper is to analyse the disciplines that inform doctoral-level tourism research as an important indicator of the growth and theoretical maturity of tourism research. In addition to providing a tool to assess and measure the evolution, sophistication and "state-of-play" of the field in these four western-world countries (Das & Handfield, 1997; Faulkner et al., 2003), this dataset makes it possible to look for differences between countries. As such, this research sought to examine disciplinary differences between countries and changes over time, and assess the extent to which doctoral dissertations in tourism are, in fact, multidisciplinary. There have been nearly 2,000 tourism-focussed dissertations completed in the US, Canada, Australia and NZ since the first tourism thesis was completed at Clark University in the US in 1951. The present study's findings are generally consistent with the findings of previous studies in terms of overall trends in tourism-focussed doctoral research, showing almost uninterrupted growth over the past 60 years in all four countries. Tourism has emerged as a significant field of doctoral research in all four countries, particularly in the past 30 years. Reasons for this growth were not investigated in this study, but it seems likely that they would not be dissimilar to reasons for the growth in academic research in tourism generally, as discussed by Jafari (2001), Tribe and Airey (2007) and others.

Not surprisingly, given the population of the US is more than five times that of the other three countries combined and has far more universities, the majority of dissertations in this dataset were produced in the US. It is also not surprising, given its size, that doctoral-level tourism research is spread across a larger number of universities in the US, while being concentrated in just a few universities in a country the size of NZ. Generally, the findings suggest that doctoral-level tourism research has been and continues to be dominated by a handful of universities in each of the countries analysed in this study. A quarter of all doctoral-level research in tourism across the four countries is undertaken at just 10 universities, and 20 universities produced 40% of all tourism-focussed theses. This is not necessarily a bad thing if academic expertise and other resources to support tourism-focussed doctoral research are also concentrated at these institutions, as critical mass can be an asset in research. However, an implication of this finding is that the coverage of tourism research at the doctoral level may well be restricted not only in its disciplinary focus but also geographically.

In the US and Canada, research is dominated by universities in the eastern half of North America. The University of California is the only university in the west that is a major

producer of doctoral-level tourism graduates. This distribution is imbalanced both in relation to the distribution of the population of the US and Canada and in the significance of the tourism industry in regions, provinces and states. For example, the University of Hawaii does not feature in the top 20 universities producing doctoral-level research in tourism. This may have implications for the tourism research capacity of particular regions of both the US and Canada. The five Australian universities that dominate in producing doctoral-level tourism research are all in the states of Queensland and Victoria. In the case of Queensland, this may be due to the high profile and importance of the tourism industry in this state. However, there are other states and regions in Australia where tourism is an important sector of the economy and where building research capacity is important. Further research is needed to determine the research subject matter and geographic focus of the research before firm conclusions can be drawn.

What is somewhat surprising is Australia's contribution to doctoral-level tourism research. Given that only eight tourism-focussed theses had been completed in Australia prior to 1990, it is notable that nearly a quarter of all doctoral theses in tourism over the 60-year period in the four countries included in this study were from Australian universities. Five of the 20 top-producing universities of doctoral-level tourism research are Australian institutions. This outcome is almost certainly attributable, at least in part, to Australia's industry and government funded Sustainable Tourism Cooperative Research Centre (STCRC), which commenced in 1997. By 2006, the STCRC had partially or fully funded 166 PhD scholarships and, although some attrition occurred (Sustainable Tourism Cooperative Research Centre, 2010), the STCRC was able to claim 30 doctoral-level graduates between 2000 and 2005 and another 83 between 2006 and 2010. The implications for Australian tourism can only be positive, providing considerable human capital in tourism research for government, industry and academia. Whether these and other doctoral graduates are well-equipped to contribute to undertaking research both in Australia and overseas is, however, beyond the scope of the present study.

In comparison to previously published studies, this study uncovers new insights regarding the contributions of particular disciplines to doctoral-level tourism research in these countries. As the methods used in the present study have not previously been applied to an analysis of tourism-focussed doctoral research it is not possible to compare the present study's findings directly with those of Jafari and Aaser (1988), Weiler and Laing (2008), Botterill et al. (2002), Huang (2011) and others. Nonetheless, based on the present study's findings, there are many more disciplines influencing doctoral-level research in tourism than

has previously been acknowledged. Each of the disciplines of psychology, environmental studies, anthropology, history, economics, geography, sociology, marketing, business, political science, parks and recreation, urban and regional planning, hotel and restaurant administration, and education have contributed to at least 70 dissertations. The first three disciplines—psychology, environmental studies and anthropology—have been particularly notable in informing tourism theses: 813 (43%) of all tourism-focussed dissertations have drawn on at least one of these. While some of these theses have been informed by a second discipline, this still suggests some imbalance in which disciplines inform tourism research. It is unclear why this imbalance occurs, but may be a result of the growth of these disciplines generally and the fostering of research by academic staff in some of these disciplines (Tribe & Airey, 2007). For example, environmental studies has gained prominence as a discipline in recent years, due in part to the phenomenon of many geography departments adding environmental studies to their name (Harvey, Forster & Bourman 2002), or even replacing the name geography with environmental studies.

While the reasons for disciplinary emphasis are not completely clear, the consequences seem reasonably evident: there is now considerable capacity to undertake tourism research informed by psychology, environmental studies, anthropology and several other disciplines as shown in Table 3. This is consistent with Tribe and Airey's (2007) analysis of tourism research generally. Putting aside very new disciplines, some that are lower than might be expected in influencing tourism-focussed doctoral research include architecture, law, transportation and education. Again, the reasons are less clear than the consequences, in that tourism research capacity in these areas is undoubtedly lower than in other areas of study.

Drilling down to the level of the specific country, nearly half of all tourism research at the doctoral level in the US has been informed by anthropology, psychology or history. The differences between these findings and those of previous studies are due to the larger dataset and the more refined set of methods of the present study for identifying disciplinary influence, as opposed to examining the disciplinary context of the research. For example, economics, recreation, geography and anthropology were identified in previous studies as the key disciplinary context of doctoral-level tourism graduates in the US. For Australia, the present study identifies the disciplines of environmental studies and psychology as informing more than a third of tourism research at the doctoral level. Again, this diverges from previous studies which found that business, management and marketing were the disciplinary bases for nearly half of all postgraduate level research in tourism in Australia. As noted earlier in this paper, this may be explained by the fact that, while much doctoral-level tourism research in

Australia has been housed in business, management and marketing schools and departments, researchers in these areas often draw on other disciplines to inform their research. This may suggest that Australian doctoral graduates are well-equipped to undertake research in these contexts, informed particularly by environmental studies and psychology.

Overall, while past studies identified economics as the key disciplinary *context* for tourism-focussed doctoral research, it does not emerge as the key discipline *informing* research in the present study. Perhaps more importantly, it is clear from the trend data that the influence of economics on doctoral-level tourism research has been declining in these countries. In other words, the lower ranking of economics as a discipline informing tourism doctoral-level research in this paper is a result of both changes over the past 20 years (see Table 5) and greater sophistication in both the data sources and the methods used in the present study. While some such as Tribe and Airey (2007) may see this disciplinary breadth as a positive thing, others might well argue that, in the case of economics, this could lead to an under-supply of graduates with the capacity to undertake tourism research underpinned by economic theory in coming years. This deficiency may be acutely noticed within the government sector, where economics and econometrics are desirable qualities, resulting in increased employment of economists and researchers with little to no tourism background.

Multidisciplinarity and inter-disciplinarity in tourism research are subjects of considerable interest and discussion in recent literature (Coles, Hall & Duvall, 2006; Darbellay & Stock, 2012; Tribe, 2010). This study's findings indicate that more doctoral-level tourism research projects, even in recent years, are single-discipline based than multidisciplinary. Moreover, at the level of the individual thesis there is no evidence of an increase in multidisciplinarity over the first 50 years of doctoral-level tourism research and only a slight increase in the final decade included in the database, although some key discipline combinations—marketing and psychology, and education and hotel/restaurant administration—have been notable in informing multidisciplinary research. These are new findings not previously investigated or reported in the literature and are somewhat concerning given the importance ascribed by Darbellay and Stock (2009), Tribe and Airey (2007) and others to multidisciplinary perspectives and the capacity to draw on multiple disciplines in tourism research. There seems to be considerable scope for fostering greater multidisciplinary research at the level of the individual thesis, and for building the capacity of doctoral students to undertake multidisciplinary research.

There are many avenues for further research, both using the comprehensive database established for the present study, and extending the methods to other countries. With regard to

the latter, there is insight to be gained in replicating the methods on other English-speaking countries such as the UK and Hong Kong which are known to be major contributors to tourism research and scholarship. The present study also provides an important baseline from which to analyse the contribution of non-English speaking countries, using dissertation databases of European countries, China and other Asian countries. The current database lends itself to further analysis, particularly because of the size and comprehensive nature of the dataset. It is possible to drill down into particular disciplines, universities and schools to gain insight, for example, into whether tourism research at the doctoral level is associated with fringe vs. elite universities and whether the disciplines that influence theses differ by university status. It is also possible to do further keyword searching and analysis to identify, for example, specific research topics, theories and methods, although as mentioned in the methods section of this paper the variability of the abstracts included in the database potentially impacts the veracity of the findings of such analyses.

Different datasets (such as the full theses) and additional methods are required to analyse the *quality* of selected subset(s) of the dissertations in the database, replicating Adams and White (1994). A more thorough investigation of the nature of multidisciplinary research is also warranted, including the extent to which scholars have embraced inter-disciplinarity, i.e. have blended philosophies and techniques so that the disciplines "do not stand apart but are brought together intentionally and explicitly to seek a synthesis" (Leiper, 1981, p. 72). Similarly, a keyword search of the current database identified no theses proclaiming to be post-disciplinary, but it would be insightful (though labour-intensive) to undertake an analysis of complete theses to ascertain whether there is any evidence of tourism being conceptualised and investigated as a post-disciplinary area of study (Coles et al., 2006; Darbellay & Stock, 2012). Another focus that would require reading complete theses would be to investigate 'how' and 'why' particular disciplines are used to inform tourism research. Equally ambitious would be to examine how the nature of doctoral-level tourism research impacts tourism research more generally, and how output (graduates) translates into actual research capacity. Anecdotally, many of these graduates are employed as academics and researchers and are publishing their research. Areas for further research include assessing the research competencies of doctoral program graduates, analysing their employment patterns and career progress and, of course, analysing their contribution to tourism research following graduation. The answers to questions such as whether the growth in tourism researchers with PhD qualifications has addressed the problem of tourism research being "atomised" (Tribe &

Airey, 2007) and whether it has helped build tourism as a discipline (Echtner & Jamal, 1997) remain elusive.

In conclusion, this study's analysis provides some support for the notions that, in the countries included in this study, doctoral-level tourism research has grown considerably in quantity and demonstrates disciplinary breadth. With this growth comes research capacity, although arguably this is not evenly distributed either in terms of discipline or geography. The results of this study suggest that there is evidence of multidisciplinary research in tourism at the doctoral level, but that it is limited and that proportionally it has increased only modestly over time. Whether any of these findings imply the need for deliberate intervention in the research agenda of doctoral-level research in tourism is a matter for future debate.

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Table 1

Key disciplines in tourism and hospitality education

#	**Discipline**	11	Parks and recreation
1	Sociology	12	Urban and regional planning
2	Economics	13	Marketing
3	Psychology	14	History
4	Anthropology	15	Law
5	Political science	16	Kinesiology
6	Geography	17	Business
7	Entrepreneurship	18	Gaming
8	Environmental studies	19	Transportation
9	Architecture	20	Hotel and restaurant administration
10	Agriculture	21	Education

Source – Adapted from Goeldner and Ritchie (2006)

Table 2

Educational institutions producing doctoral-level tourism research

Name of educational institution	Country	Number of theses	Percentage of theses overall (%)
University of California	United States	80	4.2
Texas A&M University	United States	71	3.8
University of Queensland	Australia	55	2.9
Michigan State University	United States	53	2.8
University of Otago	New Zealand	45	2.4
Griffith University	Australia	43	2.4
James Cook University	Australia	43	2.4
Pennsylvania State University	United States	37	2.0
Victoria University	Australia	35	1.9
University of Illinois	United States	34	1.8
Clemson University	United States	32	1.7
University of Florida	United States	31	1.6
Purdue University	United States	29	1.5
University of Waterloo	Canada	29	1.5
Indiana State University	United States	27	1.4
Monash University	Australia	23	1.2
Lincoln University	New Zealand	22	1.2
University of Minnesota	United States	22	1.2
Cornell University	United States	21	1.1
Oklahoma State University	United States	21	1.1
Top 20 institutions		**753**	**40**

Table 3

Disciplines informing tourism-focussed doctoral research

Disciplines		**Number of theses**	**Ranking of disciplines**			
			United States	Canada	Australia	New Zealand
1	Psychology	289	2	8	2	1
2	Environmental studies	270	4	2	1	4
3	Anthropology	254	1	11	7	3
4	History	212	3	12	12	11
5	Economics	211	5	6	4	9
6	Geography	206	7	1	8	7
7	Sociology	197	6	4	5	5
8	Marketing	173	8	13	6	10
9	Business	143	12	9	3	6
10	Political science	137	9	5	13	2
11	Parks and recreation	131	10	7	10	8
12	Urban and regional planning	125	11	3	11	12
13	Hotel and restaurant administration	82	13	14	9	13
14	Education	70	14	10	14	14
15	Other	204				

Table 4

Year discipline commenced in informing doctoral-level tourism research

Order	Discipline	Year	Order	Discipline	Year
1	Geography	1951	8	Political science	1973
2	Urban and regional planning	1963	9	Psychology	1974
3	Parks and recreation	1963	10	Education	1976
4	Economics	1968	11	History	1976
5	Anthropology	1969	12	Environmental studies	1978
6	Marketing	1971	13	Sociology	1978
7	Business	1971	14	Hotel and restaurant Administration	1982

Table 5

Change in the number of theses by disciplinary influence between 1950–1999 and 2000–2009

Discipline	1950-1999	2000-2009*	% change	Above or below average change
Hotel and restaurant administration	7	73	943%	Above
Environmental studies	51	213	318%	Above
Business	33	108	227%	Above
Marketing	40	129	223%	Above
History	50	156	212%	Above
Political science	32	99	209%	Above
Psychology	73	211	189%	Above
Sociology	52	139	167%	Above
Parks and recreation	41	88	115%	Below
Anthropology	79	166	110%	Below
Education	22	45	105%	Below
Urban and regional planning	41	82	100%	Below
Geography	68	131	93%	Below
Economics	93	109	17%	Below
All disciplines*	**577**	**1262**	**119%**	

* Because of the incomplete nature of the database with respect to the most recent year, 2010, this particular analysis was conducted using 2000–2009 theses only.

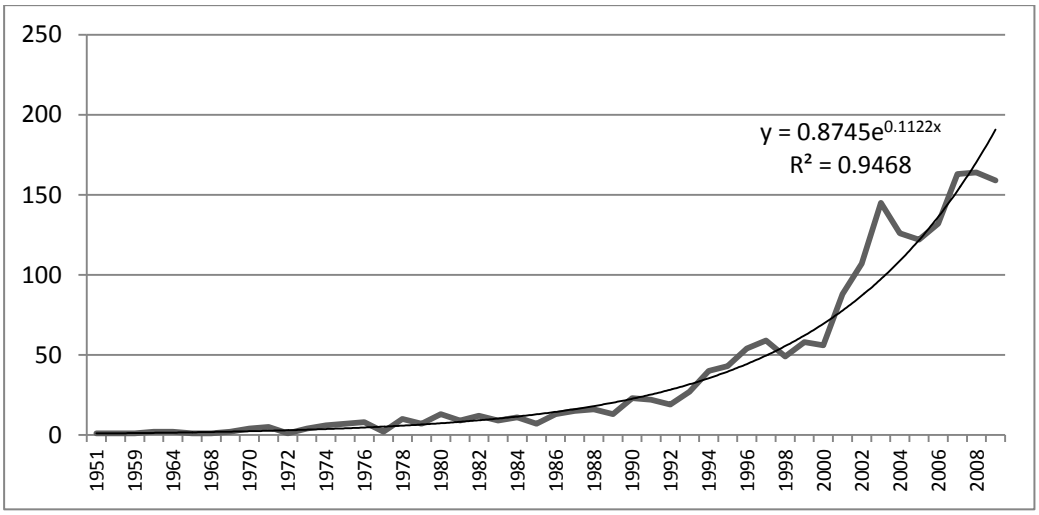

Figure 1. Number of doctoral-level tourism theses by year.

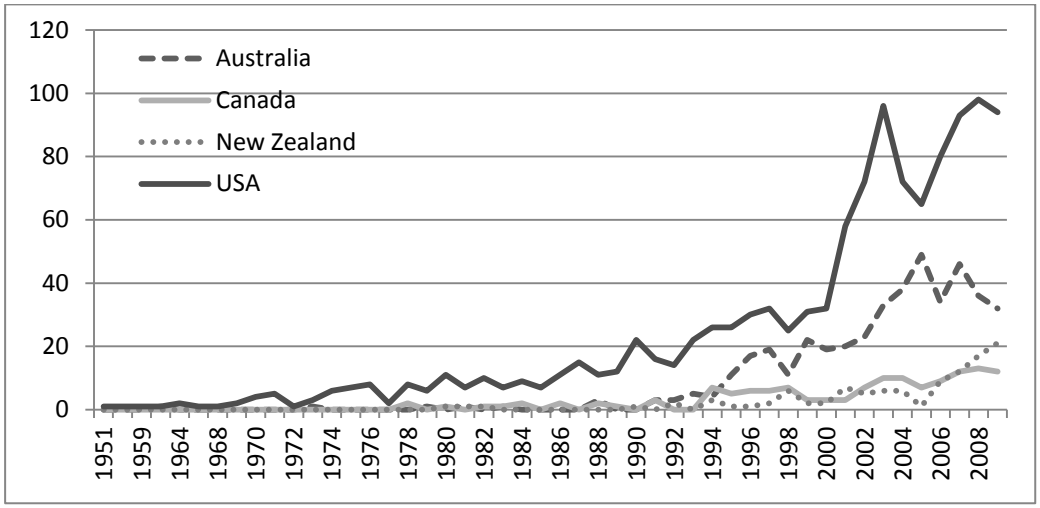

Figure 2. Number of doctoral-level tourism theses by year by country.

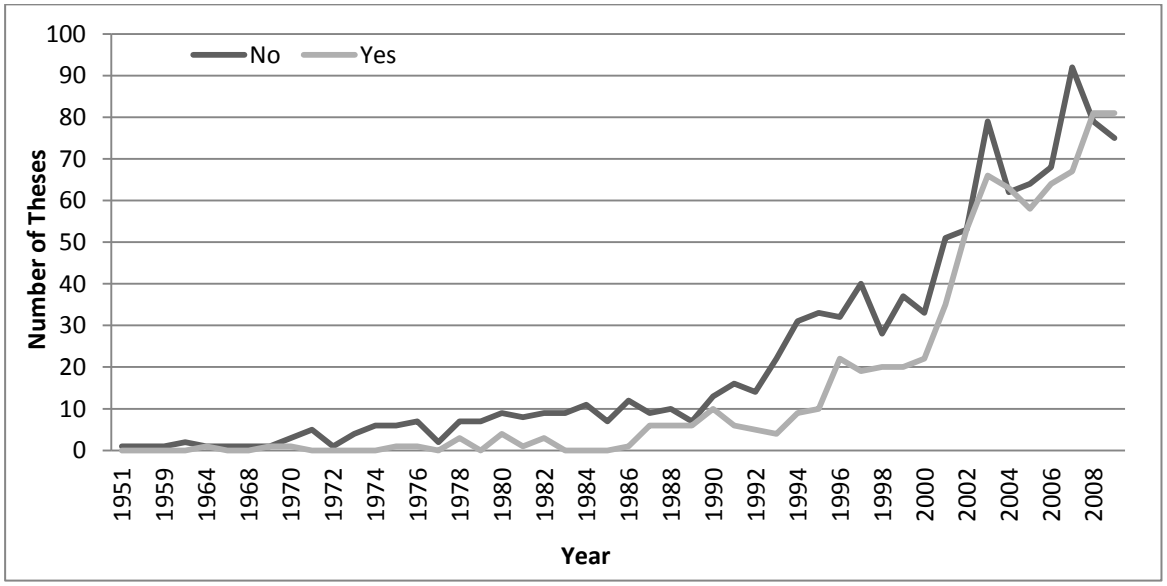

Figure 3. Multidisciplinarity of doctoral-level tourism research.