

**Epistemic Modality in Social Science Research Articles  
Written by Ghanaian Authors: A Corpus-Based Study of  
Disciplinary and Native vs. Non-Native Variations**

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## DECLARATION

I declare that this thesis represents the outcome of my own original research and that it has not been previously included in a thesis or report submitted to this University or to any institution for a degree or other qualification.

Richmond S. Ngula

Signed .....

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## LIST OF INITIALISMS AND ACRONYMS

ADJ: Adjective

BNC: British National Corpus

CARS: Creating a Research Space Model

CLAWS: Constituent Likelihood Automatic Word-tagging System

COMP: Complement

CR: Contrastive Rhetoric

DWR: Digital Work Room

EADJ: Epistemic Adjective

EADV: Epistemic Adverb

EAP: English for Academic Purposes

EFL: English as Foreign Language

ELV: Epistemic Lexical Verb

EM: Epistemic Marker

EMV: Epistemic Modal Verb

EN: Epistemic Noun

EOP: English for Occupational Purposes

EPAP: English for Professional Academic Purposes

ESL: English as Second Language

ESP: English for Specific Purposes

IMRD: Introduction-Method-Results-Discussion

JHS: Junior High School

KNUST: Kwame Nkrumah University of Science and Technology

LL: Log-likelihood

LOB: Lancaster/Oslo/Bergen

NAAC: Native Anglo-American Corpus

NES: Native English Speakers

NNES: Non-Native English Speakers

NNGC: Non-Native Ghanaian Corpus

NP: Noun Phrase

OCR: Optical Character Recognition

POS: Part of Speech

RA: Research Article

RE: Research English

SFL: Systemic Functional Linguistics

SHS: Senior High School

SSCI: Social Science Citation Index

TESOL: Teaching English to Speakers of Other Languages

UCC: University Cape Coast

UEW: University of Education, Winneba

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## ABSTRACT

Using a corpus-based methodology, this thesis reports a study into how non-native Ghanaian academic authors of English in the disciplines of Sociology, Economics and Law deploy epistemic modality devices as rhetorical features of argumentation in their research articles (RAs) published in journals based in Ghana. The study focuses on understanding the ways in which the use of these rhetorical features by Ghanaian authors compare with their use in international RAs written by native academic authors of English. Based on the aims of the study, two sets of corpora of RAs for the Ghanaian and international authors were created and analysed to compare the use of epistemic modality features between the two groups of authors in terms of: depth of use, diversity of use, linguistic types of epistemic markers, phraseological patterns of notable epistemic markers and degrees of epistemic strength. The quantitative aspects of the comparisons relied mainly on frequency counts of epistemic markers which were supported by Log-likelihood tests to determine significant differences of epistemic use across disciplines and between the two groups of authors. The qualitative aspects (e.g., phraseological pattern analysis) focused mainly on a close inspection of concordance lines for comparisons. The findings of the study revealed that while Ghanaian writers seem to be generally aware of the most important epistemic devices used for academic writing, as they used as wide a range of epistemic devices as their international counterparts, they tended to use these devices significantly less in their RAs. A few cases of overuse and misuse of epistemic modality by Ghanaian writers were also observed. It was found also that many of the disciplinary variation patterns of epistemic use observed in the international RAs did not match with the patterns revealed in the RAs written by the Ghanaian authors. A further important finding was that whereas the

international writers generally preferred medium and weak level epistemic markers over strong ones, the Ghanaian writers favoured the use of medium and strong level epistemic markers over weak ones. It also became apparent that the significant underuse of epistemic rhetorical features by the Ghanaian writers could be attributed to the way rhetorical features are represented in academic writing course materials in Ghanaian universities. The findings reported in this thesis suggest that there is the need for Ghanaian academic authors to make language adjustments to their academic writing if their writing practices are to fully adhere to international disciplinary norms and conventions.

## CHAPTER 1 – GENERAL INTRODUCTION

### 1.1 What the study is about

This study is concerned with the rhetoric of scholarly communication and it focuses specifically on the research article (RA) genre in English. The study explores the use of epistemic modality markers as rhetorical devices for persuasive academic argument in social science RAs written by Ghanaian authors. It aims to find out 1) how Ghanaian academic writers of RAs in the disciplines of Sociology, Economics and Law utilise epistemic modality resources to make research claims; 2) what possible variations are discernible in the scholarly writing of the Ghanaian authors across the three disciplines; and 3) how these epistemic features by the Ghanaian (non-native) authors across the disciplines compare with mainstream discourse community norms and practices, as reflected in similar disciplinary RAs in reputable international journals written by Anglo-American (native) authors.

### 1.2 Background to the study

Various studies of scholarly communication suggest that writing in the academic context has its own dynamics and therefore requires the effective use of rhetorical and language resources in order to successfully negotiate acceptance of research ideas and claims in specific academic discourse communities. In this regard, Hyland (2009: 5) claims that academic writing “is only effective when writers use conventions that other members of their community find familiar and convincing”. Zamel (1998: 187) has earlier noted that academic writing “has come to characterize a separate culture” and that “it appears to have a kind of language with its own vocabulary, norms, sets of conventions, and modes of inquiry”. Thus invariably a writer is expected to follow the

norms and textual practices of this domain of writing to increase his or her chances of success.

As a direct consequence of the typical nature of academic writing, many studies within applied linguistics, especially English applied linguistics, have in the last few decades focused on the linguistic, rhetorical and structural features in academic writing genres such as undergraduate students' academic essays (e.g., Henry and Roseberry, 1997; McEnery and Kifle, 2002; Hewings, 2004; Chen and Baker, 2010) and postgraduate thesis and dissertation (e.g., Paltridge, 2002; Gabrielatos and McEnery, 2005; Bunton, 2005; Charles, 2006; Aşçam, 2014). Not only have such studies shed light on the strengths and weaknesses that characterise students' academic writing practices, the results of the studies have also, perhaps more importantly, provided empirical evidence to guide the preparation and development of pedagogical material for English for Academic Purposes (EAP): the teaching and learning of English communication skills within formal educational systems, especially within the university setting (Jordan, 1997; Coxhead, 2010; Harwood and Petrić, 2011).

The emergence of EAP can be traced back to the 1960s, and two important factors accounted for its development: firstly the increasing interest of linguists in the study of language variability in context and the functions of specialised registers; and secondly the rise of English as a global language (Flowerdew and Peacock, 2001; Harwood and Petrić, 2011). The former factor has led to the growth of English for Specific Purposes (ESP), of which EAP represents one of its two main branches, the other being English for Occupational Purposes (EOP). The latter explains why in many parts of the world the main medium of instruction for learners in higher educational

institutions is English. Dudley-Evans and St John (1998: 35) point out that EAP instruction takes place with different groups of learners, in different contexts as follows:

1) in higher education settings in English-speaking countries; 2) in settings where English has official status and is used as a medium of instruction; 3) in settings where certain school/university subjects are wholly or partly taught in English (e.g., medicine); and 4) in settings where all tertiary education is taught in the L1, but English is recognised as an important additional language for study, and where certain learning materials and texts can only be found in English.

While EAP instruction now takes place within secondary education as indicated by Johns and Snow (2006), it has largely focused on higher (tertiary) education levels, with the university being the place to receive the most notable attention. Furthermore, the concentration of EAP instruction has been in the first of the four settings outlined by Dudley-Evans and St John above: English-speaking countries such as the USA, UK, Australia and Canada, where English is the main medium of instruction in the universities. In these jurisdictions, EAP instruction has largely targeted international students who use English either as a second or foreign language, and who may need pre-sessional English courses to raise their levels of proficiency and academic writing styles to the required standards for university academic work and writing tasks.

However, lately, writing in EAP research has moved beyond undergraduate and postgraduate students' productions of academic texts to also address writing issues in professional scholarly communication. This new interest has focused especially on the linguistic and textual rhetorical practices in scholarly texts, mainly RAs published in journals (e.g., Gosden, 1993; Hyland, 1998; Chih-Hua, 1999; Martinéz, 2005;

Basturkmen, 2012; Lin and Evans, 2012). Much of the research in this area has often explored how non-native professional academics writing in English utilise these features in their RAs and has tried to determine the extent to which the rhetorical patterns and choices in non-native speaker texts conform to expected discourse community textual norms, often shaped by (and based on) Anglo-American rhetorical norms (Mauranen, 1993; Curry and Lillis, 2004; Martinez, 2005; Adnan, 2009).

A number of these studies have suggested that non-native English speaking authors often underuse, overuse or misuse (pointing to imprecise and ineffective choices) certain linguistic features in their academic writing, thereby not conforming to the preferred conventions and rhetorical styles of the discipline in which they are writing. In fact, there is some evidence indicating that many non-native English speaking academics and professionals themselves admit they are disadvantaged compared with their native speaker counterparts with respect to having “less facility of expression” in English and a “less rich vocabulary” (Flowerdew, 1999: 254). Hyland (2003: 34) further notes that the linguistic knowledge base of L2 writers is different from that of native English speakers, adding that while most native speakers “have a vocabulary of several thousand words and an intuitive ability to handle the grammar of the language when [they] begin to write in [their] L1, L2 writers often carry the burden of learning to write and learning English at the same time”.

In addition, there seems to be a general difficulty for non-native speakers of English in conforming to suitable rhetorical patterns and strategies of scholarly writing within mainstream academic discourse communities. This, it has been claimed, has partly accounted for their under-representation in peer-reviewed international

Anglophone journals (Swales, 1987, 1990; Salager-Meyer, 2008; Flowerdew and Li, 2009). Swales in particular is of the view that there is urgent need to bring to the attention of novice researchers and non-native English speaking academics the English language competencies and skills required for their effective participation in the academy through the teaching of the research paper. Leki, Cumming and Silva (2008: 58) further stress the challenges that confront L2 scholarly authors, “especially those in developing or Outer Circle countries (B. Kachru, 1992)”, suggesting that “the need to control linguistic and rhetorical features of English” is one of such challenges.

The need for novice and less experienced L2 writers of English to become more aware of the precise and appropriate ways of communicating academic knowledge in order to satisfy the discourse community rhetorical conventions of scholarly writing in English has given rise to the “growing area of academic literacy support, focusing on English for Professional Academic Purposes (EPAP): research and instruction with the goal of facilitating academic publication and presentation in English” (Hyland, 2007: 1). Martinéz (2005: 175) states that it is useful to bring to the attention of non-native speakers of English the need to “gain a deeper understanding of the social contexts of use of academic texts and the strategic linguistic choices that characterize these texts”.

Research in EPAP has become imperative given that English now indisputably occupies the position of the language of international scholarship and knowledge production and dissemination (Flowerdew, 1999; Canagarajah, 2002; Hyland, 2007; Bidlake, 2008), and it is “an important medium of research communication for non-native English speaking academics around the world” (Hyland, 2007: 1). If NNES are to be able to gain greater visibility through publications “in major, high-impact, peer-

reviewed Anglophone journals" (*Ibid*: 1) and enhance their professional development, then they might have to, among other things, become more aware of the suitable patterns of rhetorical strategies and practices expected in their respective discourse communities.

It is this orientation of academic literacy and scholarly writing practices in English by non-native academics and professionals worldwide that provides the impetus for this thesis. The present study is therefore concerned with the rhetoric of scholarly communication and more specifically on the use of epistemic modality markers as rhetorical devices for making academic claims in social science RAs written by non-native English-speaking Ghanaian authors.

Within second language writing in English, Leki *et al.* (2008: 5) identify and list seven different contexts for research as follows:

- a. child L2 writers
- b. L2 writers in secondary schools
- c. undergraduate L2 writers
- d. L2 writers in graduate school
- e. L2 writers in community, resettlement, and adult education settings
- f. L2 writers in the workplace
- g. L2 writers in academic, scholarly or, professional contexts

Clearly, the present study is properly situated within the (g) category of these different contexts: L2 writers in academic, scholarly or professional contexts. To this end, this study concerns itself with the RA genre, and one particular group of researchers,

Ghanaian academics/scholars who are largely based in Ghana, a notable British postcolonial region in sub-Saharan Africa.

### **1.3 Motivation and goals of the study**

In many African countries (and perhaps most parts of the third world), one strategy adopted to meet academic staff needs in universities is to offer contract lectureship appointments to young, promising individuals who hold a research master's degree, and then soon after, encourage and support such appointees to pursue PhD studies (either locally or internationally) to enhance their professional work as academic researchers for the purpose of institutional capacity development. I benefitted from such an arrangement at the University of Cape Coast in Ghana, where I became a novice university teacher and researcher in February 2010 after completing an MPhil degree in English Language at the same University.

My experience led me to observe and encounter issues relating to research and publications undertaken by academics in Ghanaian universities. Most Ghanaian universities spell out clearly in their statutes the academic publishing requirements faculty members are expected to meet in order to be promoted from one rank to the next, and I observe that the main publication outlet for the majority of academics in Ghana is peer-reviewed journal articles. Other professional genres of academic discourse apart from journal articles, including, for example, research monographs, edited books and book reviews are not often given much attention. The Ghanaian universities recognise that high quality research that appears in reputable international journals can considerably enhance their research reputation and profile on the global stage. For example, the University of Ghana's research policy document (2012) states

the University's intention to achieve a world class status by ensuring that publications by faculty members earn international recognition and are widely cited in mainstream communities around the world.

However, the policies, as stated in the statutes of most public (traditional) universities in Ghana, also welcome publications in locally established journals, so long as such publications are refereed. While there are slight differences in the publication requirements for promotion from lecturer to senior lecturer in the public universities, most require a minimum of five (5) publications. For instance, the University of Education, Winneba (UEW) requires a minimum of five (5) with at least one appearing in an international journal (Criteria for Appointment and Promotion of Academic Staff, UEW 2010). The University of Cape Coast statutes (2012: 85) states that a candidate seeking promotion to the position of a senior lecturer "must have at least five refereed publications in his/her area of specialization", but does not mention how many of these publications should appear in international journals.

In academic publication and scholarship, the distinction between periphery scholars/journals vs. centre-based scholars/journals is acknowledged and well known (Canagarajah, 1996; 2002; Flowerdew, 2001; Swales, 2004; Salager-Meyer, 2008). While the former is used to address scholars and journals based in less privileged Third World contexts, the latter refers to those in more privileged advanced Western and European contexts which Flowerdew refers to as "the intellectual centres of the developed countries" (Flowerdew, 2001: 122). A typical feature often ascribed to periphery scholarship is that it is "off network" (Swales, 2004) which means that much

of the scholars/journals in this context is not so well connected to mainstream and global web of scholarship.

From the above policy documents in Ghanaian universities, and from my personal observations at the University of Cape Coast, while research published in peripheral local journals is generally accepted for the promotion of faculty members, the institutions do not insist that faculty members' research must necessarily be published in reputable centre-based journals located in Europe and the USA, although they recognise that such journals define mainstream publishing communities with higher impact factors and citation frequencies than the local, periphery journals. Hence they encourage their staff to publish in such journals. But perhaps Ghanaian universities have tended to be quite flexible with their staff when the question of publishing in reputable centre-based Anglophone journals arises because they know there are enormous challenges that stand in the way of periphery scholars in third world countries.

Indeed as a young researcher in a Ghanaian university, I observe that the problems that make publishing in top English-medium journals based in industrialized countries arduous for many a Ghanaian researcher are vast. They range from office space (sometimes two or three academics sharing an office), to weak institutional support in terms of the provision of basic research facilities such as computers, equipment for fieldwork, relevant and up-to-date research-based books, and access to mainstream disciplinary community journals. For those who own personal computers/laptops, they can be sure to have their research activity curtailed by regular power cuts and frequent on-and-off internet access. The situation in Ghana is quite

similar to the experiences narrated by Canagarajah (2002) of his academic and scholarly life at the University of Jaffna in Sri Lanka, where he outlines the difficulties encountered by periphery scholars in Third World countries in their effort to be active participants and contributors of knowledge construction in the world of academia. Research has further indicated that Africa in general is the least technologically developed continent in the world and its scholars over many years have had to work in technologically deprived environments (Oshikoya and Hussain, 2004).

Scholars in Ghana are certainly confronted with these logistical and technological problems, but beyond these, there are also linguistic factors – issues relating to scholarly writing in English – that serve as an obstacle for Ghanaian scholars who seek to publish in English-medium international journals. It is the linguistic issues that I explore in this thesis, as my training and expertise are rooted in English applied linguistics. Although the status of English in Ghana is very high (it is the official language and the main medium of communication in education, governance, the media etc.), I observe that many Ghanaian scholars often complain about the rejections they suffer at the hands of editors and reviewers when they submit manuscripts for publication in reputable Anglophone international journals. Anecdotal evidence from Ghana suggests that many submitted articles get back to authors unpublished (albeit with good feedback) due to what editors and reviewers perceive to be considerable inadequacies in content and inappropriate rhetorical and linguistic choices.

The way that most Ghanaian academics have gone around this problem of rejection has often been to give up on such acclaimed international journals and to resort to submitting papers to lesser-known local journals, where they stand a better

chance of getting papers published. Although these local journals are well-known and respected in Ghana and in the West African sub region, as scholars in the sub-region also sometimes publish their articles in these journals, their reputability most probably does not go beyond the sub-region. As Hyland (2007: 9) has noted, journals are at different levels of esteem: “from the ‘blue chip’ through the solidly respectable, to the third tier commendable, the locally credible and beyond”. Many local journals in Ghana may well come at the lower end of Hyland’s rankings: locally credible, and as Salager-Meyer (2008: 123) says, which might be true of Ghanaian journals, the readership of local journals in developing countries “is very small and hardly ever transcends national boundaries”. She adds that even fully-fledged third world scholars rarely publish in the local journals and would prefer their best works to appear in mainstream Anglophone journals. This notwithstanding, it seems that there are far more Ghanaian researchers in the humanities, social sciences and natural sciences who publish their articles in English-medium journals based in Ghana than those who get to publish in highly respected international journals.

Thus it seems true that there is a general scarcity of high standard international publications by Ghanaian researchers. Because the readership of these local journals is low, most Ghanaian scholars publishing in them are not cited and visible, evidenced by Ondari-Okemwa’s (2007) claim that, “scholarly publications emanating from sub-Saharan Africa and the entire African continent lack visibility”, adding that generally very few publications in this region “may become citation classics or even find a place in the list of key papers on the emerging research fronts”. King (2004: 311) has further reported that on the African continent only South Africa is among the group of countries (the leading ones being the United States and the United Kingdom) that

account “for more than 98% of the world’s highly cited papers”. From these accounts, it is safe to assume that most Ghanaian (and other sub-Saharan Africa) scholars are not so well connected “with members of the core academic communities” (Uzuner, 2008: 257).

The issue of language and rhetorical choices in the writing of RAs by Ghanaian researchers is one that needs to be studied in order to be able to determine the extent to which it contributes to the overall challenges advanced non-native Ghanaian writers face in their effort to publish research articles in top international Anglophone journals. As we know, researchers/scholars everywhere are expected to meet the textual and rhetorical conventions of academic writing which, according to Canagarajah (2002: 6), involves “matters of language, style, tone and structure”. Hyland (2007: 3) explains that textual convention standards set by journals are the same for native and non-native writers, and notes that “requirements are daunting to all academics as native English speakers also struggle to produce polished prose”. He advises that novice and other non-native writers who wish to get published in high-impact English-medium journals ought to learn how to do so from more experienced scholars in their respective discourse communities. This is crucial because, for authors everywhere (native or non-native), writing for journal publication “not only involves developing the research craft skills and ‘ways of knowing’ of a discipline, but also control of its specialized discourse conventions” (Hyland, 2007: 2). Hyland (2001: 209) has earlier noted that publishing in academic journals requires that the writer “demonstrates a familiarity with the rhetorical conventions and social understandings of the community, and observes suitable patterns of social and rhetorical interactions”.

Based on my observations of Ghanaian academics and their experiences in writing RAs for publication in mainstream international journals, as well as findings of previous research on academic writing by non-native English-speaking authors, which invariably showed a lack of conformity to expected discourse community textual conventions, I developed interest in exploring the RA genre in the Ghanaian context. The broad questions I had been thinking about prior to starting this research were: 1) how do Ghanaian writers deploy linguistic and rhetorical devices when they publish in English-medium local journals? 2) How do the linguistic and rhetorical devices used by Ghanaian writers compare with choices and patterns in articles in mainstream academic community international journals written by experienced native speakers? 3) Could it be that Ghanaian writers deploy linguistic and rhetorical features in their RAs in ways that do not meet the expectations of high-impact international journals? And 4) might there be a need for Ghanaian writers to make language choice adjustments in the process of writing their RAs so as to meet the expectations of members of the academic writing communities?

It is these broad and general questions that shape the narrowed focus of this thesis, which aims to contribute to the academic literacy and scholarly writing practices in English by non-native academics and professionals located in developing countries. The study is therefore concerned with the rhetoric of scholarly communication and it focuses on the use of epistemic modality resources in the RA genre.

#### **1.4 Objectives and research questions**

Using a corpus-based methodology, the present study seeks to shed light on how epistemic modality, a crucial rhetorical tool in academic writing, is utilised to either

weaken or strengthen academic arguments in scholarly writing. In particular, the study aims to find out what possible variations are discernible in the use of epistemic modality markers in RAs produced by Ghanaian authors across the disciplinary fields of Sociology, Economics and Law, and also to examine how the use of this rhetorical resource by Ghanaian authors (non-native speakers) compares with discourse community conventions as represented in the language produced by Anglo-American (native) writers in similar articles published in journals of repute within the metropolitan centres of scholarship.

So the focus of the study is on Ghanaian writers who are operating from a region (Africa) that is typically identified (alongside other third world regions) as 'off network' and peripheral as far as academic scholarship is concerned (Canagarajah, 1996, 2002; Flowerdew, 1999; Swales, 2004; Salager-Meyer, 2008). Would the Ghanaian academic writers' English rhetorical practices, as reflected in the use of epistemic modality, confirm this off-network status and indicate that they are less aware of centre-based scholarly writing norms and conventions? Martínez (2005: 176) has already suggested that many peripheral, non-native English speakers (NNES) who write scholarly articles in English, compared with native English speakers (NES), tend to either underuse, overuse or misuse important rhetorical features, and thinks that they need to be empowered to become more "aware of the variety of linguistic resources upon which NES writers draw". In this study, I seek to deploy corpus techniques and tools to address the following research questions:

Overarching:

How do Ghanaian non-native English speaking authors utilise markers of epistemic modality in academic argument within social science RAs?

Specifics:

1. What is the relative frequency of markers of epistemic modality in sociology, economics and law research articles written by Ghanaian authors in respect of the:
  - a. overall occurrence of epistemic markers in each discipline?
  - b. linguistic types (modal verbs, lexical verbs, adverbs, adjectives, nouns) in each discipline?
  - c. degrees of epistemic strength (weak, medium, strong) in each discipline?
2. How do the disciplinary patterns of epistemic use in the articles written by the Ghanaian authors compare with those in the articles written by the Anglo-American authors?
3. Overall, what differences are discernible in the use of epistemic markers in social science research articles between Ghanaian (non-native) authors and their Anglo-American (native) counterparts?
4. What does corpus-based analysis tell us about the Ghanaian (non-native) authors' linguistic repertoire, versatility and overall rhetorical awareness with regards to the use of epistemic markers in academic argument within the social science fields?

5. What plausible reason(s) could be given to account for the most notable feature of epistemic use observed in the Ghanaian-authored RAs?

At this point, I should justify certain choices made (at the expense of others) for the present investigation. Why RAs in particular and not other academic writing genres such as student argumentation essays, theses/dissertations, textbooks etc.? Why the focus on social science fields and specifically Sociology, Economics and Law? And why the focus on epistemic modality markers when there are other linguistic and rhetorical features?

#### *1.4.1 Justifying the focus on research articles (RAs)*

Of all academic writing genres, the RA occupies the most central position in the construction and dissemination of knowledge (Hewings, 2001; Canagarajah, 2002; Swales, 2004). According to Hewings (2001: 12), the RA is “the most important channel for conveying claims of new knowledge”. Due to its importance in the scholarly life of any researcher, the RA has been the subject of several studies over the past decades by applied linguists interested in academic discourse, especially with regards to its linguistic, rhetorical and structural features (e.g., Hyland, 1996, 1998, 2002; Chih-Hua, 1999; Master, 2001; Samraj, 2002; Martinéz, 2005; Ozturk, 2007; Biber, Connor and Upton, 2007; Basturkmen, 2012; Lin and Evans, 2012). Even so, the RA continues to receive more attention than other academic genres as suggested in the comprehensive list of research on academic genres supplied by Biber and Conrad (2009: 281-282).

It is important to mention, however, as Chapter 3 of this thesis shows, that most of the previous studies on RAs in English have been situated in Europe, North America and Asia to the neglect of English-speaking contexts in Africa. Ghana is a case in point.

An important academic genre such as the RA has virtually been ignored. It is hard to see any existing studies describing the language features in research genres such as the RA written by Ghanaian scholars working in local universities. By contrast, there is considerable amount of research conducted on the academic writing of university students. These studies on student academic essays in English have focused on a variety of themes: writing problems of students (e.g., Tandoh, 1987; Dako, 1997; Anyidoho, 2002), writer identity (e.g., Adika, 1998; Thompson, 2003), rhetorical organisation (e.g., Adika, 1999; Appiah, 2002; Afful, 2005), formality (e.g., Owusu-Ansah, 1992) and citation practices (e.g., Twumasi, 2012).

As far as I can determine, there is no study examining any aspects of the linguistic and textual practices of RAs in English produced by Ghanaian scholars/researchers. This conspicuous absence of research on RAs in Ghana, together with my wish to find out whether the under-representation of research by Ghanaian authors in reputable international journals could partly be on account of noncompliance to the textual conventions expected in mainstream discourse communities, has been the driving force in my choice to examine the RA.

#### *1.4.2 Justifying the focus on social science fields*

As suggested by Becher and Trowler (2001), academic disciplines are typically classified under three broad headings: humanities (e.g., literary studies, philosophy), social sciences (e.g., sociology, geography) and natural sciences (e.g., chemistry, biomedicine) (I discuss the idea of knowledge domains in Chapter 2, section 2.5.2.2). Studies seeking to demonstrate how disciplinary knowledge influences or restricts linguistic choices in academic discourse must therefore decide which discipline(s) to focus on.

For this study, I sought to determine disciplinary fields that have been widely studied and those that have received relatively less attention by looking at previous disciplinary variation work on RAs. A close look at publications on the RA with a disciplinary dimension in the journals *English for Academic Purposes* and *English for Specific Purposes* gave clues that led me to decide to explore social science disciplines in this study. For example, I note 44 relevant studies in the journal *English for Academic Purposes* from its inception in 2002 to 2014. While on the whole more studies have focused on disciplines in the natural sciences and humanities than in the social sciences, disciplinary-specific investigations have mainly compared disciplines that cut across the broad domains (humanities vs. social sciences vs. natural sciences). There is not any one of the 44 studies that compares disciplines solely within the broad domain of the social sciences.

Generally, it seems that the linguistic features examined across disciplinary fields tend to yield more obvious and visible differences when the disciplines compared are widely spread across broad domains (e.g., Linguistics vs. Mathematics) than when they are concentrated around one broad domain (e.g., Sociology vs. Economics), which is perhaps why the former has been preferred in most previous studies. It should, however, be interesting to study the kinds of differences that emerge when disciplines that are all in one broad domain are compared. The present research therefore focuses on social science disciplines and specifically explores Sociology, Economics and Law. These three disciplines in the social sciences are chosen because while Swales (1990: 133) specifically mentions Sociology and Economics as rhetorically under explored subjects, not even 1 of the 44 relevant previous studies in *English for Academic*

*Purposes* referred to above looked at the field of Law. So it's clear these are three fields that deserve more attention.

#### *1.4.3 Justifying the focus on epistemic modality*

I focus on epistemic modality as the unit of linguistic analysis in this study because while it remains a salient and crucial feature for effective argumentation in scholarly writing, it has been shown to be a relatively difficult linguistic category to acquire and use, especially by non-native learners/speakers of English (Holmes, 1988; Stephany, 1993; McEnery and Kifle, 2002).

Epistemic modality devices represent an important aspect of interpersonal rhetorical features in academic writing which are used to mitigate, moderate or strengthen research claims, particularly in the RA genre. The importance of this rhetorical feature is acknowledged and reported widely in the literature. For example, according to Hyland (1996, 1998a), any researcher engaged in scientific academic writing ought to be mindful of the need to present claims with precision and caution. It is Hyland's (1998a) view that while there is the need for research claims to be made with conviction, such claims must be balanced with caution in order to gain ratification in the research community. McEnery and Kifle (2002: 183), on their part, note that "epistemic modality is of central importance to the formation of argument" and that if the feature is well understood, it "helps writers to negotiate views and ideas and qualify claims at an appropriate level of commitment" (Ibid: 184). Meyer (1997) reminds us that in academic writing applying the appropriate levels of force to the claims we make helps to strengthen our arguments. But perhaps Toulmin *et al.*'s (1979, cited in

McEnery and Kifle, 2002: 184) earlier statement most succinctly sums up all the above views:

The degrees and kinds of strength with which warrants us to argue vary greatly from one kind of case to another. Some lead to 'probable' conclusions; others establish 'presumptive' conclusions; and so on. Most practical reasoning is in fact concerned with what is 'probably', 'presumably', or 'possibly' the case rather than with 'certainties' alone. So we shall need to look carefully at the different kinds of qualifying phrases (modals) characteristics of different types of practical argument.

The point, then, is that the effective use of epistemic modality markers enhances a writer's credibility in the context of scholarly communication. The above attestations of the crucial role epistemic modality markers play in scholarly writing make it an interesting topic for further investigation, especially among a group of Ghanaian non-native professional writers who are writing and publishing quite extensively in English locally (Ghana).

### **1.5 Language and education in Ghana**

Ghana is a multilingual country whose linguistic ecology is characterised by a great deal of diversity and heterogeneity. About 50 indigenous (L1) languages co-exist with English, which has remained the official language since the country's independence from British colonial rule in 1957. While the local languages, Akan, Hausa, Ga and Ewe especially, are used in contexts such as the home, social gatherings and, very recently, radio/TV news as well as talk shows, the centrality of English as the medium of communication in nearly all official and formal domains such as governance, education, the press, business, or even various forms of social interaction is not in doubt (see Boadi, 1971; Obeng, 1997; Ngula and Nartey, 2014). Boadi (1971), for example, has noted that English remains a crucial colonial legacy, used for a wide range of

communicative functions both internally and externally. For many years, the functional roles of English in Ghana have increasingly displaced the indigenous languages and diminished their domestic significance, a situation which may be attributed to persistent beliefs by Ghanaians that English, unlike the indigenous tongues, is the language associated with prestige, economic empowerment and advancement (Sackey, 1997; Opoku-Amankwa, 2009).

On language in education, two points need to be made: the first relates to the languages taught in schools and the second is on the language(s) of instruction in schools. The languages one can study at different levels in the Ghanaian educational system may be grouped as follows:

1. The English language – the official language which is generally recognised as an additional second language (L2) for most Ghanaians.
2. A Ghanaian language – which is the mother tongue (L1) dominant in a particular locality. Those officially approved for use in education are *Akan* (in its varieties of *Ashanti Twi*, *Akuapem Twi* and *Fante*), *Ga*, *Ga-Adangbe*, *Ewe*, *Gonja*, *Dagbani*, *Kasem* and *Dagaare-Wale* (Owu-Ewie, 2006; Opoku-Amankwa, 2009).
3. A foreign language – an L3 not particularly used internally among Ghanaians for communication. Notable examples are French, German, Spanish and Swahili.

English receives the greatest emphasis in the Ghanaian education system, as it is the only language a learner can study as a subject right from primary one up to the university level. It is a compulsory subject for pupils and students from primary one

through to the end of senior high school (SHS), but can be further studied as an optional subject in the university. A Ghanaian language is introduced as a compulsory subject only from primary four to the junior high school (JHS) while, with the exception of French, the foreign languages are mainly studied optionally at the tertiary level.

As regards the language(s) of instruction, currently, Ghana has an English-only policy (Owu-Ewie, 2006; Opoku-Amankwa, 2009) which states that English should be used as the medium of instruction from primary one to the tertiary levels. However over many decades starting from 1925 when the British colonial government took over the administration of education in Ghana (Owu-Ewie, 2006), there have been various attempts to use a Ghanaian language (L1) for instruction, at least in the first three years of primary schooling. The rationale for this has often been to help “children to understand the complex workings of their L1 for them to transfer it effectively and efficiently to the L2” (Owu-Ewie, 2006: 80) so as to achieve a ‘balanced bilingualism’. But owing to the perceived importance of English, the policy has continued to undermine the use of a Ghanaian language as the medium of instruction even at the lower primary level, as the situation currently suggests.

### 1.5.1 *English in the universities*

Perhaps more than any other domain of language use, the education sector is where the dominance of English is most visible (Sackey, 1997; Afful, 2006). In the universities, English is the language of communication for all official business – used for administrative work, lectures and all other academic writing and speaking activities. There are exceptions however, as departments that teach the linguistics of Ghanaian languages (e.g., Akan, Ga) and other foreign languages (e.g., French, Spanish) do

sometimes use these languages for academic purposes such as to give lectures, write thesis, or even write research papers. Even so, these language departments still find the use of English crucial and unavoidable. For example, staff members specialising in Ghanaian languages write most of their research papers in English as that assures them of a relatively wider readership, even if papers appear in local journals.

### 1.5.2 *Professional academic writing in Ghana*

In 1987, John Swales published a paper in which he argued that non-native English-speaking graduate students and academic staff could benefit a lot from the teaching of how to write research papers in English, and suggested that institutions could hire experienced ELS instructors who would be expected to rely on the existing literature on the research paper to regularly provide such services. Swales thought this could help NNES to better appreciate the suitable English rhetorical styles and patterns required for active participation in mainstream scholarly communication in English. Potentially, Swales' suggestion is even more useful now, especially in third world 'off-network' academic institutions where academics are required to produce research papers in English for publication in a highly globalized world.

At present in Ghana, as far as I know, universities do not offer such professional development opportunities to their academic staff, including new recruits who might, through such intervention, derive a better awareness of the rhetorical intricacies of the research paper in English in their own disciplines. Perhaps the universities assume that English proficiency levels are high among the educated in Ghana, and so a university lecturer should on his or her own be able to meet these scholarly writing expectations. This assumption, if it does exist, may be wrong. As Murray (2009) has observed,

academics may have English communication skills and can speak and write English well, yet they may not be familiar with the conventionalised English rhetorical patterns and strategies required for publishing papers.

For many young academics in Ghana, it seems that the very final (formal) academic communication instruction they receive is what the universities offer to first year university students. For example, the three oldest public universities in Ghana – the University of Ghana (UG), the Kwame Nkrumah University of Science and Technology (KNUST), and the University of Cape Coast (UCC) – call this introductory academic English module ‘Language and Study Skills’ (recently renamed ‘Academic Writing’), ‘Communication Skills’ and ‘Communicative Skills’ respectively. As Afful (2006) notes, this module is similar to what is termed ‘English for Academic Purposes’ or ‘Freshman Composition’ in other jurisdictions. The module aims to assist fresh undergraduate students to cope better with the writing (and speaking) tasks they would be required to undertake in the university. But as to whether academic staff who sat in this module during their undergraduate years feel it has contributed to their scholarly writing practices now as lecturers is another matter. My experience is that many lecturers, after finishing a draft of their research paper in English informally seek editing support from their colleagues in English language departments before finally submitting it for publication. While this is useful, it only helps to the extent of correcting general lexico-grammatical infelicities; these language experts may themselves not be familiar with the rhetorical strategies expected in the disciplines of the papers they edit (e.g., papers in social science and natural science fields). Hence, while useful, it is not the expert service that Swales proposed.

## 1.6 Significance of the study

The current research should be seen as a further contribution in the field of scholarly communication within academic discourse, especially as it represents an ESL context (Ghana), where, though considerable scholarly writing in English goes on, we know very little about in terms of scholarly rhetorical practices. Expert academic texts such as the RA produced by Ghanaian (non-native) authors have so far not been studied. Thus the present work has theoretical, practical and pedagogical value.

Theoretically, it will provide insights into how Ghanaian authors of RAs in the disciplinary fields of Sociology, Economics and Law deploy epistemic modality devices in the arguments they make as they report research claims. Because the study relies on corpus methods, the analysis presented here could be useful even in its own right as it “can improve descriptive adequacy by adding a distributional dimension to linguistic description” (Kennedy, 2002: 89). But beyond that, it should also help us with added evidence to either refute or uphold theoretical views such as those that say that non-native writers of articles in English have real difficulties using the conventionalised features of academic discourse, and that they often tend to underuse, overuse, or misuse these features. After all, corpus-based inquiries have the descriptive power and the strength to contribute to linguistic theory in this way.

The study should also make a contribution in terms of a concrete practical value. The present investigation would seem most beneficial to Ghanaian (and third world) academics, especially in the disciplinary fields explored here. When these non-native speakers write articles targeted at reputable international Anglophone journals, they would be required not only to produce grammatically correct structures, but more

importantly, demonstrate a considerable insider-knowledge of the stereotypical and conventionalised rhetorical patterns preferred within their discourse community. This study stands to enhance their rhetorical awareness so as to allow them to perform as competent community members whose academic communication style is appropriate even in the eyes of experienced members of the international discourse community who are likely to be reviewers of their papers. Given that these Ghanaian writers are operating from a region not so well connected with mainstream academic communities, this kind of awareness is necessary to help increase their chances of publishing their articles in mainstream journals. In a sense then, this study could well be offering a needs analysis for Ghanaian (and other African) non-native authors in the social sciences.

Last but far from least, the findings of this study would be of immense value pedagogically in the Ghanaian context. I am thinking of the insights we can derive for syllabus design and development of material not only for the teaching of the academic writing courses offered to undergraduate students in Ghanaian universities, but also for postgraduate research students who might soon be making a transition from being students to becoming academics and researchers. The present study should therefore be a good starting point towards more vigorous research into academic English so as to form the basis for academic English training in Ghanaian universities and beyond.

### **1.7 Overall structure of the thesis**

This thesis is organised into ten (10) chapters, including the current section (Chapter 1) which offers a general introduction (and background) that defines the goals and parameters of the entire study. In Chapter 2, I examine relevant conceptual and

theoretical literature which encapsulates and properly situates the study as one whose concerns lie in the contexts of the rhetoric of academic (scholarly) communication and corpus linguistics. Chapter 3 is a review of relevant empirical literature on epistemic modality in different geographical contexts of English academic discourse. This chapter helps to establish the gap and the need for the present investigation. Chapter 4 is concerned with the various methods, procedures and principles that were applied in the collection and analysis of the linguistic data (corpus of RAs) for this study. Each of chapters 5 to 9 presents and discusses aspects of the results and findings arrived at in this study.

To effectively address the diverse features of this study, these 5 results chapters do not directly correspond to each of the research questions for this study posed earlier in this present chapter. Rather, they are built mainly around the five linguistic categories of epistemic resources that are studied; so Chapter 5 focuses on epistemic modal verbs, although this is preceded by a discussion of the overall quantitative findings. Chapter 6 focuses on epistemic lexical verbs, Chapter 7 on epistemic adverbs and chapter 8 on epistemic adjectives. Chapter 9 looks at epistemic nouns. In Chapter 10, I examine what accounts for the most notable epistemic feature in the Ghanaian RAs, and then offer a general conclusion to the study. At the start of every chapter, there is an introduction that outlines how the chapter will proceed.

## CHAPTER 2 – THEORETICAL AND CONCEPTUAL ISSUES

### 2.1 Introduction

In this second chapter of the thesis, I explore related theoretical literature by looking at the various theories and concepts that define the boundaries of this study. As I have clearly stated in the introductory chapter, this study deploys corpus linguistic techniques to examine the use of epistemic modality as a rhetorical tool in academic communication in English. I will therefore discuss, from a theoretical standpoint, issues relating to i) modality (and epistemic modality in particular); ii) the concept of rhetoric and its place in scholarly communication; and iii) the ideas of discourse community in academic discourse, contrastive rhetoric, academic writing in a global context, and corpus linguistics. These issues are important to the extent that they not only contribute to contextualise the goal and research questions of this study, but also offer a perspective on the kinds of analysis that drive it.

### 2.2 Modality in English

Modality, as used in the context of linguistics, is a semantic category that spans a wide range of meaning fields of modal expressions. The concept of modality has been defined by different researchers (e.g., Lyons, 1977; Coates, 1983; Quirk *et al.*, 1985; Hoye, 1997). Lyons (1977: 452), for instance, says that modality refers to a speaker or writer's "opinion or attitude towards the proposition that a sentence expresses, or the situation that a proposition describes". According to Quirk *et al.* (1985: 219), "modality may be defined as the manner in which the meaning of a clause is qualified so as to reflect the speaker's judgment of the likelihood of the proposition it expresses being true".

We can infer from the definitions offered by Lyons and Quirk *et al.* that an important feature of modality is its subjective nature. Since it relates to people's opinions and attitudes expressed in their utterances and sentences, modality is quite a subjective concept. As Palmer (1986: 16) explains, modality "is concerned with subjective characteristics of an utterance, and could even be argued that subjectivity is an essential criterion for modality". The issue of subjectivity is often extended to the analyst interested in modality because of the difficulties and fuzziness that sometimes characterise efforts to assign appropriate semantic labels to modal expressions, especially when the analyst is working with authentic texts. This explains why it is argued that whereas the grammar of modal expressions is fairly easy to analyse without any serious challenge, analysis targeted at their meanings can sometimes be difficult and problematic (e.g., Palmer, 1979; Freeborn, 1995). In the words of Freeborn (1995: 164), "The grammar of modals is simple. The meanings however are often complex, subtle and ambiguous". But the complexity associated with modality also explains why over the years it has been an interesting topic examined by various linguistic traditions, leading to various accounts of modal semantic theory and practice.

### 2.2.1 *Types of Modality*

In traditional linguistic study, modality has often been classified into two types namely, *epistemic* and *deontic*, and discussed in terms of two central ideas: *possibility* and *necessity*, following philosophical treatments by logicians who dealt with a range of other types (e.g., *alethic* or *logical*) that were more relevant to logic and philosophy than to the field of linguistics. Huddleston and Pullum (2002: 178) offer views about how epistemic and deontic modalities are perceived in language: "Epistemic is derived

from the Greek for ‘knowledge’: this kind of modality involves qualifications concerning the speaker’s knowledge”. On the other hand, “Deontic is derived from the Greek for ‘binding’, so that here it is a matter of imposing obligation or prohibition, granting permission and the like”. Each of these two types has some relation with the two notions of possibility and necessity. Table 2.1 is a summary of these two notions and how they relate to epistemic and deontic modalities. The sentential examples are taken from Huddleston (1984: 166).

**Table 2.1:** The possibility/necessity notions of epistemic and deontic modality

	EPISTEMIC	DEONTIC
Possibility	You <b>may</b> be under a misapprehension.	You <b>may</b> take as many as you like.
Necessity	You <b>must</b> be out of your mind.	You <b>must</b> work harder.

Beyond the epistemic and deontic dichotomy, there is a third type commonly mentioned in the literature: *dynamic* modality. Palmer (1979, 1990), in his classification of modality types, recognises this third category and so ends up with a three-way classification scheme of epistemic, deontic and dynamic modalities. According to Palmer (1990: 36), dynamic modality is different from both epistemic and deontic modalities in the sense that it is subject-oriented since it concerns the “ability or volition of the subject of the sentence, rather than the opinions (epistemic) or attitudes (deontic) of the speaker (and addressee)”. So for example, as noted in Huddleston and Pullum (2002: 178), the modal *can* in the sentence (*she can easily beat everyone else in the club*) is a dynamic modal as it dynamically reports the subject’s ability to do the beating as reported in this sentence.

It must however be pointed out that several other scholars (e.g., Coates and Leech, 1980; Kratzer, 1981; Sweetser, 1982; Coates, 1983) have found this three-way classification of modal meanings quite troubling, especially because of fuzzy and indeterminate cases often detected within the deontic and the dynamic, both non-epistemic, categories. A two-way classification of *epistemic* and *root* (non-epistemic) modalities thus seems a much more useful and preferred categorisation of the meanings of modals for these scholars. Other researchers have used different terms that roughly correspond to the epistemic vs. root distinction, with a notable example being Quirk *et al.* (1985) who distinguish between *extrinsic* and *intrinsic* modalities. What this two-way classification has sought to achieve, to my mind, is to bring all non-epistemic uses under the broad category of root modality, with a view to reducing the fuzzy and indeterminate tendencies often resulting from the distinction made between deontic and dynamic modalities. But whichever way one views the various classifications suggested, it becomes clear that the epistemic type/category, which is the aspect this study is concerned with, has maintained a certain level of stability and is less fuzzy and controversial. It is the category that seems to pose the least problems and instances of epistemic use, which are quite straightforward to characterise in language. This probably accords with Coates' (1983) view that epistemic modality is one of the most clearly relevant modality types related to everyday language use.

### 2.2.2 *Epistemic modality as a semantic category*

Epistemic modality allows a speaker or writer to make a statement with varying degrees and levels of commitment essentially because what is known to the speaker or writer about the statement does not warrant absolute certainty. Kratzer (1981) has explained

this aptly by saying that, if we use an epistemic device, we are interested in what else may or may not be the case, given everything we know already about the situation that triggered the use of the epistemic device. Furthermore, Coates (1983: 18) has defined epistemic modality as being “concerned with the speaker’s assumptions or assessment of possibilities and, in most cases, it indicates the speaker’s confidence (or lack of confidence) in the truth of the proposition expressed”.

More recently, Vold (2006: 226) has suggested that “epistemic modality concerns the reliability of the information conveyed, and epistemic modality markers can be defined as linguistic expressions that explicitly qualify the truth value of a propositional content”. With epistemic modality therefore, the evidence available to the speaker [or writer] determines the level of confidence and force that backs an assertion, a statement or a proposition. The linguistic expressions used to mark epistemic modality represent varying degrees of commitment on the epistemic modality continuum, one end of it indicating *doubt/doubtfulness* and the other end expressing *certainty/confidence* (Coates, 1983; Holmes, 1988; McEnery and Kifle, 2002).

With regard to the linguistic devices and resources used to express epistemic modality, it seems well established that the modal verbs (e.g., *may*, *would*, *could*, *must*) are the prototypical and best known for this purpose. However, other lexical items beyond the modals usefully express epistemic modality. These include adjectives such as *possible*, *likely*, *probable*; adverbs such as *perhaps*, *maybe*, *possibly*; lexical verbs like *seem*, *appear*, *guess* and nouns such as *hope*, *possibility*, *assumption* (Holmes, 1988; Hoye, 1997). I take this broad perspective of expressions of epistemic modality beyond

the use of modal verbs in the present study of RAs written by Ghanaian and Anglo-American scholars, with the particular aim of throwing some light on how Ghanaian academics in the fields of Sociology, Economics and Law utilise this important argumentative rhetorical resource in their RAs. In the next subsection, I briefly look at epistemic modality as an important element within Halliday's (1994) interpersonal metafunction of language.

#### *2.2.3 Epistemic modality as an interpersonal metafunction feature*

In his Systemic Functional Linguistic (SFL) model of language description, Halliday emphasises the point that language ought to be seen as a social process that is shaped by different contexts of situation. Thus the specific function and meaning carried by language is determined by an appropriate context of situation (Halliday, 1994; Halliday and Matthiessen, 2004). Halliday identifies *field* (what is said/written), *tenor* (the relationship between participants) and *mode* (expectations of how what is said/written is organised) as the three main contextual dimensions manifest in a register, and shows how these dimensions respectively correspond to the three 'functional' components of human language (*ideational*, *interpersonal* and *textual*), referred to in SFL nomenclature as *metafunctions*. Following Halliday, Hyland (2005: 26) summarises the purpose(s) each element serves within the metafunction framework:

- *The ideational function*: the use of language to represent experiences and ideas. This roughly corresponds to the notion of 'propositional content' ... and concerns perceptions of the world and our own consciousness.

- *The interpersonal function*: the use of language to encode interaction, allowing us to engage with others, to take on roles and to express and understand evaluations and feelings.
- *The textual function*: the use of language to organize the text itself, coherently relating what is said to the world and to the readers.

Although, as Halliday himself has established, these three functions complement each other in creating the communicative meaning of a text as a whole, there are noticeable linguistic resources that typically contribute to highlighting the role of each function. Epistemic modality, the linguistic resource examined in this study, belongs to the interpersonal function. As Flowerdew (1998: 543) notes, “The interpersonal function is concerned with the writer’s attitude to the message and is typically realised through modal verbs (e.g. *should*, *may*) and various types of modal adjuncts (e.g. *probably*, *obviously*)”.

It must be noted, though, that in SFL theory the epistemic and deontic types I have discussed in section 2.2.1 come under different labels, although what these labels describe seems to be pretty much similar to the epistemic/deontic distinction, more common in traditional grammars. *Modality* is the ‘umbrella’ term used to describe degrees of probability and certainty (roughly corresponds to ‘epistemic’) while *modulation* refers to degrees of obligation and inclination (roughly corresponds to ‘deontic’) (Halliday and Matthiessen, 2004: 147). In the present study, I prefer the term epistemic modality and use it to represent the different degrees of probability in a proposition, following similar classifications by Holmes (1988), Hyland and Milton (1997), Hyland, (2001), McEnery and Kifle (2002) and Vold (2006).

#### 2.2.4 Epistemic modality as an interpersonal feature in academic writing

Given that interpersonal rhetorical features play a crucial role in academic writing, researchers of composition theory and the rhetoric of science are becoming more and more interested in how writers make use of these interaction features in order to achieve persuasion, acceptance and ratification from their readers. With varying scope and focus, researchers have discussed these interpersonal linguistic resources in academic writing under such broad terms as *metadiscourse* (e.g., Crismore, Markkanen and Steffensen, 1993; Hyland and Tse, 2004; Hyland, 2005, 2013; Adel, 2006), *stance* (Biber and Finegan, 1989; Biber, 2004; 2006a, 2006b), *evaluation* (Hunston, 1994; Hunston and Thompson, 1994), *appraisal* (Martin, 2000; Martin and White, 2005), among other labels.

While there seems to be a great deal of overlap as regards the interpersonal linguistic resources covered within these broad terms, most of them have included categories that adequately fall within the scope of epistemic modality. For example, with regards to metadiscourse, which has been quite extensively studied by Ken Hyland (and several others), the taxonomy of metadiscoursal features has categories that include the expressions of doubt and certainty. In a recent account of what metadiscourse entails, Hyland (2013: 67-68) explains that metadiscourse refers to “the self-reflective expressions used to negotiate interactional meanings in a text, assisting the writer (or speaker) to express a viewpoint and engage with readers as members of a particular community”. Thus metadiscourse is guided by three main principles (Hyland and Tse, 2004; Hyland, 2013) outlined as follows:

1. that metadiscourse is distinct from propositional aspects of discourse;
2. that metadiscourse refers to aspects of the text that embody writer-reader interactions;
3. that metadiscourse refers only to relations which are internal to the discourse.

It is on the basis of these principles, which have been partly shaped by many years of his analysis of real texts (especially situated within academic genres), that Hyland developed his interpersonal model or taxonomy of metadiscourse. Table 2.2, adopted from Hyland (2013: 77), is a summary of the model. Within this metadiscoursal framework, epistemic modality (and the linguistic forms used to express it) can be classified within the *interactional* subcategory, covering its major types, i.e., hedges and boosters, which primarily focus on the writer's level of confidence or commitment to the proposition that is expressed. As Hyland (1998: 1) reminds us, "hedges and boosters are communicative strategies for increasing or reducing the force of statements".

Furthermore, he explains each of the two by saying that boosters (e.g., *clearly, obviously, of course*) "allow writers to express conviction and assert a proposition with confidence, representing a strong claim about a state of affairs". On the other hand, hedges (e.g., *possible, might, perhaps*) "represent a weakening of a claim through an explicit qualification of the writer's commitment" (Ibid: 2).

**Table 2.2:** Hyland's (2013) interpersonal model of metadiscourse

Category	Function	Examples
Interactive	<b>Help to guide reader through the text</b>	Resources
Transitions	express relations between main clauses	in addition/but/thus/and
Frame markers	refer to discourse acts, sequences, or stages	finally/to conclude/my purpose is
Endophoric markers	refer to information in other parts of the text	noted above/see Figure/in section 2
Evidentials	refer to information from other texts	according to X/Z states
Code glosses	elaborate propositional meanings	namely/e.g./such as/in other words
Interactional	<b>Involve the reader in the text</b>	Resources
Hedges	withhold commitment and open dialogue	might/perhaps/possible/about
Boosters	emphasize certainty or close dialogue	in fact/definitely/it is clear that
Attitude markers	express writer's attitude to proposition	unfortunately/agree/surprisingly
Engagement markers	explicitly build relationship with reader	consider/note/you can see that
Self-mentions	explicit reference to author(s)	I/we/my/me/our

In the present study, I use the term 'epistemic modality' to discuss the various degrees of probability expressed in statements and propositions. While hedges and boosters make use of linguistic resources that fall within those degrees of probability, the use of the term 'epistemic modality' in this study allows for the inclusion of other epistemic devices on the continuum of probability that may not properly function either as a hedge or as a booster but which can be placed somewhere between these two epistemic functions. As such, the categories of epistemic modality suggested by Hyland and Milton (1997) and McEnery and Kifile (2002) – *certainty* (highest probability),

*probability* (medial probability), and *possibility* (low probability) – seem to better serve my purpose in this corpus-based study.

Another broad term often discussed in the context of writer attitude towards text and readers is *stance*. In academic discourse research, stance has been used to cover many features beyond epistemic modality. In his work on university language, where he discusses a number of linguistic features associated with spoken and written university registers, Biber (2006a; 2006b) prefers to talk about how speakers and writers convey their personal feelings and assessments under the term ‘stance’. Relying on the stance framework in Biber *et al.* (1999), Biber (2006b: 99) explains that stance markers “convey many different kinds of personal feelings and assessments, including attitudes that a speaker has about certain information, how certain they are about its veracity, how they obtained access to the information, and what perspectives they are taking.”

Thus the semantic aspects of stance, while they include epistemic devices, also span attitudinal and stylistic features (Biber *et al.*, 1999), which are not the concern of the present study. The point then is that the lexico-grammatical features used by Biber (2006b) in his analysis of stance in university registers cover epistemic, attitude and style markers. For instance, one of the major linguistic resources examined in his study is stance adverbs and he exemplifies these as follows:

**Stance adverbs**

- **Epistemic**  
**Certainty:** e.g., *actually, certainly, in fact*  
**Likelihood:** e.g., *apparently, perhaps, possibly*
- **Attitude:** e.g., *amazingly, importantly, surprisingly*
- **Style/Perspective:** e.g., *according to, generally, typically*

(Biber, 2006b: 101)

The other categories in Biber's stance framework (namely, modal/semi-modal verbs, complement clauses controlled by stance verbs, adjectives, or nouns) all have a similar pattern, including epistemic, attitude and stylistic lexico-grammatical features. It is the epistemic aspects of stance (without an eye on the attitudinal and stylistic aspects) that the present investigation is concerned with. The linguistic features often discussed under the term 'stance' are thus broader in scope than the range of devices used to express epistemic modality. The point, that epistemic modality only constitutes a subpart of stance generally, is further expressed in Myers' (2013) analysis of stance in blogs where he classifies *epistemic* stance as one kind of stance markers, the others being *attitudinal* and *stylistic* stance markers.

### **2.3 The concept of rhetoric**

The idea of rhetoric as applied to contemporary studies of academic discourse, and in particular to writing as communication, relates principally to ways persuasion is affected by audience through the two principal modes of speaking and writing. In the present study the term 'rhetoric' is crucial and already in previous sections of this thesis, its several occurrences (especially in its adjective form: 'rhetorical') suggest that I am using it in the context of how language is used by authors of scientific academic writing for persuasive and successful communication. This understanding of rhetoric is more broadly acknowledged by Bazerman (1988: 6), where he theorises about the role of rhetoric in the construction of knowledge and defines rhetoric within that context as "the study of how people use language and other symbols to realize human goals and carry out human activities". But this notion of rhetoric has quite a long history, and at this point I intend to provide a brief historical account of the concept of rhetoric in

discourse to properly contextualise its current place in scientific academic writing, the focus of this study.

### *2.3.1 A brief background to rhetoric*

Modern studies of rhetoric, manifested in several treatises and handbooks (e.g., Corbett, 1965; Perelman and Olbrechts-Tyteca, 1969; Nash, 1989; Roberts and Good, 1993, Richards, 2008), show the most profound of rhetorical traditions to be the one situated in the West and whose beginnings can be traced back to ancient Greece in the fifth century BC. It is important to note that rhetoric had started off not as a discipline in its own right but as part of the discussions of the crucial issues of life that attracted the attention of Greek philosophers, a situation which eventually established rhetoric as an art, to be later further extended and formalized by Roman rhetoricians (Nash, 1989). Thus it is the Greek and Roman practices of the art in this early period that represent what has become known in modern studies of rhetoric as 'classical rhetoric'. The notable figures who made substantial contributions to the development of classical rhetoric were the Greek philosophers the Sophists, Plato, Isocrates, and the Roman rhetoricians Cicero and Quintilian. But the one man whose influence on rhetoric has transcended generations even to modern times is Aristotle. In the words of Richards (2008: 41) "Aristotle is by far the most important theoretician of rhetoric to many historians".

In large part classical rhetoric centred on public political speech and how well one's ideas were organised into words and delivered to an audience with the aim of achieving a desired persuasive effect, although the art was later to find expression in other kinds of speeches, prefaces, prologues and openings of narratives (Perelman and

Olbrechts-Tyteca, 1969; Perelman, 1982; Nash, 1989). As Perelman and Olbrechts-Tyteca (1969: 6) observe, in classical antiquity rhetoric had as its primary object “the art of public speaking in a persuasive way: it was therefore concerned with the use of the spoken word, with discourse to a crowd gathered in a public square, with a view to securing its adherence to the thesis presented”. Persuasion was thus inseparably linked to the idea of rhetoric. The underlying assumption then, as is clearly the case in many domains of speaking and writing today, was that some people spoke better than others and therefore the “discipline was intended to prepare the novice for tasks that involved speaking in public...” with the ultimate goal of being effective in establishing proof or arguing persuasively (Nash, 1989: 6).

Central to classical theories of rhetoric were the ideas of ‘ethos’, ‘logos’ and ‘pathos’ introduced by Aristotle. Ethos relates to the qualities of character in the speaker’s act of communication, logos refers to the proofs given to support an argument, and pathos is the speaker’s ability to successfully arouse the feelings of the audience. Aristotle’s argument in respect of persuasive rhetoric was that these three ideas complemented each other and became the guiding principles used for evoking and directing the emotions of one’s audience.

As most modern discussions and exegeses of classical rhetoric show (e.g., Corbett, 1965; Dixon, 1985; Plett, 1985; Nash, 1989; Richards, 2008), classical rhetoric was divided into five parts which represented the sequential stages in the production of a text. These were *inventio* (the capacity to find argumentative matter), *dispositio* (the structural arrangement of arguments), *elocutio*, (verbal adornment of the matter/topic being argued), *actio* (the use of gesture, facial expression and other visual

elements) and *pronuntiatio* (auditory realisation). It should be mentioned that each of these stages was accompanied by a set of rules even though the five stages together constituted the rhetorical competence of the orator/speaker.

As Nash (1989: 15) observes, the Greek and Roman theories of discourse structure even today “guide the presentation of arguments at law, the writing of scholarly papers and theses, [and] the construction of newspaper editorials”. We see, then, that the theories of classical rhetoric, and perhaps those after them, have greatly influenced modern and contemporary thinking of rhetorical studies. Gradually, through the contributions of the Classical, Medieval, Renaissance and Enlightenment periods (Conley, 1990), contemporary rhetoric has expanded in shape and has come to be considered as a powerful tool for the analysis of discourse in general, embracing nearly every facet of human communication.

### *2.3.2 Modern approaches to rhetoric*

Particularly in the 20<sup>th</sup> century, new theories of rhetoric were developed and these strongly revived the study of rhetoric in the modern world. These theories have often been collectively referred to as the ‘new’ rhetorics, following what Perelman and Olbrechts-Tyteca designated as the ‘New Rhetoric’ (Roberts and Good, 1993). While several rhetoricians have made contributions to the new rhetorics, the works of Chaim Perelman and Stephen Toulmin seem to have been most profound in shaping modern thinking of rhetoric. Drawing on classical rhetorical theory, these authors have especially stressed the structure of argumentation in discourse.

Stephen Toulmin’s model emphasises the sequential development of arguments for different purposes at different levels of writing, which is especially useful

for L2 writers in learning the structure and sequence of argument development (Toulmin, 1958; Toulmin, Rieke and Janik, 1979). On the other hand, Perelman's greatest contribution has been on the effect a well-constructed argument has on the audience, distinguishing three audiences: those the speaker directly addresses, the speaker herself, "reflecting privately about how to respond to delicate situation", and the "universal audience", which refers to "at least all those who are competent and reasonable (Perelman, 1982: 14).

### *2.3.3 Rhetoric is now everywhere*

Quite clearly, rhetoric is no longer merely an art of persuasion mainly confined to the public domains, as was the case with classical rhetoric. While the persuasive element remains central to contemporary rhetoric, the subject has become more of a theory of language which, apart from the tools it offers for the analysis of discourse, also addresses all contexts involving the use of language and symbols (Cahn, 1993; Foss, 2009). As Foss notes, these contexts include

... everything from intrapersonal to interpersonal to public discourse to social movements and mediated discourse. Rhetorical theories address what makes a public, personal diaries as rhetoric, and television, the Internet, and the Web sites as rhetorical artifacts. This means that rhetorical theory also includes the study of visual and nonverbal elements, such as the study of art and architecture, buildings and all design elements of cities, and dress and appearance, to sports, to mention a few. There is virtually nothing that is part of the human experience that cannot be looked at from a rhetorical perspective.

(Foss, 2009: 855)

Quite clearly, rhetoric is now virtually everywhere, and in the field of academic discourse its role started becoming manifest in the 1930s and 40s in the USA through studies of university students' composition by applied linguists and other scholars in

various English departments (Moberg, 1990; Connor, 1996). A crucial motivation for the interest in composition studies lied in the notion of 'epistemic rhetoric'. This notion, as James Berlin posits, "holds that language is the key to understanding the dialectal process involved in the rhetorical act. Knowledge does not exist apart from language" (cited in Moberg, 1990: 67).

As I have noted in chapter 1, as EAP developed in the 1960s, the study of the language of academic communicative practices extended to include other domains of speaking and writing in academic contexts. Notable among these are scholarly research genres such as research articles, research books, conference papers and grant proposals, among others (Hyland, 2006). The present study is situated within the context of the rhetoric of scholarly writing, focusing on the RA genre. In the next section, I provide a brief overview of the historical development of the scientific RA, and then move on to consider the role of rhetoric in scholarly professional writing, mainly situating the discussion around the RA genre and its operation in academic discourse communities.

#### **2.4 The research article (RA): a brief historical background**

The historical background of the scientific RA in English which I present here is by no means intended to give a comprehensive account or perhaps a complete picture of the historical and linguistic development of the genre, as information on this can be found in many previous studies (e.g., Meadows, 1980; Bazerman, 1988; Swales, 1990, 2004; Banks, 2008; Biber and Conrad, 2009; Holtz, 2011; Lin and Luyt, 2012). I essentially seek to briefly highlight how it evolved and developed over the centuries to emerge today as what scholars largely agree to be the number one research genre in contemporary scholarship. This provides a lead towards the appropriate context for the discussion of

how rhetoric and rhetorical practices play out within this very important channel of academic communication.

The evolution of the scientific RA in English has often been traced back to the seventeenth century in the year 1665 when the first notable scientific journal, namely, the *Philosophical Transactions of the Royal Society*, appeared in London (Swales, 1990; Biber and Conrad, 2009; Lin and Luyt, 2012). In fact, Biber and Conrad (2009: 157) have noted that the scientific articles that were published in this journal represent the “most influential record of scientific research during the seventeenth and eighteenth centuries”. Perhaps its significance as an outlet for the dissemination of scientific knowledge, in contrast with earlier conventions, was the fact that it “established the practice of reporting immediate empirical results of the study of nature” (Holtz, 2011: 7).

According to Ard (1983) (cited in Swales, 1990), the early development of the scientific article in English took the form of informative letters that scientists wrote to each other, and it had the kinds of salutation that is typical of modern formal letter writing. With time, the *Philosophical Transactions* and other subsequent journals started to assume the role of providing a regular platform for scholars to interact and share their scientific research findings. As expected, “the new and recurring rhetorical situation that emerged led to the creation of a new genre increasingly distinct from its letter writing origin” (Swales, 1990: 110).

One influential figure in the development of scientific research writing is Robert Boyle, whose crucial contribution lied in the introduction of what he called the ‘experimental essays’ which started to gain prominence in the *Philosophical Transactions* and other scientific journals, after quite a long period of publishing informative letters.

The experimental essay introduced by Boyle appeared to have a typical rhetorical structure that was appealing to scientists at the time. The essay opened with a prologue which stated the reasons for undertaking a certain experiment; followed by a step-by-step account of the methodological procedures used in the experiment; and then ended with the presentation and discussion of the results arrived at, often leading to the formulation of new hypotheses (Montgomery 1996, cited in Holtz, 2011).

While Boyle's style of disseminating scientific knowledge became quite popular and gained wide acceptance at the time, the last 350 years of scientific writing, as Swales (1990) explains, has seen a considerable change in the structure and style of the RA, at least in terms of article length, structure, and the use of certain features such as references. For instance, it is common practice today for most scientific articles to have their structure divided into the introduction, methods, results, discussions, conclusion and reference sections (essentially following the Swalesian IMRD format), but this was not so common before 1950, as only about 50% of scientific articles published followed this format. Also, making references to previous studies by way of in-text citations only became a prominent feature of the RA in the twentieth century, and clearly this might be attributable to the coming of the World Wide Web and the role it played in making electronic academic material more readily accessible to scholars.

Despite these internal changes that have characterised the scientific RA over many years, its primary goal of adopting empirically verifiable principles and methods to study phenomena and arrive at results deemed scientific and objective has remained (Biber and Conrad, 2009, Holtz, 2011). Today, the RA is a product of a considerably long process (manuscript writing, submission to a journal of choice, peer-reviewing, revising

or rewriting the manuscript, and publishing in the journal), but scholars deem it a worthy endeavour since publishing in journals has become prestigious, “especially because of the high quality standards of scientific practices established over time” (Holtz, 2011: 9).

The final point I wish to make here is that when a manuscript is published in the journal of choice at the end of the long process, it communicates a number of messages and establishes the writer of the manuscript as a credible academic who is contributing to the creation of knowledge in the discourse community where s/he belongs, and that piece of publication represents the author’s reward for the effort. Hyland (2009: 5) makes this point succinctly:

A paper is judged as a contribution to a particular field by an audience of colleagues who are potentially in a position to make use of it. If editors, referees, proposal readers, conference attendees and journal editors regard it as original and significant, allow it to be published, cite it in their own work and develop it further, then the writer receives the reward of recognition.

## 2.5 Rhetoric in scholarly communication: the RA

Scholarly communication, especially as we see it in RAs, essentially advances arguments and authors are constantly seeking to ensure that the language which conveys their thought (as well as the claims they make in their arguments) is convincing and persuasive. Thus the role of rhetoric in research communication is not in doubt. As Nelson, Megill and McCloskey (1987: 3) have noted “scholarship uses argument and argument uses rhetoric ... in the ancient sense of persuasive discourse”. According to Bazerman (1987), communicating in a scientific style in the human sciences is necessarily a rhetorical endeavour because writing in that context embodies rhetorical choices that are inescapable.

Researchers of scholarly communication are quite unanimous in their view that research writing is a social activity, and by this, they recognise that writers do not simply report or project ideas about some reality in the world, but, more crucially, they engage in an interaction with readers. This engagement further requires a writer to effectively manage the use of certain interactive and rhetorical features in order to negotiate with readers to gain their acceptance and ratification – especially those readers who are the ‘intelligent equals’ of the writer and also core members of the discourse community in which the writer is making a contribution (Bazerman, 1988; Myers, 1989; Swales, 1990; Hyland, 1996, 1998, 2001, 2004; Thompson, 2001). The interactive nature of scientific discourse is captured in Bazerman’s (1988: 24) claim that four contexts are crucial for any scientific written text: (1) the object under study, (2) the literature of the field, (3) the anticipated audience and (4) the author’s own self. How a scientist effectively brings together these contexts in the construction of knowledge through writing determines the acceptance or otherwise of these ideas by members of the discourse community.

At the centre of persuasion in scholarly academic writing is the effort by writers to negotiate meaning with readers in ways that will “convey their credibility by establishing a professionally acceptable persona and an appropriate attitude, both to their readers and their arguments” (Hyland, 2004: 89). To this end, as Hyland (1998: 439) further notes, their “sense of audience is critical because gaining acceptance of academic claims involves both rational exposition and the manipulation of rhetorical and interactive features”. In effect, then, familiarity with the persuasive practices and preferred language patterns in one’s disciplinary community is critical, and mastery of them is an important first step towards being accepted and recognised as a credible participant in that disciplinary community.

### 2.5.1 Analysing the RA as a genre

A useful place to start a discussion on the analysis of the RA as a genre is to consider briefly the term *genre* itself. Over the past thirty years or so, the notion of genre has increasingly become important in the research of many fields including rhetoric, applied linguistics, TESOL, ESP, composition studies, technical communication, critical discourse analysis, sociology, education among others (Bawarshi and Reiff, 2010; Bhatia, 1993; Trosborg, 1997). As a result, definitions and views relating to the term are varied, diverse and, thus, leave us with no universally agreed conceptualisation.

Despite the considerable variations in the definition of a genre, scholars generally agree that genres are text-types that are shaped by socio-cultural factors in a community (Kress and Threadgold, 1988; Leckie-Tarry 1993; Miller, 1984; Trosborg, 1997). According to Kress and Threadgold (1988: 216), genres are the product of “the interface the social-cultural world and textual form ... ways in which text and the social agents which produce them construct and are constructed by the social and the cultural”. Thus the conceptualisation of genres has moved beyond simply categorising text-types. Some researchers have further sought to explain how certain kinds of texts are connected to certain kinds of social action. Drawing on Miller’s work *Genre as Social Action*, Bawarshi and Reiff (2010: 3) explain that we can think of genres as “ways of recognising, responding to, acting meaningfully and consequently within, and helping to reproduce recurrent situations”. Because genres have typified rhetorical features and can help to reproduce recurrent situations, they have important implications for the study and teaching of spoken and written text domains.

Thus Genre theory has an important place in text analysis in ESP, especially in the domain of academic and professional discourse analysis. Three different theoretical approaches to genre in ESP are highlighted in the literature, namely: *International ESP*, *New Rhetoric* and *Australian Systemic Functional Linguistics* (Flowerdew, 2005; Hyon, 1996; Swales, 2009). While these three traditions have their points of departure in textual analysis, Swales (2009: 5) has suggested that their differences are now much less sharp, as all three approaches share a lot in common. He outlines four points of agreement in the approaches as follows:

- a. a balance between constraint and choice;
- b. the role of local contextual colouring in the realisation of genre exemplars...;
- c. a greater sense that genres and genre sets are always evolving in response to various exigencies; and
- d. a consequence more nuanced approach to genre awareness-raising and genre acquisition.

Despite these shared characteristics in the three traditions, the present study is situated more within the *International ESP* perspective. This perspective not only focuses on NNES' writing; it has also been applied more in EAP and EPAP, thus providing perhaps the most suitable orientation for the present study, which concerns non-native professional writing in English. Its application has been particularly profound in research genres such as the RA, research monographs and book reviews.

Key figures of the ESP approach to genre analysis include Swales (1990), whose work has focused mainly in academic discourses, and Bhatia (1993), who further developed the notion of genre and extended Swale's work to include texts in other professional settings (Flowerdew, 2005). However, the early work by Swales (1981, 1990)

is perhaps the most influential, especially in its application to the analysis of the RA. Two main directions and tendencies are emphasised in the analysis of the RA genre: the analysis of its 'macro-structure', which applies the model of *moves* to classify segments of the RA according to its prototypical communicative purpose, and the analysis of its 'micro-structure', where the emphasis has been on a detailed analysis of specific lexico-grammatical features used in the RA.

On the move analytic model, Swales' work (1990) has focused on the introduction section of the RA, where he proposes the Creating a Research Space model (the CARS). This consists of three main *Moves* (establishing a territory, establishing a niche, occupying the niche) and a number of *Steps* in each move. As Dudley-Evans (2000: 5) has noted, the model sought to capture:

the ways in which academic writers justify and highlight their own contribution to the ongoing research profile of the field by first establishing a topic for the research and summarising the key features of the previous research, then establishing a gap or possible extension of that work will form the basis of the writers' claims.

The move structure analysis has been applied widely since it was first proposed by Swales and many researchers have extended the model to the entire IMRD (introduction-methods-results-discussion) pattern of the RA, as well as other academic genres such as the abstract, lectures, theses and dissertations, book reviews (Dudley-Evans, 2000).

As regards the analysis of specific linguistic features of the RA (the micro-level analysis), the concern for researchers has been to highlight ways in which specific linguistic and rhetorical resources contribute to establishing the overall communicative purpose of the RA. So detailed analysis of specific features such as epistemic modality, reporting verbs, voice, nominal clause types, tense and aspect, personal pronouns, etc.

are also important but have not been explored as much as moves. Bhatia (2001: 85), for instance, has stated categorically that “while moves are well established, rhetorical strategies have been so far neglected”.

Biber and Conrad in their book *Register, Genre, and Style* (2009) prefer to distinguish these two perspectives to genre analysis (the macro-level analysis and the micro-level analysis) in terms of *genre* and *register* respectively. As they note, genre focuses on “the conventional structures used to construct a complete text...” (Biber and Conrad, 2009: 2) and register is more interested in “core linguistic features like pronouns and verbs ... used in association with the communicative purposes and situational context of texts” (Ibid: 2). This perspective of register by Biber and Conrad further informs the perspective taken in the present study of epistemic modality markers in the RAs written by Ghanaian and Anglo-American researchers.

### *2.5.2 The concept of discourse community*

A useful concept underlying the present study is what has been referred to as *discourse communities*. A discourse community essentially draws attention to the idea that language is not particularly used to communicate in the world at large. Rather, language operates among groups of people – or perhaps between members in a group – recognised as specific social networks of language users who share defined goals, norms and values. By virtue of their membership and participation in the group over a period of time, members are expected to gain sufficient awareness of the norms and practices of the group they belong to, evident in the ways they exchange information, dispute ideas, present themselves in the discourse, make claims and argument, etc. (Hyland, 2012). Gee (2004) discusses the idea of discourse communities using the term *affinity spaces* whereas in the context of scholarly communication, Hyland (2009, 2012) prefers to use

the term *disciplinary* (or *academic*) *cultures*. According to Hyland (2009: 47), the value of a discourse community is considerable as “it offers a way of bringing writers, readers and texts together into a common rhetorical space, foregrounding the conceptual frames that individuals use to organise their experience and get things done using language”.

Swales (1990: 24-27) has outlined the defining characteristics of a discourse community in six points; namely, 1) a discourse community has a broadly agreed set of common public goals; 2) it has mechanisms of intercommunication among its members; 3) it uses its participatory mechanisms primarily to provide information and feedback; 4) it utilises and hence possesses one or more genres in the communicative furtherance of its aims; 5) in addition to owning genres, it has acquired some specific lexis; and 6) it has a threshold level of members with a suitable degree of relevant content and discoursal expertise. Despite the obvious relevance of the idea of a discourse community to the use of language, the notion has come under some criticism.

One such criticism has been the view that a discourse community rests on the assumptions of the sociolinguistic notion of *speech community*, which had been variously discussed by sociolinguistic scholars such as Gumperz (1968) Labov (1972) and Hymes (1972) before the emergence of the notion of discourse community. Thus this view argues that the notion of a discourse community does not really offer a conceptual shift from the long-held idea of a speech community, and therefore the two concepts could not be clearly separated.

However, I agree with the suggestion by Swales (1990) and Blanton (1998) that a discourse community has a different reality from a speech community. Quite clearly, the kinds of conscious strategies used to identify, select and include the members of a

discourse community are different from those of a speech community. Swales (1990) has stated that even if the definition of a speech community includes shared linguistic forms, shared regulatory rules and shared cultural concepts, an alternative definition for a discourse community is necessary. He identifies three important ways the two notions can be distinguished. The first concerns medium: the term *speech* seems to exclude communities that are predominantly engaged in writing (e.g., academic communities), and whose members are likely to communicate with other members in other parts of the world and receive feedback. In such communities, reactions and feedbacks to members are more in the form of writing rather than speech.

The second point that separates the two notions, according to Swales, is that whereas a speech community is a *sociolinguistic* grouping, a discourse community is a *sociorhetorical* one. Thus in the former, the discoursal characteristics and linguistic behaviour of the group (e.g., socialisation, group solidarity etc.) are shaped by social factors. However, the discoursal characteristics and linguistic behaviour of a discourse community are functional, “since a discourse community consists of a group of people who link up in order to pursue objectives that are prior to those of socialization and solidarity ...” (Swales, 1990: 24). It is the goals of members that determine the discoursal characteristics in a discourse community.

The final difference between the two notions noted by Swales relates to membership: a speech community tends to be more general as its membership may be open to everyone in the society by virtue of birth, accident or adoption; a discourse community, on the other hand, “recruits its members by persuasion, training or relevant qualification” (Swales, 1990: 24). Clearly, Swales succeeds in establishing that the

underlying assumptions of the two notions are different and each is important in specific contexts of language use.

The notion of *discourse community* is important in academic communities and academic literacy studies. It has been especially useful in the development of scholarly writing skills and in helping novice scholars to be “inducted into their disciplinary discourse communities through various forms of apprenticeship” (Flowerdew, 2000: 128). Flowerdew (Ibid: 128) further notes that academic discourse communities stress “the participatory, negotiable nature of learning and the fact that learning is not always based on overt teaching”.

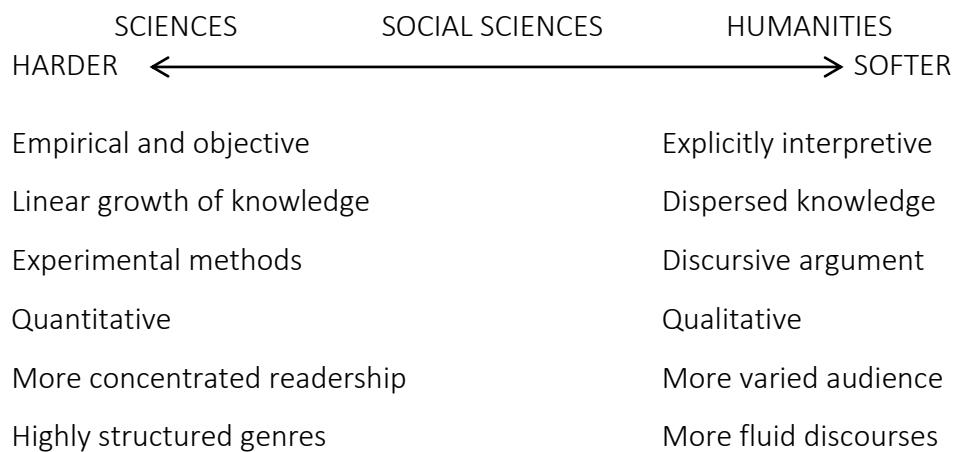
Thus in this study, the idea of a discourse community serves as a useful framework from which to explore epistemic rhetorical practices in scholarly journal articles written in English, especially by non-native English-speaking academics. While the notion of *discourse community* remains quite a contested concept, at least within academic discourse communities, it represents a “principled way of understanding how meaning is produced in interaction and proves useful in identifying how writers’ rhetorical choices depend on purposes, setting and audience” (Hyland, 2009: 66).

### 2.5.3 *Knowledge domains and community norms*

There are clearly defined academic knowledge domains and disciplines, and this explains why most linguistic and rhetorical analyses carried out by linguists on research genres such as the RA often specify the disciplinary domains or fields in which their work is based. Traditionally, the broad dividing line for scientific knowledge domains has been between natural sciences and technology, social sciences and humanities, and each of these broad domains recognises various specific disciplines such as Chemistry in the natural sciences,

Sociology in the social sciences and Linguistics in the humanities (Becher and Trowler, 2001; Hyland, 2009).

The epistemological methods of knowledge construction for these three broad domains have further led to the concepts of *hard* and *soft* disciplines, often seen as a continuum: the natural sciences are often regarded as hard, the humanities soft and the social sciences somewhere in between on the continuum, as figure 2.1 illustrates. These concepts have been arrived at based on the ways and principles underlying the construction of knowledge in these three broad fields.



**Figure 2.1:** Continuum of academic knowledge (after Hyland, 2009: 63)

The hard-soft scheme of knowledge disciplines has its own problems. For example, because it implies clear-cut divisions of fields of knowledge, it sometimes results in irregularities along the scale. Hyland (2009) notes, for instance, that psychology as a discipline is hard in its experimental form and soft in its psychoanalytical aspects. However, the scheme has been useful in establishing specific disciplinary groupings.

The social and rhetorical practices of members in specialised disciplines over time shape and define community norms and conventions. Thus in disciplinary academic

communities the patterns of rhetorical choices that frame knowledge are based on academics' shared writing experiences. Sargeant (2012) argues, then, that discourse patterns are a direct reflection of knowledge communities, their historical development and their social practices. This also suggests that differences in discursive practices between disciplinary communities can include a vast array of linguistic resources such as "the use of subject-specific vocabulary and terminology, through the manipulation of grammatical structures, to the adoption of a unique system of symbolic notation" (Sargeant, 2012: 118).

## 2.6 Contrastive rhetoric

In the present study, I am interested in differences in the use of epistemic rhetorical devices in the academic texts (RAs) written in English by Ghanaian (L2) and Anglo-American (L1) researchers. Thus the overall focus of this study can be situated within the contrastive rhetoric tradition. A major concern of contrastive rhetoric (CR) has been to examine problems and difficulties of writing encountered by second language writers and to explain them relying on the rhetorical strategies of the first language (Connor, 1996).

Although much work in CR has concentrated on the composition rhetorical practices of students at different levels across different languages and cultures, with Kaplan's (1966) study being the pioneering work, it has been extended in its application to include non-native English-speaking professional writers in many different cultures (e.g., Mauranen, 1993). Comparisons of cross-cultural rhetorical practices between ESL and L1 English texts, as is the case in the present study, are a major concern of CR (Cahyono, 2001; Connor, 1996; Leki *et al.*, 2008).

While such comparisons may take into account culture-specific rhetorical features in academic writing, thereby recognising differences across cultures, such differences

often do not help to advance the cause of academic discourse communities, where the specific academic or disciplinary cultures aim at convergence rather than divergence in the use of rhetorical features for academic communication. So for example, members of the international community of sociologists, whether they are native speakers of English, ESL or EFL speakers based anywhere in the world would typically be expected to deploy similar rhetorical styles of writing preferred by sociologists as a way of identifying with and showing awareness of community practices. Thus English as a lingua franca in academia is expected to be used to achieve common rhetorical goals in research and scholarship (Mauranen, 2010).

However, in discussing cross-cultural practices between native and non-native speakers of English, some studies have, instead, emphasised divergence and/or difference in academic rhetorical practices. These have focused on CR in the context of World Englishes (e.g., Kachru, 1995; Yajun and Zhou, 2006). Kachru (1995), for instance, has questioned the underlying assumptions of CR, drawing attention to ways these assumptions favour Anglo-American rhetorical styles and thought patterns (Inner Circle Englishes) over those of non-native speakers of English such as Indians and the Chinese (representing the Outer and Expanding Circles respectively).

One of these assumptions, she argues, is the view that “there is a norm of writing in Inner Circle English which is clearly identifiable” (Kachru, 1995: 22), and for which other users of English must learn to conform to in order not to violate the expectations of the native reader. According to Kachru, rather than insisting that non-native users of English write like those from the Inner Circle, CR practitioners need to redefine their focus and be more tolerant of the norms of writing and rhetorical styles used by non-native English-using population from Asia, Africa, and other parts of the world.

It makes sense to argue, as Kachru does, that because of the socio-cultural and linguistic diversity observed among groups of non-native users of English in the non-Western world, the Western world (native speakers of English) must be tolerant of the cultural differences in rhetorical styles and thought patterns across the many varieties of English around the world, especially as expressed through writing in higher education.

The tolerance argument of Kachru seems realistic, especially when argued for from the theoretical standpoint of *World Englishes*: a perspective that recognises the legitimate linguistic differences between regional varieties of English worldwide, with a particular emphasis on 'New Englishes' (Platt, Weber and Ho, 1984; Mesthrie and Bhatt, 2008). As Kachru (1997) explains, the term 'Englishes' is intended to characterise English-speaking communities globally by recognising the different forms and functions of the language in diverse geographical contexts. It is this framework that drives Kachru's argument that there is the need to tolerate cultural differences in rhetorical styles of academic writing in English across the many varieties of English worldwide.

However, while *World Englishes* might be a useful framework for recognising and accepting socio-cultural linguistic differences between national varieties of the language in the context of 'general English' usage, it does not seem to capture the essence of English for scholarly communication and scientific writing. Academia is an international community characterised by social practices of disciplinary communities and perceived to be a global research network of scholars writing in English (Hyland, 2007). English for scholarly writing thus requires writers (native and non-native speakers alike, anywhere in the world) not just to be aware of the preferred rhetorical styles and conventions in specific disciplinary communities, but to learn to apply them in their scholarly writing in

order to be accepted as competent participants in the disciplinary community they consider themselves a part of.

The vital point, therefore, is that English as a lingua franca in academia stresses convergence and/or similarities (rather than the cultural differences that are stressed in World Englishes) in the use of the normative and conventional rhetorical features acknowledged in academic discourse communities. This point is confirmed by Mauranen (2010: 9) who observes that English as an academic lingua franca is “not used or learned for the purpose of linguistic and cultural identification with a community that uses it as a national language.”

## **2.7 Academic writing in a global context**

The practice of academic writing transcends what takes place in specific institutions or even particular geographical locations, although institutional identities do somewhat shape institutional norms. It can be viewed from a more global perspective as a web of global scholarly engagement, especially because it has for many years been facilitated by the use of a neutral language to communicate academic knowledge. Research has shown that languages such as Arabic, Latin and German became dominant lingua francas at various points in history (e.g., Vikor 2006), helping to facilitate communication among scientists and scholars all over the world. Today, it is widely acknowledged that English occupies this privileged position of the world’s lingua franca and the language of international scientific communication.

### *2.7.1 English as the language of scholarly discourse*

The English language now carries with it the role of the language of research and scholarship, and as several studies have shown (e.g., Ammon, 2001; Tardy, 2004; Flowerdew, 2007; Hyland 2007; Bidlake, 2008), there is an ever increasing number of

scholars who find it necessary to write and publish in international journals, which largely have English as the medium of communication.

But this role of English does not elude controversy. While the growth of English can be viewed positively as a helpful way of facilitating the dissemination of knowledge and access to information around the world via a common language, there is also the view that this growth represents a kind of cultural and linguistic imperialism perpetuated by a few economically empowered L1 nations such as the USA (Phillipson, 1992; Pennycook, 1994; Phillipson and Skutnabb-Kangas, 1999; Ammon, 2001). This latter view suggests that the dominance of English undermines other cultures and language communities, making them appear less important. Swales (1997: 374) characterises this view of English in terms of a *Tyrannosaurus rex* – “a powerful carnivore gobbling up the other denizens of the academic linguistic grazing grounds”.

Despite this somewhat alarmist perspective on English, it would be difficult to deny the importance of English as a neutral lingua franca worldwide. Tardy (2004: 258) reports that even NNES international graduate students, who are most likely in the near future to be NNES scholars, acknowledge the benefits of English as a language of science as follows:

- ease of information sharing and access worldwide
- ease of communication among professionals worldwide
- facilitation of the scientific process
- its grammatical structure is “explicit and objective”
- effective for inputting information into a computer
- a good choice because it is already widely used.

But while these NNES accept that English serves scientific communication, they also know the challenges that stand in the way of NNES, citing in particular "(1) the great deal of time spent learning English for non-native speakers, and (2) the difficulties that NNES researchers might face in communication" (Tardy, 2004: 258). Thus in academia, one thorny issue relates to how NNES deal with the pressure and difficulties of writing in English for publication in international journals where, it is assumed, textual norms and text construction practices are largely determined by NES editors and reviewers who use gate-keeping strategies (including not conforming to native English conventions and rhetorical patterns) to reject submissions (Ammon, 2001; Canagarajah, 2002; Hyland, 2007).

### *2.7.2 Issues for non-native speakers of English*

In principle, it makes sense to argue against the hegemony of one language and culture in scientific communication over a wide range of other languages and cultures worldwide. In practice however, it does not seem that the dominance of English will wane any time soon. A survey conducted by Phillipson and Skutnabb-Kangas (1999: 28) in Denmark generally showed that the "trend is towards a strengthening of English" and Danish scholars think that English is suitable as a language of science. For L2 or L3 NNES therefore, especially researchers and scholars, I think that the need to write and publish in English calls for a conscious learning of how rhetorical knowledge is socially constructed in a discipline, as this forms part of efforts to participate in relevant global discourse communities.

This suggestion finds support in the theory of situated learning and apprenticeship developed by Lave and Wenger (1991). Professional academic writing is a situated practice and those who wish to be part of a community of practice must learn from

insiders in order to fully develop the knowledge, skills and identity of that community. In fact, both native and non-native speakers of English seeking to be part of mainstream disciplinary communities go through this process of learning equally. Producing polished articles can be a daunting task for new entrant native speakers too. Swales (2004: 56) argues therefore that the more crucial factor is how less experienced researchers/scholars can learn from the more experienced ones “who know the academic ropes in their chosen specialisms”.

Thus with regard to the current status of English, NNES who wish to publish in international Anglophone journals in order “to validate the respectability of their work” as well as “disseminate their findings effectively to the academic channels that matter in their profession” (Canagarajah, 2002: 43) should be ready to learn the qualities of English proficiency and rhetorical patterns required in their respective disciplinary communities. Commendably, as Swales (2004) notes, contributions to mainstream English-only journals by NNES authors have been increasing for some time now, albeit slowly, a situation which in itself suggests a willingness by NNES to overcome the difficulties that come with publishing in English.

## **2.8 Corpus linguistics**

The methods of data collection and analysis for the present study are rooted in corpus linguistics. It is now indisputable that corpus linguistics, despite the severe criticisms it suffered in the 50s and early 60s, especially from Noam Chomsky and followers of generative linguistics, has developed to become a leading research methodology in both applied and theoretical linguistics, having relevance for virtually every subfield within the subject. This accounts for Römer’s (2006: 81) view that there are good reasons why “linguists all over the world draw on corpora in language analysis and description”.

Although work that could broadly be called corpus based was going on long before the advent of computers, as exemplified in the works of scholars like Otto Jespersen, Franz Boas and Carpenter Fries, modern corpus linguistics shares close affinity with computers (Leech, 1992; McEnery *et al.*, 2006) and this is evident even in the definition of a corpus. Leech (1992: 106) says a corpus is “a *helluva* lot of text, stored on a computer”, and according to Johansson, 1998: 3), “A computer corpus is a body of texts put together in a principled way and prepared for computer processing”. Today, corpus tools have significantly advanced language study in such areas as vocabulary (e.g., Sutarsyah, Nation and Kennedy 1994; Brezina and Gablasova, 2015), lexical semantics (e.g., Stubbs, 2001; Gries and Otani, 2010), grammar (e.g. Biber *et al.*, 1999; Hunston and Francis, 1999; Leech, Hundt, Mair and Smith, 2009), discourse analysis (e.g., Baker and McEnery, 2005, Baker *et al.*, 2013; Partington, Duguid and Taylor, 2013) among others, and have introduced interesting quantitative dimensions to analyses in ways that could not have been achieved without electronic computers.

### 2.8.1 *A methodological approach*

Corpus linguistics is widely regarded by those who work with corpora as a methodology – one which includes a variety of methods that can each be utilised in the exploration of linguistic data. However, as McEnery and Hardie (2012) note, some corpus linguists following the Firthian (and Sinclairian) tradition of linguistics are particularly not in favour of the characterisation of corpus linguistics as a methodology, and would rather see it as having a strong theoretical status. Thus Tognini-Bonelli (2001) has argued that all corpus analyses undertaken by corpus linguists may come under one of two broad types: *corpus-based* or *corpus-driven*. Corpus-based researchers approach a corpus with preconceived ideas and questions that are informed by existing hypotheses and theories of language,

and their main goal is often to observe how new data (texts) can either confirm or refute these hypotheses and theories. On the other hand, corpus-driven linguists approach a corpus with less or no preconceptions, hoping that the corpus itself will generate data and patterns to alert the analysts on what is crucial to explore further, and also lead to new theoretical conclusions.

While some corpus linguists do not find this distinction useful and would rather regard all corpus linguistics as corpus-based (e.g., McEnery and Wilson, 2001; McEnery and Hardie, 2012), the two approaches have healthily co-existed, with some corpus studies applying key ideas from both camps (e.g., Baker, 2014). I should point out here that the present study is essentially corpus-based, as it sets out with new data to interrogate earlier claims about how NNES utilise epistemic modality devices in scholarly communication. But to some extent, the study also has characteristics of corpus-driven analysis because it discusses interesting epistemic collocation patterns I had not thought about as I started to examine the corpus of RAs built for this investigation. The point worthy of note is that as a methodology, corpus linguistics allows the analyst to observe patterns and uses of linguistic features that can easily elude an analysis that relies on human introspection.

### *2.8.2 Corpus linguistics and academic discourse*

Corpora have already found a special place in academic discourse studies that have explored the linguistic features of such genres as student essays (e.g., McEnery and Kifle, 2002), theses (e.g., Charles, 2006), textbooks (Biber, Conrad and Cortes, 2004), academic lectures (e.g., Low, Littlemore and Koester, 2008), RAs (Gray and Cortes, 2011), among others. According to Shaw (2007: 2-3), within academic discourse corpora have “already been analyzed with statistical awareness, giving interesting results, and will doubtless be

the basis for many further investigations". In the view of Connor (2004: 298), corpus methods have become an indispensable "part of empirical genre-based studies, in both academic and professional genres".

Indeed as far as academic writing is concerned, corpora have particularly proved useful in the way they can tell something about the repeated patterns of language choices preferred by a writer or group of writers, and by so doing help analysts to observe how routine practices construct academic communities. Thus for this study, I adopt corpus linguistics methods to examine aspects of the rhetoric of academic communication. As the analysis of epistemic modality is based on authentic, naturally occurring texts (RAs), and as it has both quantitative and qualitative dimensions, the use of corpora and corpus tools emerges as the most suitable approach for this study. The research questions I explore guided the construction of the two sub-corpora of RAs analysed – one by Anglo-American writers and the other by Ghanaian authors. The corpus exploration tools used provided an effective means of extracting and analysing epistemic modality devices discovered in the two-sub-corpora. I apply best practices in corpus techniques and methods to address the research goals of the present research.

## 2.9 Conclusion

The aim of this chapter has been to discuss theoretical literature relevant to the research, with a view not only to define its key concerns, but also to offer the appropriate framework and context within which it must be understood by readers. The topic I explore necessarily invited me to engage with issues relating to modality, rhetoric, the RA as an academic genre, rhetoric in scholarly communication, contrastive rhetoric, academic writing in a global context and corpus linguistics. As a variety of theories and concepts emerge in the discussion of these issues, each offering support to the other in

defining the goals of the study, I safely assume that the present investigation is guided by what I would characterise as a theoretical triangulation. In the next chapter, I discuss related empirical studies on epistemic modality in the RA in different geographical contexts.

## CHAPTER 3 – PREVIOUS EMPIRICAL STUDIES OF EPISTEMIC MODALITY IN RAs

### 3.1 Introduction

This chapter presents a survey and discussion of related empirical studies that have looked at epistemic modality as an interpersonal resource in research articles (RAs). The use of epistemic modality to express varying levels of commitment in academic argumentation has already been investigated in a number of different academic discourse genres. Much of the previous work on this feature has been carried out in RAs. This is not so surprising because, as I have already noted in Chapter 1, the RA represents the foremost outlet or medium through which academics disseminate and share the new knowledge from their findings, and so applied linguists have been interested in studying the ideal linguistic and rhetorical features associated with this genre.

As this study's focus is on the RA, I discuss the most notable epistemic modality research (explored under various terms in the literature) on this genre, with a view to showing why the present study, which focuses on a group of academics/researchers in sub-Saharan Africa – Ghanaian professional writers, promises to be a worthy further contribution to the existing research. I discuss the studies of epistemic modality in three subsections as follows: (1) epistemic modality in exemplary native English RA texts, (2) epistemic modality in RAs by non-native authors in different parts of the globe – Europe, Asia, Latin America and the Middle East, and (3) epistemic modality in RAs by non-native writers in post-British colonial West Africa, where the focus of the present study lies. While each of these three sections has a specific goal, the three considered together

bring into sharp focus the dearth of linguistic research on the RA in the West African context, although in English postcolonial countries such as Ghana so much RA writing in English goes on in higher academic institutions, especially in universities.

### 3.2 Epistemic Modality in Exemplary Native English RA Texts

As with research on other interaction management features in RAs, work on epistemic modality devices have primarily been studied in order to identify what may count as the suitable and ideal rhetorical patterns to be expected in RAs. Previous studies have ranged from a manual analysis of a few RA texts within specific disciplinary fields – either in the humanities, social sciences, or natural sciences/technology – to quite substantial amounts of RA texts in electronic form, analysed with the aid of corpus methods (e.g., frequency lists, concordances, collocates, clusters/n-grams etc.), and sometimes investigating variations in the use of epistemic resources across disciplines or within the different main sections of the RA.

To begin with, Salager-Meyer (1994) reports the findings of a study into the use of epistemic (hedging) devices in research papers and case reports, two notable subgenres in medical research journals. Salager-Meyer looks at how the communicative purposes of the different sections of the research paper (introduction, materials/methods, results, discussion) and the case report (introduction, case report, comments) influence the distribution and use of a list of epistemic hedging devices grouped under five headings as follows: *shields* (e.g., 'seem', 'appear'), *approximators* (e.g., 'roughly', 'approximately'), *authors' personal doubt* (e.g., 'to our knowledge', 'I believe'), *emotionally-charged intensifiers* (e.g., 'extremely', 'of particular importance') and *compound hedges* (e.g., 'it may suggest', 'would seem likely'). The data upon which

her study is based are 15 articles published between 1980 and 1990 in leading medical research journals.

Besides highlighting differences between the sections of the two subgenres, she finds that shields are the most frequently used hedging devices in both the research papers and the case reports, accounting for 40.7% and 34.3% respectively. While in the research papers, shields are followed by compound hedges (29.3%) and approximators (23.2%), in the case reports, shields are followed next by approximators (32.5%) and compound hedges (26.1%). Overall, shields, approximators and compound hedges record over 90% of all occurrences of hedging devices in the research papers and case reports, and thus suggest that the categories of authors' personal doubt and emotionally-charged intensifiers are not quite common in these genres. Salager-Meyer (1994: 157) contends that the frequent use of shields (most notably verbal modality) in the two subgenres corroborates previous findings that "modals are frequently used in scientific-technical literature to tone down and enhance quantitative and qualitative information as well as to modulate the degree of certainty on the author's part". Salager-Meyer also reports that in the conventional Introduction, Methods, Results and Discussion (IMRD) format of RAs, epistemic devices intended for the purpose of hedging claims are most common in the discussion section of scientific research papers.

Skelton (1997), in a study titled 'How to tell the truth in *The British Medical Journal*', explores the kinds of hedging strategies used in medical articles. Skelton begins his work by acknowledging the importance of hedges in discourse, but also draws attention to some potential problems associated with the term *hedge*. He notes, for instance, that typical words/phrases used to express doubt, where absolute

certainty is elusive, also express connotations and value-judgments that may not be considered as instances of mitigating certainty. Furthermore, he notes that even when such words/phrases are used in context one may find it difficult to say whether they are expressing truth-judgment (hedge) or value-judgment (some other connotative meaning). Skelton emphasises that hedging devices should be associated only with truth-judgments, but not to only mitigate certainty, intensify it as well.

Following his own conceptualisation of hedging, Skelton then goes on to examine three (3) articles, each from 1853, 1883 and 1991 in the British Medical Journal (BMJ), claiming to trace the development of truth-judgment markers over the long period of existence of this journal. Among other findings on how academic medical papers have developed since the inception of the BMJ, Skelton shows that the vocabulary items used to express truth-judgments in the early years (1853, 1883) are not very different from those in contemporary papers (1991), as both the 19<sup>th</sup> century papers and the 20<sup>th</sup> century ones display substantial use of 'evidential' judgment markers, "comments on truth-value which are founded on empirical evidence" (Skelton, 1997: 53) and a limited set of 'speculative' judgment markers (hedges) which occur mainly in the introduction and discussion sections of the contemporary paper.

One further study whose orientation is similar to that of Salager-Meyer and Skelton's is Simpson's (1990) work on the use of modality features in a literary criticism article by F. R. Leavis entitled 'The Great Tradition', an article he considers to be famous and widely cited in this field. Adopting a purely qualitative approach, and also the interpersonal function of language within Halliday's SFL model, Simpson explored the strategies and techniques of modality that characterize this type of academic writing –

literary criticism texts. He examines the two traditional types of modality known in language – *epistemic* and *deontic*, with the aim to establish how various modality items are used to show the linguistic organization of a literary criticism text. With regard to epistemic modality, he notes that while many instances of unmodalized expressions (categorical assertion) used to indicate writer confidence are visible in the literary criticism article, there is also the full range of epistemic modality expressions used to convey various degrees of less committed epistemic positions by the writer. Simpson suggests further that less committed positions that are expressed through epistemic modality devices are a clever way of showing politeness to readers in order to achieve persuasion.

What these studies by Salager-Meyer (1994), Skelton (1997) and Simpson (1990) on epistemic modality tried to do, in essence, is to engage in a kind of academic discourse analysis of a few texts (in the case of Simpson just 1) to illustrate what may count as the ideal academic literacy practices in terms of epistemic modality uses in specific disciplines. While Salager-Meyer and Skelton focus on disciplines in the natural sciences, Simpson's study of a literary criticism article falls within the humanities. Although these studies make a contribution by providing a descriptive account of epistemic modality expressions in RAs, they have been constrained in terms of offering reliable quantitative information of the epistemic modality features due to the small amount of texts examined manually.

In fact, Salager-Meyer attempts to include a quantitative dimension to her study in order to show frequency differences in the use of epistemic markers in sections of medical research articles, and between the medical research article and case report.

But with only 15 articles making up her corpus (11, 871 running words), her findings on such frequency differences would probably be taken only as tentative and inconclusive. Obviously, a larger corpus of texts in electronic form whose analysis is aided by corpus tools would offer more reliable frequency information, especially when the focus of analysis in texts is on specific words and phrases. As Biber and Conrad (2009: 74) have noted, corpus-based approaches make “it possible to identify and analyse complex patterns of language use, based on consideration of a much larger collection of texts than could be dealt with by hand”.

Another related study focusing on the use of epistemic modality markers in exemplary native English research articles (RAs) is Varttala (2003). Varttala’s study is also not based on a computerised corpus, and Varttala herself acknowledges this as a limiting feature of her data (p. 145). Nonetheless Varttala’s work is a good attempt to provide a more comprehensive account of this rhetorical feature across three disciplines. She examines 30 RAs across the disciplines of Economics, Medicine and Technology, selecting 10 articles from each discipline, all written by native speakers of English (American English). Her main goal is to show possible variations across these disciplines in terms of the use of these epistemic (hedging) devices. Varttala concludes that hedging devices exhibit notable differences across the disciplines and between the various rhetorical sections of the RA genre, both in the frequency distribution of hedges and the types of lexical items used. Most notably, her study also confirms Salager-Meyer’s finding that the discussion section in the IMRD structure is where hedges are most pervasive, while the introduction comes up as the second most heavily hedged section.

Other more recent studies on the use of epistemic modality expressions in the RA have relied on the analysis of corpora stored electronically and analysed with corpus tools. Ardizzone and Pennisi (2012) have explored the use of epistemic modality markers in research articles on community law, with a special focus on the emerging constitution of the European Community/Union. They note that socio-cultural values of Member States of the Union have led to several changes in EU laws over time (from 1990 to 2010), and these changes have been necessary in order to maintain a true European identity, especially in the laws that govern the operations of the Community/Union. As a result, their aim was to “understand the rhetorical organisation and argumentative strategies deployed by disciplinary actors in response to the changing emergent community’s norms and ideology” over the period (p.155).

Ardizzone and Pennisi therefore examine the frequency patterns and semantic properties of ten epistemic modality markers in English (*may, could, might, possible, appear, perhaps, probably, seem, assume, indicate*) in forty academic articles dating from 1990 to 2010. These articles deal with the emerging constitution of the EU and are drawn from four prestigious international journals according to the time span. They found that the modal *may* is the most frequently used epistemic modality marker in their legal corpus and its use has increased from the period 1990 to 2010. On the communicative functions of these epistemic markers, Ardizzone and Pennisi note, for instance, that the epistemic markers *may, might, could* and *possible* do not only express personal judgment; they also sometimes simply state an eventuality without any visible modalizing agent. This often serves to disguise the source of the evaluation and consequently gives the impression of an objective stance taken by the writer. This seems to correspond to the *accuracy-based* hedge proposed by Hyland (1996, 1998),

where a proposition made is based not on reliable facts but on plausible inferences drawn by the writer.

Vold (2006) also carried out a corpus-based study of epistemic markers in RAs in English. She compares the use of epistemic markers in Linguistics and Medicine RAs. Although Vold is aware that epistemic modality may include uncertainty markers (e.g., hedges) and certainty markers (e.g., boosters/emphatics), she focuses her analysis only on the hedging effects of epistemic modality, without dealing with expressions of certainty in her study. Her main aim is to explore possible variations in the frequency and communicative function of eleven selected epistemic markers in the two disciplines. She also includes in her analysis the distribution of the epistemic markers in the different IMRD parts of the article. In total, her analysis is based on a corpus of 40 research articles (20 from linguistics and 20 from medicine) taken from prestigious refereed journals published between 1998 and 2002.

One notable finding on frequency in her study is that while *seem* is the most frequently used epistemic marker in the Linguistics RAs, *may* is the most frequent in the Medicine articles. The epistemic marker *suggest* is fairly common in both disciplines as it represents the second most frequent in the two disciplines. Regarding communicative functions of epistemic markers, Vold establishes that the most important functions of these hedging devices are common to both disciplines. She notes, for instance, that in both disciplines authors present conclusions in a cautious manner, stressing that this “protects the writer against the negative consequences that might arise if at a later stage the conclusions should turn out to be inaccurate” (Vold, 2006: 239). The epistemic forms often used for this purpose are *may*, *might* and *suggest*, but the same function

is further achieved in the Linguistics articles with *seem* and *appear*. This function of epistemic markers used to mitigate claims in the conclusion of RAs accords with Myers' (1989: 12) view that in the scientific community, a writer's claims are (always) "pending acceptance".

Perhaps the most comprehensive account of expressions of epistemic modality in research articles (RAs) is derived from one of the leading scholars in academic discourse and EAP studies: Ken Hyland. Hyland has spent many years of his research activities shedding light on the idea that scientific academic writing is less an exercise by which writers simply present propositional facts but more of an engagement between writers and readers. As a result, he discusses a broad range of linguistic resources used to demonstrate this writer-reader relationship under such terms as 'stance and engagement' (Hyland, 2005a) and 'metadiscourse' (Hyland, 2004b, 2005b, 2009). Expressions of epistemic modality in RAs are one of the major engagement markers that have received considerable attention in Hyland's work, the results of which have been reported in various research outlets (Hyland, 1996, 1998a, 1998b, 2001). Although Hyland recognises the linguistic features he looks at as epistemic modality devices in academic argument (see Hyland, 2001), he discusses these features under the labels hedges and boosters.

In total, the studies undertaken by Hyland on hedges and boosters as epistemic markers in RAs in English are based on a corpus of 240 research articles selected from leading international journals in eight disciplines spanning the 'soft disciplines' (humanity and social science papers) and the 'hard disciplines' (science and engineering papers). To complement the corpus data for his study, Hyland also interviews leading

members within the respective disciplines to solicit their views about the use and significance of hedges and boosters in scholarly writing. His work addresses virtually all the pertinent issues in respect of epistemic markers in RAs, offering insights in the interactive role of hedges and boosters in RAs generally, the types of hedges and boosters used across disciplines and across different IMRD sections, quantitative variations across disciplines and across IMRD sections, as well as the typical discourse functions hedges and boosters serve in RAs across disciplines and in the different IMRD sections of the RA.

Hyland found, for instance, that across all the disciplines hedges and boosters are important interpersonal markers used by academic writers to engage readers and to achieve persuasion. But he noted also that overall the use of these epistemic markers is generally more pervasive in the ‘soft disciplines’ than in the ‘hard disciplines’. His findings further revealed the most frequent hedges in research articles to be *may*, *would* and *possible*, and the most frequently used boosters being *will*, *show* and *the fact that*. There is also an indication that epistemic verbs like *suggest*, *indicate*, *assume* and *seem* were heavily used as hedges.

Overall, the studies of epistemic markers in RAs reviewed in this sub section (from Salager-Meyer to Hyland) form part of the micro-level analysis of the linguistic and rhetorical resources associated with RA writing. A typical feature of such studies, as I have shown in this review, is that researchers often rely on the best exemplars of RAs in English, published in leading journals of the various disciplines, and often authored by experienced native speakers of English. The careful selection of articles for examination/study seems important as the features identified in the analysis tend to

represent what may count as the ideal and suitable rhetorical patterns and conventions in the RA genre, thereby serving as a guide for learners, novice researchers and other non-native speakers of English in their own (future) productions. This explains the implication such studies have for pedagogy, and for material development to aid the teaching of research and scholarly writing. As Varttala (2003: 168) has suggested, an awareness of the appropriate textual rhetorical features in RAs “by those involved with ESP research and pedagogy would probably provide important information for those engaged in the construction of RAs”. Already, the outcome of some studies on aspects of the textual properties of RAs has led to the development of materials and books, especially for advanced learners, novice researchers and non-native speakers generally (Hyland, 1998b; Swales, 1990; Swales and Fpeak, 1994; 2012).

Furthermore, the above studies highlight the theoretical importance of interaction elements such as epistemic markers in academic discourse, especially in the RA genre. While in the past, it was held strongly that impersonality, objectivity and open-mindedness in scientific academic writing meant presenting only the facts as they occurred in an investigation of an activity, thereby discouraging the use of interactive words by authors of scientific texts (Arbon, 1996; Bolsky, 1988; Lachowicz, 1981), the contribution of the above studies on epistemic markers (as well as other rhetorical features in academic discourse such as self-mention, exemplification, addressee features, etc.) has now, quite clearly, established written academic texts as embodiments of interactions between writers and readers (Thompson, 2001; Hyland, 2012). It is this understanding that has led to the view that academic writing is essentially a persuasive venture, and in it “academics are not seen as simply producing

texts that plausibly represent an external reality, but as using language to acknowledge, construct and negotiate social relations" (Hyland, 2012: 417).

Also, as the RA remains the most important academic discourse genre through which research findings are reported, extensive studies on its rhetorical and linguistic resources have often been the basis for the development of taxonomies of those resources, and such taxonomies have proven to be useful guides for future research. Two examples of such taxonomies of rhetorical resources in RAs are Swales' (1990) taxonomy of citation practices, where he identifies two main types: *integral* and *non-integral*, and Hyland's (1996, 1998) taxonomy of the communicative functions of hedges, where he classifies hedges into *content-based hedges* and *reader-motivated hedges*. It is clear, then, that empirical studies of the rhetorical resources in RAs play a crucial role in the development and construction of linguistic theory.

To sum up, the scientific investigation of epistemic modality markers (and by extension of other interactive rhetorical features) in the best exemplars of RAs written by experienced scholars and active members of the discourse communities not only informs EAP and research English (RE) studies, but also enhances our knowledge and understanding of the ways these resources contribute to the overall construction of this genre in a community. I now move on to the next sub section to consider how epistemic modality devices in English are used in the writing practices of non-native scholars for the purposes of conveying appropriate levels of commitment in academic argumentation as reflected in their RAs.

### 3.3 Epistemic Modality in RAs by NNES Scholars around the World

Much of the existing empirical research on the rhetorical and linguistic practices by non-native English speaking scholars around the world has taken the shape of a cross-cultural and cross-linguistic perspective. The special focus for researchers has been on how these non-native English speaking professionals, who have now come to terms with the current status of English as the lingua franca of research and scholarship worldwide, and who are caught up in the pressure to write and publish in English, are coping with the challenges of not just writing correctly and proficiently in English, but also demonstrating an awareness of and applying the suitable rhetorical norms of writing in English (Flowerdew, 1999, 2000; Uzuner, 2008). As Hyland (1995: 40) remarks:

The need to carry out research and publish results in English language journals presents NNSs with serious problems for they have to work within an unfamiliar cultural and linguistic environment. The RA is the key genre in academic disciplines and a NNS who wishes to function in the international research world must be familiar with its conventions...

It is this need that facilitated research into the rhetorical practices by non-native English speaking professionals who are submitting papers for publication in English-medium journals. Researchers have, among other goals, sought to discover how well these scholars are conscious of the suitable rhetorical norms of writing expected in the various disciplinary cultures. The use of epistemic modality as a rhetorical feature for reporting claims in academic argument is one of the features that have been explored in the RAs of non-native English speaking scholars.

### 3.3.1 Europe

In Europe (excluding the British Isles) where English is largely recognised and used as a foreign language (part of Kachru's categorisation of varieties of English in the Expanding Circle, see section 2.6), scholars who probably would have preferred to write and publish their research papers in their native language (e.g., Spanish, Portuguese, Danish, German) are increasingly resorting to English as the medium of communicating their research findings and reports, as this enhances their visibility on the international stage. This has generated enormous interest in intercultural and cross-linguistic studies of rhetorical features in the research article. Epistemic modality has been particularly of interest to researchers and has therefore been explored quite extensively.

One major approach to the study of this feature in RAs in the European context has taken the form of a contrastive analysis between English and the native languages of the writers. Notable among such studies include Vassiliva (2001), who examines epistemic modality in English and Bulgarian research articles in the field of Linguistics; Vold (2006) studies epistemic markers of modality in Linguistics and Medicine research articles across different languages (English, French and Norwegian); and Orta (2010) explores expressions of epistemic devices in Business Management research articles in English and Spanish. For these contrastive studies on epistemic modality, one point that is underscored is that there are cross-linguistic differences which arise as a result of culture-specific situations that characterise different languages. So for example, Vold (2006) reports that there are significant differences in the use of epistemic modality devices in English, French and Norwegian, and that French and Norwegian scholars, when writing in English, use these epistemic rhetorical features in ways that largely

preserve their cultural identity, and thus violate Anglo-American conventional norms typically expected in English international journals.

This situation has led some researchers such as Vassiliva (2001) to argue that there is need for tolerance of culture-specific features when scholars from non-English speaking countries write RAs for publication in English-medium international journals, as they admit that for most of these scholars who do not have English as their mother tongue, the difficulties they encounter in writing in English are considerable, a point several previous studies have quite strongly made (e.g., Ammon, 2001; Burrough-Boenisch, 2003; Flowerdew, 1999, 2000; Gosden, 2003). To my mind, the tolerance argument advanced by Vassiliva (2001), and others, does not seem a very convincing position. If non-Anglophone scholars are willing to write less in their native language and more in English in order to overcome the challenges of being visible internationally, they should also be willing to learn and to adjust their English writing in line with Anglo-American rhetorical norms and conventions, at least to levels that come close to their native English speaking peers. This is where I share Mauranen's (2010) view that English as a lingua franca in scientific academic communication is used to achieve common goals rather than highlight cultural identification and differences. Elsewhere, Mauranen (1993: 18), focusing on Finnish economists writing in English, argues also that while traces of the Finnish culture may be seen in their rhetorical strategies, she cautions them to be mindful that “the Anglo-American culture dominates in the academic world”.

Apart from the cross-linguistic studies of epistemic modality in the RAs of non-English European scholars, there are other works more closely related to the present study, and therefore need to be reviewed in some detail. These compare the use of

epistemic modality expressions in scientific RAs written in English by native speakers with a similar corpus of RAs written in English by European scholars who are non-native speakers of English. Thus, rather than investigating rhetorical features of RAs in different languages, these studies focus on differences across varieties of English: native vs. non-native. I review here studies by Panocová (2008), Ghivirigá (2012) and Pastor (2012) which recount such research.

Panocová (2008) explores expressions of epistemic modality in biomedical research papers in English written by Slovak researchers and compares the epistemic features with those in a similar corpus of RAs written by scholars who are native speakers of English. Using the epistemic modality occurrences in the native speaker corpus to represent the ideal scientific conventions in the discourse community of biomedical communication, Panocová aimed to determine the Slovak writers' awareness of the suitable rhetorical conventions in this community of scholars. The study is based on a corpus of ten biomedical RAs written by native English-speaking scientists, culled from top scientific journals, and ten RAs in the same field written in English by Slovak scientists. Panocová applies a manual rather than a computerised analysis to the data.

Notably, she finds that the distributional differences of epistemic markers in the RAs of the two groups of academics are dramatic. In total, she reports that 892 epistemic modality expressions were used by the native English speakers as against 352 by the non-native Slovak scientists, indicating that Slovak biomedical scientists tend to use less epistemic modality expressions than their native English-speaking colleagues. The most striking difference of epistemic modality use in specific sections of the RAs written by

the two groups of scientists occurred in the frequencies of modality adverbials and modal verbs. The modality adverbials were far more frequent than the modal verbs in each of the sections for both groups, yet in each section the number of modality adverbials and modal verbs was more for the native speakers than for the Slovak scientists. For example, she reports that the discussion section recorded the highest incidence of epistemic features (261 modality adverbials, 151 modal verbs in the RAs written by native English-speaking scientists, and 126 modality adverbials, 58 modal verbs in the RAs written by the Slovak scientists). Panacová attributes the differences in the use of epistemic expressions by the two groups of scientists to cross-cultural differences and says that it would appear most Slovak scientists first write their articles in Slovak before translating them into English.

Ghivirigá (2012) reports a study on Romanian economics researchers publishing in English. Ghivirigá examines the use of a number of linguistic features in their RAs, including the use of modal verbs to express modality (the others being pronouns, possessive forms and tense forms). She had her eye on the linguistic quality of the Economics articles in English by Romanian authors published locally in Romania, and thus compared these with similar Economic RAs in highly regarded international journals written by native speakers of English. The two sub corpora for her study are 22 articles for the native English corpus (NC) and 49 articles for the non-native English corpus (NNC), a little under 200, 000 tokens each (190, 153 for the NC and 179, 946 for the NNC).

As regards her findings on modality, Ghivirigá reports that while certain modals (*can, will, must*) are overused by the Romanian authors, others (*may, might, could*,

*would*) are underused. But this is where her findings on modality end, and so she advises that further analysis is required to be able to establish the extent to which modality is appropriately used, and also to be able to see a clear pattern characteristic of Romanian writers of RAs on Economics in English. From her findings, it is possible to infer that the underused modal forms (*may, might, could, would*), which are notable epistemic marking items for mitigating the force of claims, could suggest the Romanian authors' research claims to be less modalised and thus more direct. However, it is also possible that rather than using modal verbs, the Romanian authors resort to other linguistic resources to express epistemic modality. In conclusion, Ghivirigá suggests that the Economics journals in English published in Romania can meet the required native English standards by a careful monitoring and quality assessment of the language used, and advises that one way this could be achieved is from corpus investigations into the language of these journals.

The last of the three studies I review here is Pastor (2012), who compares 50 Engineering RAs in English written by native English speakers (NES) and 50 similar RAs in English written by Spanish researchers (NNES) for the use of epistemic modal verbs. The Spanish NNES are based at the Polytechnic University of Valencia in Spain and all their RAs, like those of their NES counterparts, were selected from Anglophone international journals. Pastor aimed to establish areas of contrast in the use of epistemic modal verbs in the scientific articles produced by the two groups of scholars in the field of Engineering, and to attempt an explanation for the variations.

Pastor's study reveals a distinction between the epistemic uses of *can, may* and *must* in the NES and NNES sub corpora. *May*, used in an epistemic sense, occurs more

frequently in the NES articles than in the NNES ones. However, interestingly, both *can* and *must* as epistemic modal verbs are shown to be more frequent in the NNES corpus than in the NES corpus, a finding Pastor (2012: 128) cannot confidently explain. Pastor thus speculates that “only a transposition of thoughts from Spanish to English can clearly justify this...”. Pastor notes further that both the NES and NNES have considerable preference for the use of *may*, *might* and *can* to downtone the claims in their argument and style of reporting findings. He concludes that, overall, the use of epistemic modals is similar between the NES and NNES Engineering scholars, with the frequencies in the NES sub-corpus being only slightly higher than those in the NNES sub-corpus.

The studies by Panacová (2008), Ghivirigá (2012) and Pastor (2012) on the use of epistemic modality expressions in the RAs written by the Slovak, Romanian and Spanish scholars provide further evidence in support of the view that the rhetorical strategies used by non-Anglophone researchers in academic communication in English are a major concern, as their rhetorical and linguistic choices often do not meet the expected specified conventions in their discourse communities (Curry and Lillis, 2004; Martínez, 2005; Mauranen, 1993). For instance, as Panacová’s (2008) study reveals, Slovak biomedical scientists appear to be overly forceful and direct in making research claims, as they tend to use less epistemic markers than expected. However, from Pastor’s (2012) study, Spanish scholars (at least in the field of Engineering) seem to be making a lot of effort to use epistemic rhetorical choices in similar ways as their NES peers, as there is only a marginal difference between the two groups of academics. While the effort by the Spanish engineers might be attributed to the translation of their texts from Spanish to English, it gives an indication of their willingness to adopt

strategies to help them meet the expected rhetorical and linguistic conventions of academic English.

Each one of these three studies has its specific focus, making each one different from the present inquiry. For example, in Panacová's (2008) work, the focus is on a single discipline – Biomedical RAs – in the natural sciences. Beyond comparing epistemic modality between native English speakers and non-native Slovak scientists, her study also looked at differences with regard to the specific sections of the RA. The present investigation, however, looks at three disciplines – Sociology, Economics and Law – in the social sciences, and the comparison is between native Anglo-American authors and non-native Ghanaian authors. Also, the present study looks at the overall occurrences of epistemic markers in the RAs and explores differences at the level of discipline (disciplinary variation) rather than differences between the conventional sections in the RA.

But these three studies, all conducted in non-Anglophone European contexts, can be distinguished from the present work on Ghanaian authors at a more general level. It is quite clear that non-Anglophone European academics would under normal circumstances prefer to write and publish their RAs using their native L1 language rather than English (but for the perceived pressure to write in the lingua franca of science, English). However, the first choice language for the Ghanaian researcher is English. English in Ghana is an institutionalised second language, and Ghanaian authors appear to have developed their writing literacies more in English than in their native L1. In fact, many do not write in their L1 at all; they only rarely speak it.

So generally, as I pointed out the introductory chapter of this thesis, the proficiency levels in English of Ghanaian academics are high, and this may be attributable to the language being introduced to learners very early in their childhood. It must, however, be noted that general proficiency in English may not necessarily mean awareness of what is rhetorically appropriate in scientific academic English. Murray (2009: 136) has observed that there are established rhetorical devices and strategies used in publishing papers and for these “academics’ knowledge [often] runs a bit thin...” Thus my aim in the present study is to examine, using corpus techniques, how Ghanaian academics in the fields of Sociology, Economics and Law utilise epistemic modality for argumentation in their RAs, and to see how their rhetorical practices (relative to epistemic modality) compare with discourse community norms and practices as represented in the writing of experienced native speakers in highly regarded English-medium international journals. I now turn to look at RA writing in English in the Asian context, and particularly by Asian scholars.

### *3.3.2 Asia*

I will begin with a brief account of the general concerns regarding RA writing in English by Asian scholars for international journals, and then move on to review studies that specifically look at epistemic modality resources in English in RAs written by Asian non-native scholars. Generally, the use of English is rapidly spreading across Asia, as it is in other parts of the globe. In China alone it is reported that Chinese learners of English are now over a third (400 million) of the entire population (Graddol, 2012; Wei and Su, 2012; cited in ESP Guest Editorial, 2014). The huge numbers of learners of English have significantly boosted ESP research in Asia, and this is amply attested in the ESP research

journals that have emerged in the last few years, including *Asian ESP Journal, Taiwan International ESP Journal* and *China ESP Research* (ESP Guest Editorial, 2014).

English in professional academic communication in Asia is one important area of research. In this context too, a major concern has been the difficulties and challenges Asian scholars encounter (especially those in regions typically classified in Kachru's *Expanding Circle* such as China, Hong Kong, Japan, Korea and Taiwan) in their effort to write academic articles in English for publication in Anglophone international journals. Notably, ethnographic survey studies conducted by Okamura (2006) on Japanese researchers and Flowerdew/Li (Flowerdew, 1999a, 1999b; Flowerdew and Li, 2007, 2009) on Hong Kong and Chinese scholars have proved revealing in terms of the difficulties they encounter when writing scientific RAs in English. For instance, recounting their personal experiences writing for English language international journals, the Hong Kong scholars say that it has always been an arduous task, and that having to compete with their native English-speaking colleagues at the international level is a major drawback for them. According to Flowerdew (1999a: 254), the challenges, as expressed by the non-native Hong Kong scholars themselves, can be summarised as follows:

- a. they have less facility of expression;
- b. they take longer to write;
- c. they have a less rich vocabulary;
- d. they are less capable in making claims for their research with the appropriate amount of force;
- e. they are better suited for writing quantitative articles;

- f. their L1 may intervene in the composition process;
- g. they are best advised to write in a simple style; and
- h. for them, the most problematic parts in the RA to write are the introduction and the discussion parts.

Of particular relevance to the present investigation is point number (d) which essentially addresses the issue of the use of epistemic rhetorical markers to moderate the amount of force in research claims. Although Flowerdew's study is not based on evidence derived from textual analysis of RAs, it gives an indication that the use of epistemic modality for argumentation in RAs might be problematic for non-native Hong Kong scholars. In the words of Flowerdew (1999a: 256), "They [Hong Kong scholars] experience difficulty in expressing themselves with the appropriate amount of force". But given that Flowerdew's claim is based on the voices of Hong Kong scholars themselves, one can be assured that they may be aware of their own challenges in the use of this rhetorical feature and might be willing to take the necessary steps to learn on the appropriate levels of force required to make research claims so as to meet international discourse community standards. Hopefully, this awareness and willingness should also apply to the other problems of Hong Kong scholars enumerated in the studies conducted by Flowerdew.

In addition to the evidence from survey studies, the problems encountered by Asian scholars writing for publication in English-medium journals are even more widely reported in studies based on the textual and linguistic productions of these scholars, particularly in the RA genre. Much of the work on the rhetorical practices in the RA written by Asian scholars has focused on a macro-level analysis, applying Swales' (1990,

2004) move analytic model. The aim of these studies has often been to highlight the overall rhetorical structure of the RA (or sections of it) written in English by non-native Asian scholars, and to compare their rhetorical practices with similar RAs written by native speakers of English. In this regard, there are comparative studies between English and Indonesian scholars (Adnan, 2009; Basthom, 2006; Mirahayuni, 2002, 2010; Safnil, 2000), English and Malaysian scholars (Lim, 1992; Suryani et al 2014); English and Thai scholars (Jogthong, 2001; Amnuai and Wannaruk, 2013), among others.

Generally, these studies reveal that Asian non-native scholars have only partially accomplished the RA rhetorical structure moves associated with scientific writing in international publications, and attribute their inadequacies to cultural differences. The studies further suggest that authors in this non-English speaking contexts need to improve their English rhetorical practices in order to overcome the problems and rejections they might encounter when they aim to publish their articles in English-medium international journals. The conclusion arrived at by Mirahayuni (2002: 311) on Indonesian scholars exemplifies the scenario:

The lack of a solid macro-structure in the non-native English RA texts clearly reflects [a] major weakness. Furthermore, the findings also show that RA writing requires more than just knowledge of the grammar of the language. Non-native English writers urgently need to master the discourse aspects of RA writing in order that their research findings gain recognition in the wider research community.

Micro-level analyses of specific linguistic units in the RA have also received some attention in the Asian context, although not much has focused on epistemic modality strategies except for the studies conducted by He and Wang (2012) and Jirapanokorn (2012). He and Wang's (2012) study focused on Chinese scholars. However, their

analysis did not look at Chinese scholars' RA in English. Rather, they chose to focus on RAs written in Chinese in the disciplines of Linguistics, Medicine and Aerospace. They then compared the frequencies of epistemic modality markers in their data to similar features in English, French and Norwegian research articles, relying on data in a previous study conducted by Vold (2006).

He and Wang's study showed that RAs written in Chinese use considerably more epistemic devices than RAs written in English by native speakers of English do, and attributed this to the influence of traditional Chinese academic culture which, as they claim, is characterised by the heavy use of epistemic expressions to mitigate research claims. Given this finding by He and Wang, it would be interesting to see in a further study whether this preponderant use of epistemic modality in Chinese RAs would be reflected in RAs written in English by Chinese scholars. This further study should also, then, offer insights into the survey study claims by Flowerdew (1999a), especially on the point that suggests that non-native Asian scholars struggle to apply epistemic markers in their appropriate proportions.

The study conducted by Jirapanokorn (2012) compared epistemic verbs in medical RAs written in English between Thai scholars and native English-speaking international scholars. The study showed that overall the international scholars used considerably more epistemic verbs than the Thai scholars. Jirapanokorn further observed that the Thai scholars used only a limited set of epistemic verbs to report research findings compared with the wide range of verbs used by the international scholars. One of her concluding recommendations is that Thai non-native English-speaking authors ought to seek professional academic language assistance in order to meet the international standards required for publishing in English.

The review presented here on the RA in English in the Asian context points to the fact that not much on epistemic modality has been researched. However, it would seem that there is a growing interest in exploring the ways Asian scholars writing for publication in English are grappling with issues relating to the production of the RA genre, as is evident from the survey studies and macro-rhetorical structure analyses of the RA we have highlighted above. I now move on to discuss the case of Latin America.

### *3.3.3 Latin America*

In the Latin American context, English for Professional Academic Purposes (EPAP) is an avenue of research interest and the question of writing articles in English for international journals by NNES is a priority topic in this field. Research suggests that non-native English-speaking Latin American scholars are showing an increasingly impressive presence in indexed English-medium journals, and lists the five most productive countries in this regard as Brazil, Mexico, Argentina, Chile and Venezuela (Martínez, 2011). However, according to Martínez (2011), while the signs show that NNES in Latin America are capable of reporting scientific knowledge in English, there is still the need to offer English academic writing instruction to NNES in this context to further develop awareness of the cultural, rhetorical and linguistic nuances of the RA genre for enhanced research publications in indexed English-medium journals.

Studies of scholarly writing by Latin American researchers have either, through surveys, looked at the burdens and challenges of writing articles in English (e.g., Hanauer and Englander, 2011), or examined language features in RA and other academic discourse texts produced by them (e.g., Salager-Meyer, 1990 on Venezuelan researchers; Martínez, 2005 on Argentinian scholars; Englander, 2006 on Mexican scientists). On this latter perspective where research has focused on the linguistic and

rhetorical features in academic texts, Englander's (2006) work offers interesting insights as regards how Mexican scholars in particular cope with epistemic rhetorical devices in their articles, although her study examines other features as well.

Although Englander's study is on research papers produced by Mexican scientists, the approach she adopts is quite novel and interesting. She examines the changes made in a small corpus of manuscripts written in English by three Mexican scientists (two in the field of Marine Sciences and the other in Geophysics) that were initially criticised by journal editors, partly for their language usage, but were later accepted. Thus armed with the original manuscripts, the journal editors' comments and the accepted revised versions, Englander applies an SFL framework to her analysis in order to understand the kinds of language changes that the editor comments compelled these Mexican scholars to make in the revised versions which were accepted. She closely examines the original and revised articles in terms of how language use satisfied the ideational, interpersonal and textual metafunctions in these articles.

Englander's findings on the use of epistemic devices (hedges and emphatics) within the interpersonal category deserve special mention. She finds that there are marked differences in the occurrence of epistemic devices in the original and revised articles written by the Mexican scientists. In the original articles, all three writers used significantly less hedges (e.g., *usually*) than they did in the revised accepted versions. Also in the original articles, all three writers used significantly more emphatics (e.g., *no doubt*) than they did in the accepted versions. For example, in the case of one of the writers (Roberto), hedges increased from 11% in the original articles to 34% in the accepted versions while emphatics decreased from 48% in the original articles to 26%

in the accepted versions. What these findings on epistemic markers reveal is that in the original articles, the Mexican scholars were overly forceful in the way they made their research claims. Although following the journal editors' comments, these authors revised their articles to reflect the appropriate levels of force required to their research claims, the original submissions are an indication that in the Latin American context too, non-native English-speaking scholars do struggle to select appropriate epistemic rhetorical resources to communicate research claims in English.

The survey study conducted by Hanauer and Englander (2011) further indicates that Mexican scientists themselves consider writing articles in English as a second language an added burden and a huge challenge. The survey reveals that Mexican scholars themselves feel that the experience of writing scientific research in English, when compared to writing it in their first language, is more difficult, generates more dissatisfaction and creates more anxiety. So as in Europe and Asia, EPAP research appears to be a major concern in the Latin American region also. Englander's (2006) study is a good example of how Latin American scholars deal with English rhetorical and linguistic features (epistemic modality in particular) when they write scientific articles in English for reputable indexed journals. It seems that researchers in this region are generally aware of the benefits that publishing scientific research in English has over doing so in their first languages, but they also acknowledge, as NNES scientists, the added linguistic burden that comes with that. In the next subsection, I consider briefly the situation in the Middle East.

#### *3.3.4 The Middle East*

The Middle East is yet another context where English for Professional Academic Purposes (EPAP) research has received some attention by applied linguists and other

researchers, who have either carried out survey studies to look at what difficulties non-native authors in this region encounter when writing scientific papers in English (e.g., Karimnia, 2012), or to explore various aspects of the language of research genres such as the RA written by non-native English-speaking authors (e.g., Sadeghi and Danaee, 2012 on textual cohesion; Hesamoddin *et al.*, 2013 on lexical bundles; and Behnam *et al.* 2014 on writer presence/self-mention). Epistemic modality, which is the focus of the present study, has also received some attention in this context, with various aspects of it looked at in the research carried out by Nasiri, (2012), Taki and Jafarpour, (2012), and Sameri and Tavanger, (2013).

As an example, Nasiri's (2012) analysis compares the use of epistemic (hedging) devices in Psychology research papers between native English speaker researchers and non-native Iranian researchers. The corpus for his analysis is made up of a total of 20 Psychology articles in English, 10 from leading international journals written by native English speakers and 10 from journals based in Iran and written by Iranian researchers. The analysis is based on Salager-Meyer's (1994) hedging taxonomy which identifies five types as follows: shields, approximators, authors' personal doubts and direct involvement, emotionally-charged intensifiers and compound hedges. Nasiri finds that while in total the native speakers used a slightly higher number of hedges (171) than the Iranian researchers (145), the difference is not statistically significant. He also reports that the pattern of distribution for hedges of the sub types used by the two groups of Psychology writers is similar, noting, for instance, that for both groups shields occurred as the most hedged type followed by approximators. Based on these results, Nasiri concludes that disciplinary community norms prevail over nationality and cultural

backgrounds, a situation he feels can help “Iranian authors to be easily accepted by their community-mates in the globe” (Nasiri, 2012: 153).

To sum up, the review in this section provides ample evidence of the importance researchers of applied linguistics, specifically those interested in English academic discourse, attach to professional scholarly writing in English by NNES in Europe, Asia, Latin America and the Middle East. While various survey studies continue to highlight the burden and challenges of writing and publishing articles in English-medium international journals by NNES in these contexts, several others in the form of empirical research continue to examine the linguistic and rhetorical features in local journal articles written by NNES in order to have a sense of how well NNES authors’ use of these features meet the expectations of international disciplinary community norms and practices.

Epistemic modality devices in particular remain a crucial rhetorical resource in journal articles, and the way they are handled in the writing of NNES has been an important topic for researchers in these non-native English-speaking contexts. Quite clearly, the studies of epistemic modality in RAs written by NNES which I have reviewed in this chapter are a testament to its importance in scholarly writing. Most of the studies on epistemic expressions of modality point to the fact that the academic English rhetorical and linguistic practices of NNES authors need some reshaping if they are to escape the problems of rejection when they submit manuscripts for publishing consideration in international Anglophone journals. While the findings reported by Nasiri (2012) are a good sign that NNES scholars can engage in scientific dialogue internationally, Mirahayuni’s (2002: 311) advice that “Non-native English writers urgently need to master the discourse aspects of RA writing in order that their research

findings gain recognition in the wider research community" might still remain a useful welcome call.

### **3.4 Epistemic Modality in RAs by NNES Scholars in Africa**

The African context is where the focus of the present study lies. Unfortunately, unlike in the other non-native English-speaking contexts (Europe, Asia, Latin America and the Middle East), research into the language of scientific inquiry in Africa has received very little or virtually no attention. One example of Africa's exclusion in this area is with regards to papers that appear in the AILA Review Journal under the theme *Linguistic Inequality in Scientific Communication*. For instance, none of the papers that appeared in the 2007 edition (Vol. 20) looked at Africa, meanwhile all the other non-native contexts were represented. As I searched to find related empirical studies that explored epistemic modality or aspects of it by African scholars, only two studies proved useful: ElMalik and Nesi (2008) who looked at articles by Sudanese authors in medical journals and Nkemleke (2010) who explored the abstracts of articles written by Cameroonian scholars.

#### *3.4.1 British Postcolonial West Africa*

In British postcolonial West African countries, notably Ghana, Nigeria and Cameroon, a great deal of professional academic writing activities in English (especially writing of RAs) occurs in universities, the main centres of knowledge production. This warrants empirical investigations into the rhetorical and textual practices of the writers in this context. As this region is one of the geographical locations considered to be 'off-network' in the academic world, and where writers are non-native speakers of English, it would be interesting to compare the practices of authors here with those of others elsewhere, especially in metropolitan centres of scholarship.

As the review in section 3.3 shows, we now know quite a lot about non-native scholars' English rhetorical practices in Europe, Asia, Latin America and the Middle East. However, not much can be said about this in the non-native English-speaking African context, apart from the findings reported in ElMalik and Nesi (2008) and Nkemleke (2010). For example, the study carried out by Nkemleke (2010) looked at the rhetoric of conference abstracts written by Cameroonian scholars. One of the rhetorical features Nkemleke examines is hedges, and on this he claims that Cameroonian scholars use far less hedges in their writing than would be required to engage in the dialogue of scientific communication internationally.

#### *3.4.2 Situating the Study – Ghana*

The present study uses corpus linguistic techniques to explore the use of epistemic modality in the RAs written by Ghanaian scholars in the social sciences. In Ghana, as far as I can determine, there is not yet a single study on Ghanaian scholars' use of rhetorical features such as epistemic modality in their professional writing. As I note in chapter 1, much work on academic writing in English in the Ghanaian context has centred on the writing practices of undergraduate and postgraduate students to the neglect of professional authors. The present study is therefore a modest effort to shift the focus a bit towards English professional writing. Not only will this study be of practical value to Ghanaian professional authors (especially in the social sciences), as it may make them more aware of the preferred linguistic and rhetorical choices for international publication, but will also facilitate EAP and EPAP research in Ghana.

#### **3.5 Conclusion**

The goal of this chapter has been to offer a review of related empirical studies on the language and rhetorical features of the RA in English as produced by native and non-

native writers around the globe, focusing mainly on how writers deployed epistemic modality resources to make research claims in journal articles. On non-native writers in particular, the chapter served to both give a sense of research already carried out in this field and to show that while considerable attention has already been given to this subject in the regional contexts of Europe, Asia, Latin America and the Middle East, there is a dearth of research when it comes to the context of Africa, especially in British postcolonial West Africa where there is a lot of scholarly writing in English going on.

The review suggests that the handling of epistemic modality devices (and other rhetorical features) by non-native authors in their writing is considered to be onerous by them. However, there is also considerable goodwill from NNES who believe in English as the sole language of science – they are willing and prepared to devise workable strategies that can help them to learn how to effectively use these rhetorical resources if that can facilitate entry into international discourse communities. In the present study, my focus is on how Ghanaian authors in social science fields use epistemic modality markers to make research claims in their professional writing. The next chapter accounts for the methodology the study adopts. It explains the data collection and analysis procedures used in this study.

## CHAPTER 4 – CORPUS DATA AND METHODOLOGY

### 4.1 Introduction

This chapter gives an account of how the corpus data used in this thesis were derived, processed and analysed. It begins with a brief explanation as to why there was the need to build my own corpora of research articles (RAs) for the study, and then proceeds to discuss the methodological procedures that guided the collection of RA texts for the construction of the corpora. The chapter further discusses the processes that characterised the computerization of the two sub-corpora as well as the procedures adopted in the analysis of the data. Overall, there was a conscious effort to apply acceptable practices in corpus design and compilation for the linguistic analyses intended in this study.

### 4.2 Why Create the Corpora of RAs for this Study?

The present study is a corpus-based investigation of how Ghanaian professional authors in academia use epistemic modality markers as rhetorical devices for argumentation in their RAs, and compares their practices with discourse community conventions as reflected in a similar corpus of RAs in highly regarded international journals written by native (Anglo-American) speakers. The study focuses on the social science fields of Sociology, Economics and Law. Given the goals of the study, two sets of comparable corpora of RAs – one representing Ghanaian authors and the other representing Anglo-American authors – were needed to address the concerns of the research. It became necessary to build these specialised sub-corpora of RAs, as no publicly available corpora were found to be suitable for the research questions that the study addresses.

As far as I can tell, there is not as yet a single computerized corpus of academic discourse genres (including the RA) written by Ghanaian authors, a situation which reflects the general lack of corpus linguistic research projects in Ghana. In the case of the native (Anglo-American) RA corpus, it was observed that while the RA is included in quite a number of native English (Anglo-American) corpora, none of these could provide adequate samples of RAs in the disciplines of focus – Sociology, Economics and Law – to be used for this study, with a notable exception being Hyland's (2009) native English research article corpus, which is made up of 240 articles from journals in 8 diverse disciplines including adequate samples from Sociology). However, Hyland's (2009) RA corpus does not include samples from the disciplines of Economics and Law. To use the Sociology component in his corpus would have also meant imposing its design criteria to create the non-existent Economics and Law components of the native corpus. Thus, the decision to create the two sub-corpora for this study was based on the idea that create your own corpus only when there is no suitable, existing corpus that can answer your research questions (Biber *et al.* 1998; McEnery *et al.* 2006; McEnery and Hardie, 2012). I therefore found myself having to build what McEnery *et al.* (2006: 71) have called a DIY ('do-it-yourself') corpus for the present research project.

### **4.3 Corpus Design and Planning**

Given the goals of this study, I thought it necessary to compile two sets of corpora of research articles for the three disciplinary fields to represent Anglo-American and Ghanaian authors. One of the major considerations was the size of the corpus. A corpus intended to be used to explore epistemic markers (realised mainly through lexical devices) ought to be quite substantial in order to reveal notable tendencies in the use

of such devices. In other words, because the present study adopts a quantitative corpus-based design: a design in which a sizeable number and volume of the relevant texts are “important for generalizable results” (Biber, 2009: 1287), the corpus for this study had to be quite large.

I therefore decided that the two sub corpora should be made up of approximately a million words in total, 500, 000 words for each sub corpus. This size proved adequate for this study as the target items occurred quite frequently in this corpus. For example in the Anglo-American RA corpus alone, I retrieved a total of 3456 (66.66 per 10, 000 words) epistemic lexical verb uses and 3162 (60. 99 per 10,000 words) epistemic modal verb uses. Also, because the corpus is a specialised one, representing the language of RAs in specific fields, a million words was perceived to be adequate for the present investigation. To this end, I determined that 20 articles from each of the three fields for the two sub-corpora would suffice, thus the entire corpus was to consist of 120 RAs, consisting of 60 articles for the Anglo-American corpus and 60 articles for the Ghanaian corpus.

Another important design decision I made at the outset related to the criteria adopted to select RAs for the two sub-corpora. The articles to be selected for the native Anglo-American corpus (NAAC) for the three fields were to be authored by English and American native speakers and published in highly respected international journals. It was thought that the linguistic and rhetorical practices in this corpus would represent the preferred strategies in the disciplinary communities of Sociology, Economics and Law. As it has been well noted, the Anglo-American rhetorical practices represent the

dominant norms in the rhetorical styles of discourse communities (Mauranen, 1993; Connor, 1996).

On the other hand, the articles to be included in the non-native Ghanaian corpus (NNGC) were to be authored by Ghanaian researchers based in Ghana, and in journals publishing RAs in English based in Ghana. This was informed by one of the main goals of the study: to determine whether Ghanaian authors' use of epistemic modality as a rhetorical device differed substantially from the language used by native English researchers in international discourse communities. Countries in third world regions including Ghana (and most parts of Africa) are thought to be located in an "off-network" region which represents a less visible context in terms of international scholarly publishing (Swales, 2004; Salager-Meyer, 2008). Thus a major concern for me regarding the specific research questions posed in chapter 1 of this thesis was: would their English rhetorical practices confirm this off-network status and indicate that they are less aware of centre-based scholarly norms and conventions? As can be seen in section 4.4 next, most of the initial design decisions were successfully carried out during the collection of RA texts for the building of the two sub-corpora. However, a few unavoidable adjustments had to be made along the process, especially with regards to the collection of the Ghanaian RA texts.

#### **4.4 Description of the Corpora of RAs for this Study**

##### *4.4.1 The Native Anglo-American Corpus (NAAC)*

The native Anglo-American corpus (NAAC) is made up of a total of 60 RAs by different authors and selected from the broad disciplines of Sociology, Economics and Law, 20 RAs representing each discipline. The 20 articles in each discipline were published in

leading, 'authoritative' English-medium international journals, and authored by native speakers who hailed either from Britain or North America. To determine and select the journals deemed prestigious, I relied on the Social Science Citation Index (SSCI), one of the best-known web of knowledge databases which lists the world's leading journals in the social sciences. Table 4.1 is a list of the journals used to compile the Anglo-American sub-corpus of RAs.

**Table 4.1:** Journals used to compile the NAAC

Discipline	Journals
Sociology	American Journal of Sociology The British Journal of Sociology Sociology of Health and Illness The Sociological Review Gender and Society Social Force
Economics	Labour Economics The Quarterly Journal of Economics The Review of Economic Studies Journal of Economic Perspectives Journal of Public Economics European Economic Review
Law	The American Journal of Int. Law Journal of Social Welfare and Family Law The European Journal of Int. Law Oxford Journal of Legal Studies Int. Journal of Constitutional Law

The topics of the articles in each discipline were not specifically restricted to particular subfields, although the majority of them dealt with general issues relating to Sociology, Economics and Law respectively. This decision was informed by the idea that interpersonal rhetorical markers such as epistemic modality devices are not easily influenced by the topics of the texts, as noted by Kim (2009), although they may

influence a particular discipline as a whole. However, my hypothesis that the RAs truly reflected these three disciplinary fields was confirmed when I carried out a keyword analysis for the RAs in each field (using the LOB as a reference corpus). The analysis returned keywords that truly were about Sociology, Economics and Law respectively. For example, the words that occurred as the top 20 keywords of the Anglo-American Economics RAs were as follows: *price, model, firms, level, growth, effects, changes, inflation, market, firms, data, variables, is, increases, income, levels, demand, pricing, increase, cost.*

Three techniques were considered together to determine that the authors were indeed native speakers from Britain or North America: 1) a check on the historical background of their names, 2) the information in the institution of affiliation of the authors and 3) online reports that specifically indicated the nationality of the authors (such as 'The British economist ...', 'The renowned American law scholar...'). Only authors whose nationality was confirmed via these techniques were included. The RAs were obtained from the electronic versions of the relevant journals, and as all the articles were available in pdf files, the selected articles were downloaded and converted to *Plain text* format. The converted texts were then edited to ensure that they were the same as the original texts. All the articles included in the corpus were published from years 2000 to 2010. The general information about the NAAC is displayed in Table 4.2 below:

**Table 4.2:** General information about the NAAC

Corpus	Discipline	No. of RAs	Tokens	Mean text length	Publication date
The NAAC	Sociology	20	147, 912	7, 396	2000-2010
	Economics	20	148, 926	7, 446	
	Law	20	221, 608	11, 080	
Total		60	518, 446	8, 640	

#### 4.4.2 *The Non-Native Ghanaian Corpus (NNGC)*

The total number of articles collected for the NNGC is 69 written by different authors, and this consists of 23 each for Sociology, Economics and Law. Although the original plan was to include 20 articles for each discipline (same as that of the NAAC), it was observed during the collection stage that the articles authored by the Ghanaian researchers were generally smaller in length and size than those produced by the native speakers for the NAAC. So on the average, while the NAAC Sociology RA, for example, had 7, 396 words, the NNGC Sociology RA was 5, 769 in word count. Besides, unlike the Anglo-American RAs which mostly displayed a macrostructure (typically following the Swalesian IMRD structure), the Ghanaian RAs invariably did not follow this structure. Even at 23 articles each, the size of each discipline in the NNGC was slightly less in word count compared with those in the NAAC. However, the slight difference in corpus size between the NAAC and the NNGC was not going to distort the comparative analysis of epistemic modality markers between the two main groups of researchers, as the analysis was based on normalised rather than raw frequencies. As both Biber *et al.* (1998) and McEnery *et al.* (2006) have noted, it is important and useful to ensure that frequency counts are comparable, since texts in a corpus are often not of the same length.

The articles selected for the NNGC were mainly from journals published locally in Ghana in English except for two of them which are not based and managed in Ghana but still within the West African sub region. Some of the journals are discipline-specific whereas others are inter-disciplinary in nature. It became necessary to select articles from inter-disciplinary social science journals because it was difficult to find enough discipline-specific journals, especially for the disciplines of Economics and Sociology. Notably, many Ghanaian authors in these disciplines published their articles in inter-disciplinary social science journals in Ghana and within the West African sub region.

Also, quite a number of the journals were not readily available in electronic format. For those, the articles selected in them were first scanned using Optical Character Recognition (OCR) software called *openbook* and obtained in word format. The articles were then edited to ensure that they were exactly the same as the source texts in the hard journals before saving them as *Plain text*. For journals that were accessible electronically, the articles selected for inclusion were simply downloaded in pdf format and converted to *Plain text*. Thus for both the NNGC and NAAC sub-corpora, each article constituted an electronic text file in *Plain text* format. As Reppen (2010) has noted, it is preferable to save a corpus text using this format because at present it works best with most corpus analysis tools.

Table 4.3 is the list of all the journals from which articles were selected to represent each of the three disciplines in the NNGC.

**Table 4.3:** Journals used to compile the NNGC

Discipline	Journals
Sociology	Legon Journal of Sociology Ghana Social Science Journal Oguua Journal of Social Sciences Studies in Gender and Development in Africa
Economics	Journal of Economics Studies Research in Business and Economics Journal Ghana Policy Journal Journal of Business and Enterprise Development Journal of Monetary and Economic Integration Africa Review of Economics and Finance African Economic Research Consortium Ghana Social Science Journal Oguua Journal of Social Sciences
Law	University of Ghana Law Journal The Review of Ghana Law The KNUST Law Journal

Although these English language-medium journals are respected and patronized by Ghanaian authors and scholars in the West African sub region, they are not particularly considered to be top rated beyond Ghana and/or West Africa. For instance, a careful perusal of notable research citation indexing databases including the SSCI database indicates that none of these journals is listed. While this observation is not intended to undermine the credibility of these lesser-known journals, it provides an exciting opportunity to investigate the English rhetorical practices in the articles contained in them (especially as they are produced and managed mainly by non-native

English-speaking authors), and to establish whether the rhetorical practices deviate considerably from practices in centre-based scholarly writing.

All the articles included in the NNGC are authored by Ghanaian researchers based in Ghanaian universities, most notably the three oldest and biggest universities in Ghana – the University of Ghana, the Kwame Nkrumah University of Science and Technology and the University of Cape Coast. Here too, the institutional affiliations of the authors as well as their names and background proved useful in establishing that authors are Ghanaians working in Ghana. All articles were published from years 2000 to 2011 Table 4.4 summarises the general information of the NNGC.

**Table 4.4:** General information about the NNGC

Corpus	Discipline	No. of RAs	Tokens	Mean text length	Publication date
The NNGC	Sociology	23	132, 676	5, 769	2000-2011
	Economics	23	145, 892	6, 343	
	Law	23	168, 922	7, 344	
Total		69	449, 490	7, 135	

In total, then, 129 RAs were collected to create the two sets of corpora for the present study, and the overall size of this corpus data is 967, 936 tokens. Although there was a good effort to ensure that the sub-corpora of RAs representing the two groups of researchers were comparable in terms of corpus size, number of texts and length of texts, some practical decisions taken during the collection of texts in the field led to some modifications of the original corpus design. However, these modifications are minor and not likely to adversely affect or distort the analyses derived from the corpus data. Besides, while those decisions were the result of unavoidable factors (Clancy, 2010), they reflect the view held by McEnery *et al.* (2006: 73) that “corpus building is of necessity a marriage of perfection and pragmatism”.

## 4.5 Other Methodological Issues

### 4.5.1 Types of RA Text Included

The texts in both the NAAC and NNGC were experimental, theoretical or observational in outlook, although the experimental papers, which involved the analysis of empirical data, constituted the large majority of RAs. Many previous studies of rhetorical features in the RA (e.g., Salager-Meyer, 1994; Hyland, 1998; Varttala, 2003) have thought it ideal to work with only experimental articles which judiciously follow the Swalesian *Introduction-Method-Result-Discussion* (IMRD) structure so that they can focus specifically on features and variations in these various sub-sections. However, two reasons explain why, along with experimental articles, theoretical and observational articles were included in the corpus for the present study (I use the term 'observational' to loosely refer to research that does not involve the collection of hard data).

First, I held the view that the use of epistemic modality markers would occur in any RA text be it experimental, theoretical or observational, although markers might vary in these types of RA. Once the underlying point of the RA – that it advances an argument in a socially oriented text – is acknowledged, I assume that the use of epistemic strategies might prove useful in advancing one's claims irrespective of the RA type. The second reason is practical and related specifically to the Ghanaian authored articles in Ghanaian journals. It was hard to find a sufficient number of experimental RAs with obvious IMRD structure, as many of the articles (especially those in the discipline of Law) appeared to be theoretical or observational in design, and even the experimental ones did not all follow the IMRD format. But this was not to represent a serious setback because the present study, rather than focusing on epistemic markers

between the IMRD sub-sections of the RA, was focussed upon tracing the overall use of epistemic markers throughout the full texts and quantitatively comparing the feature across the three disciplines.

The final point I wish to make here is that each text in the two sub-corpora was made up of the main body of the article only, i.e. the complete running text. Thus for each article, the abstract, acknowledgements, notes and references were deleted as these either constitute separate genres on their own or do not form part of the main text of the article. Furthermore, tables, long set-out quotations, figures and formulas in the main text were replaced with placeholders. I decided to use the following symbols to serve as placeholders: <&&&> for tables, <^^^> for long quotations and <\*\*\*> for formulas and figures. The long quotations were removed because they did not form part of the actual writing of the authors selected for the study, whereas the tables, figures and formulas were removed to facilitate the processing and analysis of the corpus. As McEnery *et al.* (2006: 23) note, “when graphics/tables are removed from the original texts, placeholders must be inserted to indicate the locations and types of omissions”.

#### *4.5.2 Sampling of RA Texts*

In corpus building, sampling decisions are made by the builder(s) in an effort to arrive at a fairly representative corpus (Hunston, 2002; Leech, 2011; McEnery and Wilson, 2001). Two sampling techniques were applied at two different stages of the selection of RAs for the NAAC and NNGC sub-corpora. At the first stage, I tried to ensure that the articles to enter the NAAC were written by native Anglo-American authors based in Britain or North America, were typically articles in the disciplines of Sociology,

Economics and Law, and were reflective of contemporary scholarly academic writing (the publication dates from 2000 to 2010). I tried to ensure that the NNGC articles were written by non-native Ghanaian authors based in Ghana, were typically articles in the three disciplines, and were reflective of contemporary scholarly academic writing (the publication dates from 2000 to 2011). With these in mind, purposive sampling was used at this first stage to gather as many journal articles as possible. This sampling technique was suitable at this stage because it took into account the goals of the research and the characteristics under investigation. Using this technique, I was able to download and collect more than the total number of articles that finally entered the NAAC and the NNGC sub-corpora. So that, for example, I downloaded 30 articles each (in pdf format) for Sociology, Economics and Law to create the NAAC and finally selected 20 for each discipline and discarded the remaining 10.

The second stage of sampling involved selecting the required number of RAs from the initial downloads and collections. Here, I employed a simple random method. This sampling method made it possible for every RA in the initial download list to stand a chance of being selected for inclusion in the corpus. I tried to ensure that the final list of RAs selected was chosen without regard to the language they contained. This practice accords with Sinclair's (2005) view that texts chosen for inclusion in a corpus should be based on external rather than internal factors. So at this stage, for example, each of the 30 articles on the three disciplines originally collected for the NAAC had an equal chance of being included in the final 20 articles. I then selected 20 articles at random from the list of articles saved on my computer. I followed the same random sampling procedures to select the final 23 articles that represented each of the three disciplines in the NNGC.

#### *4.5.3 Authors of Texts*

In collecting the RA texts for the two sub-corpora, there was no effort to include an equal proportion of male and female authors, as it was not one of the aims of the study to address issues of gender and gender differences. While there could be noticeable gender variations in academic rhetorical styles, it is reported that gender is not particularly a significant determining factor when it comes to the use of mitigating and strengthening claims in academic discourse (Dixon and Foster, 1997; Poos and Simpson, 2002).

Besides, I observed that there were generally a lot more male authors than female authors in the journals from which the RAs were selected (the gap particularly wider in the Ghanaian corpus). Thus the articles that finally entered the NAAC and NNGC had considerably more male writers than female writers (see appendix A). But as the analysis carried out on the uses of epistemic markers between the two groups of authors did not include accounting for variations according to gender, the bias towards male writers in the corpora had no effect on the findings reached.

### **4.6 Procedure of Analysis**

#### *4.6.1 List of Epistemic Markers for Analysis*

First, I decided to prepare a prelist of linguistic forms used as epistemic markers so that it would form the basis for my searches in the two sub-corpora. To derive this list of epistemic resources, I consulted and relied on previous studies (Holmes, 1988; Milton and Hyland, 1997; McEnery and Kifile, 2002; Rizomilioti, 2006), where most of the lexical forms used to signal epistemic modality had been reported. An initial list of 110 epistemic marking devices was derived and grouped under their lexical categories as either modal verbs, lexical verbs, adverbs, adjectives or nouns. To validate this prelist

of devices, and to be sure that I was able to retrieve all of the salient lexical epistemic items in my corpora, I decided to read samples of texts from my sub-corpora to see whether I would find epistemic forms that were not included in the original list of 110 epistemic forms. This exercise proved useful as it threw up a couple more forms that had epistemic qualities. I listed an extra 11 epistemic forms; namely, 4 adverbs (*usually, presumably, ostensibly, unarguably*), 2 lexical verbs (*infer, attest*), 4 adjectives (*well known, suggestive, convincing, speculative*) and 1 noun (*estimation*). Thus I obtained a final list of 121 epistemic markers grouped under five categories to constitute the linguistic units for my analysis. It is important to mention here that I did not include the modal *can* in the list of modals studied because it is not particularly used epistemically and thus has not been previously listed as an epistemic modality form (e.g., Coates, 1983; Holmes, 1988; Hyland and Milton, 1997). While its negative forms *can't* and *cannot* rarely exhibit epistemic qualities (see for example, Collins, 2009), these often occur in spoken discourse. Table 4.5 is the complete list of epistemic devices used for the present study.

**Table 4.5:** List of epistemic modality devices

Modal verbs	Lexical verbs		Adverbs		Adjectives	Nouns
could	appear	indicate	about	largely	apparent	assumption
couldn't	argue	infer	actually	maybe	a certain extent	belief
may	assume	know	almost	naturally	certain	certainty
might	attest	look as if	apparently	necessarily	clear	chance
must	believe	look (like)	approximately	obviously	convincing	claim
should	claim	presume	arguably	of course	evident	danger
shouldn't	consider	propose	around	ostensibly	improbable	doubt
would	convince	reckon	beyond doubt	perhaps	inevitable	estimate
wouldn't	doubt	seem	certainly	possibly	likely	estimation
will	estimate	show	clearly	presumably	obvious	evidence
won't	expect	speculate	definitely	probably	possible	explanation
	feel	suggest	doubtless	surely	probable	fact
	guess	suppose	essentially	unarguably	speculative	fear
	hope	tend	evidently	undeniably	suggestive	hope
		think	frequently	unquestionably	sure	idea
			generally	usually	true	indication
			indeed	(very) likely	unlikely	likelihood
			inevitably	without doubt	well known	opinion
			in fact			possibility
			in reality			probability
						speculation
						suggestion
						tendency
						theory
						view

#### 4.6.2 *Classifying Markers According to Epistemic Strength*

To address research question 1(c) and be able to study differences along the parameter of the different levels of epistemic commitment, I further grouped my list of epistemic modality markers in terms of a continuum, according to their levels/degrees of probability for genuine epistemicity. Again, it was possible to rely on previous accounts of the scales of epistemic probability, but not after a careful assessment of various classification types. I noted two-way classification types (e.g., hedges and boosters by Hyland, 1998; doubt and certainty by Biber *et al.*, 1999; downturners and boosters by Rizomilioti, 2006); a three-way classification type – weak/low, medium/moderate and

strong/high – (e.g., Halliday, 1994, 2004; Holmes , 1988; Hyland and Milton, 1997; McEnery and Kifle, 2002; Pietrandrea, 2005; Wärnsby, 2006); a four-way classification type – strong, quasi-strong, medium, weak – by Huddleston and Pullum (2002); and a five-way classification type – absolute certainty, high certainty, moderate certainty, low certainty, uncertainty – by Rubin (2010).

I decided to use the three-way classification type – strong, medium and weak – in classifying the list of epistemic markers according to their degrees of probability/likelihood. While this classification seems to be the most ideal scheme applied in many previous studies, as the list of studies shown above suggests, I found it provided a much neater and a less fuzzy approach to grouping the epistemic markers according to their epistemic strength. The following are also my reasons for discarding the other classification types.

The two-way classification simply does not allow for certain epistemic markers that are, for example, neither clear-cut hedges nor boosters to be classified effectively. Huddleston and Pullum's (2002) four way classification, if it were to be used in this study, could make the classification and analysis complicated. As Huddleston and Pullum note themselves, while the borderline between strong and quasi-strong markers is effective with adverbials, it is not with other categories like modal verbs, for which they used a three-way classification. Rubin's (2010) five-way classification (i.e. absolute certainty, high certainty, moderate certainty, low certainty and uncertainty) appeared unconvincing, as some of the categories on the scale seemed to me to be contestable. For example, the strongest category on her cline is *absolute certainty*. But if we think of epistemic modality as expressing degrees of probability and can be viewed

as a continuum showing the different levels of certainty, then *absolute certainty* may well mean being 100% certain. This would then be at the strongest end (tip) of the continuum, and thus suggest that there is no epistemic modality at all.

The three-way classification type thus seemed the most suitable analytical framework for the present work, and so I grouped the epistemic forms in terms of *strong*, *medium* and *weak* according to their degrees of probability/likelihood. This worked quite perfectly with the epistemic devices I analysed. For example, Biber, Conrad and Leech (2002: 316) classify the epistemic verbs *suggest*, *indicate* and *show* as expressing weak, medium and strong degrees of probability respectively. Nuyts (2001: 22) also uses *might*, *probably* and *will* to further illustrate the point, as in the following sentences:

- a. Tony might be in his office by now. [weak]
- b. Tony is probably in his office by now. [medium]
- c. Tony will be in his office by now. [strong]

So Table 4.6 contains the complete list of epistemic markers grouped according to their epistemic strength.

**Table 4.6:** Epistemic devices according to degrees of probability

Strong		Medium		Weak	
actually	inevitable	about	indicate	appear	opinion
assure	inevitably	a certain extent	indication	could	perhaps
attest	in fact	actually	infer	couldn't	possible
beyond doubt	in reality	almost	largely	danger	possibility
certain	know	apparent	likelihood	doubt (verb)	possibly
certainly	must	apparently	likely (adj.)	doubt (noun)	propose
certainty	necessarily	approximately	naturally	generally	seem
claim (verb)	obvious	argue	ostensibly	guess	speculate
claim (noun)	obviously	arguably	presumably	hope (verb)	speculation
clear	of course	around	presume	hope (noun)	speculative
clearly	show	assume	probable	look (as if)	suggest
convince	sure	assumption	probability	look (like)	suggestion
convincing	surely	belief	probably	may	suggestive
definitely	theory	believe	reckon	maybe	usually
doubtless	true	chance	should	might	view
evidence	unarguably	consider	shouldn't		
evident	undeniably	essentially	suppose		
evidently	unquestionably	estimate (verb)	tend		
fact	well-known	estimate (noun)	tendency		
frequently	will	estimation	think		
idea	no doubt	expect	unlikely		
indeed	won't	explanation	likely (adv.)		
		fear	would		
		feel	wouldn't		
		improbable			

While it is difficult to argue that the epistemic items grouped under each of the degree of probability types carry exactly the same epistemic force, we can safely assume that they are more epistemically related in terms of expressing strong, medium and weak degrees of certainty.

#### 4.6.3 POS Tagging of the Corpus

Before carrying out the analysis of the instances of epistemic devices in the two sub-corpora, I first tagged the corpora for parts of speech (POS tagging) using the

Constituent Likelihood Automatic Word-tagging System (CLAWS), specifically the CLAWS 7 tagset (Garside, 1987). In the initial searches of the lexical items in the five linguistic categories, the POS tagging helped to exclude items in the corpora that did not belong to the expected class categories and were thus functionally irrelevant to my purpose. For example, the form *will* is used in the corpora as a nominal item (e.g., “In other words, rights emanate from the *will* of the sovereign expressed in positive enactment” [LAW GH04]), while the form *around* is used in the corpora as a preposition (e.g., “HIV/AIDS is a major cause of premature death and imposes a large disease burden *around* the world” [ECO NA 14]). These uses were thus left out of the searches for *will* as a modal and *around* as an adverb.

#### *4.6.4 Extraction and Analysis of Epistemic Devices in the Corpus*

##### *4.6.4.1 Concordance analysis*

To extract epistemic uses in the two sub-corpora (NAAC and NNGC), I used the concordance search tool in WordSmith version 6 (Scott, 2013) to run concordances of each linguistic item within the five categories (modals, lexical verbs, adverbs, adjectives, nouns). Since most of these linguistic items in context could be performing other functions beside encoding epistemic meanings, it was necessary to further closely examine each concordance output in the source text so as to be able to isolate epistemic uses from non-epistemic ones. Non-epistemic uses were deleted and hits of genuine epistemic cases recorded. I should offer some examples here.

In the Sociology part of the NAAC corpus, the concordance searches carried out returned a total of 1162 uses of modal verbs alone, out of which 785 were used

epistemically. Examples (1) and (2) respectively illustrate the epistemic and non-epistemic uses of modal *could*, for instance:

- (1) This difference in search behaviour could adversely affect their reemployment chances. [SOC NA03]
- (2) Women created this analogy because they could not control their bodies as much as they could in previous years. [SOC NA17]

Following the semantic labels developed by Coates (1983), *could* in (1) expresses epistemic possibility whereas in (2) it carries the root (non-epistemic) sense of ability.

Another modal example showing instances of epistemic and non-epistemic uses in my corpora is *will*. In its epistemic sense *will* mainly expresses prediction, but it is also used in the corpus many times to show author (s)' intention, a non-epistemic use, as (3) and (4) illustrate respectively:

- (3) This privation will be difficult to monitor as no official records are kept of private prescription. [SOC NA09]
- (4) These data will be analyzed to show how often research supports each hypothesis,... [SOC NA19]

Apart from the modal verbs, a similar situation arose with the other linguistic categories. The lexical verbs, for example, showed several instances of non-epistemic uses. In the Economics part of the NAAC corpus, the concordance searches carried out returned a total of 1160 uses of lexical verbs alone, and out of this number 1077 occurred as epistemic uses. If we take the lexical verb form *appear*, for example, sentences (5) and (6) respectively illustrate its epistemic and non-epistemic uses in the Economics articles of the NAAC:

- (5) While some of these interventions have been successful, the effect of such programs appears to be highly dependent on circumstances. [ECO NA14]

- (6) Again, a regression table showing specific results appears in the Appendix. [ECO NA11]

On the whole, however, I should indicate that it is the modal verbs (more than any other linguistic category) that displayed the widest range of root (or non-epistemic) uses in the entire corpus such as root possibility, ability, tentative wish, obligation, intention, etc. Thus all non-epistemic uses of the lexical categories I studied were left out of the number of genuine epistemic cases recorded for the two groups of authors.

The concordance outputs were also sorted variously in order to observe interesting co-occurrence patterns that the epistemic forms entered into. This made it possible to report (qualitatively) interesting epistemic clustering and/or phraseological patterns, as well as preferred lexical co-occurrences with epistemic forms produced by the two groups of authors.

#### *4.6.4.2 Dispersion*

As I carried out the analysis of the use of epistemic markers in my corpus data, I was careful that I would not be focusing much on situations where a feature appeared to be overly used by only one or two authors rather than it being a general feature of either the Ghanaian authors or the Anglo-American authors. I relied on the dispersion tool in WordSmith to determine that each epistemic use was evenly spread across the disciplinary sections of the two sub corpora representing the two groups of authors.

While it was rare for an epistemic item to be clustered around one or two authors, there was the potential for this to occur, especially where a feature occurred with a very low frequency in the corpus data. However, even the majority of low

frequency cases were fairly spread in each disciplinary section of the corpus data. For example, the epistemic noun form *tendency* had a very low frequency in the Law articles in NAAC, occurring only 8 times, but it is produced by 7 different authors. Figure 4.1 is a dispersion plot of *tendency* in the Law articles of NAAC. On the whole, the dispersion check analysis, to a very large extent, showed that the epistemic uses in the corpus data were more a characteristic of the entire group of authors than a case of overuse by one or two authors in the group.

N	File	Words	Hits	per 1,000	Dispersion	Plot											
						1	2	3	4	5	6	7	8	9	10	11	12
1	Overall	76,405	8	0.10	0.714												
2	tendency LAW NA02	16,985	1	0.06	-0.069												
3	tendency LAW NA04	14,121	1	0.07	-0.069												
4	tendency LAW NA06	8,596	1	0.12	-0.069												
5	tendency LAW NA07	6,146	1	0.16	-0.069												
6	tendency LAW NA09	12,696	2	0.16	0.300												
7	tendency LAW NA10	7,016	1	0.14	-0.069												
8	tendency LAW NA14	10,845	1	0.09	-0.069												

**Figure 4.1:** Dispersion plot for *tendency* in the Law articles of NAAC

#### 4.6.4.3 Raw and Normed Frequencies

As frequency distribution of epistemic uses are important for the goals of this study, I recorded the raw frequencies of all genuine epistemic uses in the corpus data for the articles in each of the three disciplines written by the two groups of authors. However, given that the disciplinary texts of the corpus data were not of the same length and size, as can be seen in Tables 4.1 and 4.2, it was helpful to base the discussion on normed frequency counts rather than simply working with the raw totals. McEnery and Hardie (2012) explain that a normed frequency helps us know how many times a word occurs per X words of running texts which represents the base of normalisation. Thus to derive normed frequencies, we take the raw frequency of a word in the corpus, divide it by the size of the corpus, and then multiply the result by the base of normalisation.

Analysts working with very large corpora such as the BNC, whose size is approximately a 100 million words, often set the base of normalisation to per 1 million words of running texts, while those working with very small corpora of far less than a million words usually set it to per 1, 000 words of running texts. As the overall size of my corpus is approximately 1 million words, I decided that it might be best to set the base of normalisation at per 10, 000 words of running texts. Thus I used this formula to calculate for the normed frequencies of the occurrence of epistemic resources in my corpus data. However, following suggestions by McEnery and Hardie (2012), I reported both the raw and normed frequencies of epistemic uses in the quantitative analysis.

#### **4.7 Methodological Difficulties**

I can say that to a very large extent the processing of the corpus data and the procedures of epistemic analysis followed in this study were successful and went according to plan. However, I encountered a few challenges along the way, especially with regards to the collection of the Ghana component of the corpus data. As most of the articles in the Ghanaian context were not already in electronic format and therefore were obtained as hard documents in Ghana, the collection and processing proved quite difficult. First, I had to make journeys to the various university campuses in Ghana to obtain hard copy versions of the relevant journals. This meant I had to first scan the articles using a computer that had installed on it an Optical Character Recognition (OCR) software before proceeding to process them into plain texts.

The Digital Work Room (DWR) at the University of Cape Coast Main Library agreed to set up a base to assist me with this task. But this is where the main difficulty arose: the OCR software they installed on the computer I was to work with did not do

the job well. This software, called *omnipage*, did not only work very slowly, it also failed to pick up a lot of the characters in the original articles when a scan was completed. To work with this OCR software meant not only spending incredibly long periods of time in the work room, but also risking collecting electronic versions that were error-prone and inaccurate. I discarded *omnipage* and requested a better OCR package from the DWR staff. After five days of waiting, they managed to get me a new piece of OCR software called *openbook*, which worked well and quickly. When a scan was completed, very minimal editing was needed to get the scanned version to be exactly the same as the source text. While the entire process of working in the DWR was quite difficult, it proved successful in the end as I was able to scan all the relevant articles as Word files for further processing.

#### **4.8 Conclusion**

This chapter reported the methods employed to collect RA text materials for the corpus data as well as the procedures used to analyse the linguistic and rhetorical features of concern in this study. As the entire work here was based on applications of corpus linguistics as a methodology, there was a conscious effort to adopt best practices to ensure that the findings presented in this study are valid and robust. The next chapter of this thesis begins the reporting of the analysis and results of the study.

## CHAPTER 5 – EPISTEMIC MARKERS: OVERALL FREQUENCY, AND MODAL VERBS

### 5.1 Introduction

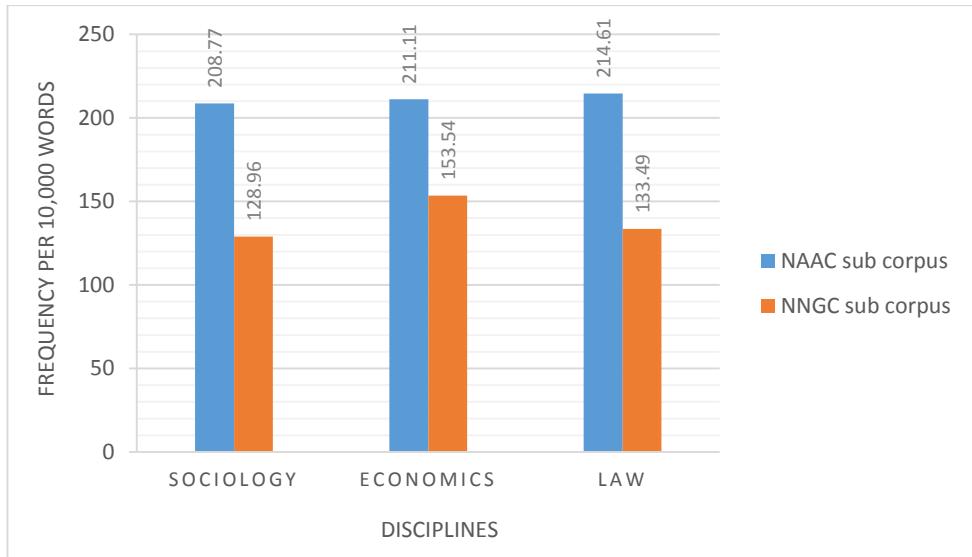
This chapter is the first of the five analysis chapters of this thesis. Here, I present the results of the analysis carried out on the uses of epistemic modal verbs in the corpora representing the Anglo-American and Ghanaian authors, discuss how, through these resources, making research claims can vary across the disciplinary fields of Sociology, Economics and Law, and then foreground ways that the Ghanaian authors' use of epistemic modal verbs compare with international discourse community practices as reflected in the articles produced by the native English-speaking authors. But I will begin the chapter by first reporting and discussing the overall frequency patterns of epistemic markers in the two sub corpora across the three disciplines.

### 5.2 Overall Frequency of Epistemic Markers across the Disciplines

Table 5.1 shows the general and overall frequency patterns of epistemic markers (EMs) (together with the normalised results per 10,000 word) in each of the three disciplines of the two sub-corpora of RAs. Figure 5.1 is a graphical representation of the overall distribution per 10,000 of running words.

**Table 5.1:** Overall frequency of EMs in the two sub corpora

Discipline	NAAC sub-corpus		NNGC sub-corpus	
	total	per 10,000 tokens	total	per 10,000 tokens
Sociology	3088	208.77	1711	128.96
Economics	3144	211.11	2240	153.54
Law	4756	214.61	2255	133.49



**Figure 5.1:** Frequency of EMs in the two corpora per 10,000 words

As can be seen from the table and the chart, the overall occurrences of EMs used by the native Anglo-American authors appear to be similar across the three disciplines of Sociology, Economics and Law, though we can observe slight differences in the distribution. Law authors record the highest instances of use per 10,000 words (214.61) followed by Economics authors (211.11), and then Sociology authors (208.77).

Throughout the analysis of this study, I tried to determine whether frequency differences of epistemic use, either across disciplines or between authors, are statistically significant or not. In this regard, a log-likelihood (LL) test, a statistical test designed by Dunning (1993) as a goodness of fit statistics used to assess and deal with deficiencies in regression models, was carried out wherever necessary. I specifically used the log-likelihood calculator developed by Paul Rayson at Lancaster University (available at <http://ucrel.lancs.ac.uk/llwizard.html>) to compute the figures. The calculator allows the user to statistically compare the frequency of a linguistic feature (e.g., a word or a phrase) in two corpora or sub-corpora to test whether an observed

difference arises merely due to chance or is indeed a reflection of a significant association between the two corpora.

So the LL values derived for the above figures representing overall occurrences of EMs by Anglo-American authors are as follows: Sociology vs. Economics (0.19), Sociology vs. Law (1.43) and Economics vs. Law (0.51). Set at a significance level of  $p<0.01$  (with a critical value of 6. 63), the LL results suggest that the observed differences in the use of EMs between Sociology and Economics, Sociology and Law, and Economics and Law are all statistically not significant (the LL values are all below the critical value). Thus the overall density of epistemic use in the native articles is fairly similar across the three disciplines.

On the other hand, the overall distributional patterns of epistemic use in the Ghanaian sub corpus seem to show more substantial differences across the three disciplines. As Table 5.1 illustrates, the Ghanaian Economics authors used the highest number of EMs in their articles (153.54) followed by the Law authors (133.49), while the Sociology authors recorded the least uses of EMs (128.96). The LL values for the overall observed differences for the Ghanaian authors across the three disciplines are as follows: Sociology vs. Economics (29.71), Sociology vs. Law (1.16) and Economics vs. Law (21.97). The statistical results reveal that while the difference in the total amount of EMs used between the Sociology and Law authors is (statistically) not significant at the  $p<0.01$  level, those between Sociology and Economics authors, Economics and Law authors are statistically significant. It does seem that, unlike the pattern observed for the native authors, the density of epistemic use by the non-native Ghanaian authors varied considerably at two independent ends of comparison, that is the Ghanaian

Economists used more EMs overall in their articles as compared to their Ghanaian colleagues both in Sociology and Law.

But perhaps the more crucial and interesting finding relating to the overall frequency in the use of EMs is that the native Anglo-American authors in all three disciplinary fields used more epistemic resources to make research claims than their non-native Ghanaian counterparts, as Table 5.1 and Fig. 5.1 clearly show. The observed normed differences for each discipline between the two groups of authors appear to be rather wide, as the Anglo-American authors used (79.81) more EMs in Sociology, (57.57) more EMs in Economics and (81. 12) more EMs in Law. Table 5.2 displays the LL results of the overall occurrences of EMs in the articles written by the two groups of authors for each discipline, which further confirms all the observed differences to be statistically significant.

**Table 5.2:** LL values for overall frequencies of EMs in the two corpora

Discipline	Anglo-American authors	Ghanaian authors	LL-value	Significance level: $p < 0.01$
Sociology	3088	1711	265.20	Sig.
Economics	3144	2240	134.47	Sig.
Law	4756	2255	361.95	Sig.
Overall	10988	6206	736.88	Sig.

The quantitative results presented here thus offer corroborating evidence to support claims by previous studies (e.g., Curry and Lillis, 2004; Martinéz, 2005) that non-native speakers of English often tend to imprecisely either underuse, overuse or misuse important rhetorical features of academic writing in their RAs. In the present study, there seems to be a general underuse of epistemic rhetorical resources by the Ghanaian writers. The figures arrived at in this study suggest that Ghanaian RA authors in Sociology, Economics and Law, in reporting their research claims, use significantly less

EMs than would be expected in mainstream international discourse communities. This overall picture of underuse of EMs by the Ghanaian writers may further suggest that they are more direct and overly categorical in the ways that they present research claims, a practice that may not be encouraged in academic discourse communities, especially as knowledge in these fields is socially constructed and thus requires that writers “reach a consensus with their readers” (Warchal, 2010: 141).

The overall uses of EMs in the RAs written by the Ghanaian authors also, in particular, confirm much of previous findings of non-native speakers’ use of epistemic modality in RAs. For instance, as in the present study, Panacová’s (2008) work on the use of epistemic modality in English by Slovak scientists revealed similar results of a considerable underuse when compared with articles in international journals written by native speakers of English, although the discipline of focus in Panacová’s study is Biomedicine. Similarly, Englander’s (2006) study of Mexican scientists in the fields of Geophysics and Marine Science suggested a marked underuse of epistemic (hedging) devices in their articles. The findings of the present study thus seem to strengthen the theory that NNES use less EMs in their academic writing than would be required to effectively report research claims in English-medium international journals.

### **5.3 Overall Frequency of Linguistic Types across the Disciplines**

In this study, I analysed the epistemic resources under five main linguistic categories: modal verbs, lexical verbs, adverbs, adjectives and nouns, and will offer a more detailed discussion on how each of these categories influences disciplinary and native vs. non-native variations in separate chapters. However here, I will look at the overall frequencies of EMs under these five linguistic categories in the articles produced by the

two groups of authors. Tables 5.3 and 5.4 show the overall frequency per 10, 000 words (with absolute figures in parenthesis) of the different linguistic categories functioning as EMs in the NAAC and NNGC respectively.

With regard to Table 5.3, which represents epistemic uses by the Anglo-American authors, we can see that lexical verbs are the most frequently used forms to express epistemic functions in the RAs, occurring 66.66 times per 10, 000 words.

**Table 5.3:** Frequency of the different linguistic categories functioning as EMs in the NAAC

Linguistic Categories	Sociology	Economics	Law	Total
<i>Modal verbs</i>	53.07(785)	54.73(815)	70.48(1562)	<b>60.99(3162)</b>
<i>Lexical verbs</i>	76.19(1127)	72.85(1085)	56.14(1244)	<b>66.66(3456)</b>
<i>Adverbs</i>	33.53(496)	29.75(443)	49.73(1102)	<b>39.37(2041)</b>
<i>Adjectives</i>	24.34(360)	17.06(254)	19.36(429)	<b>20.12(1043)</b>
<i>Nouns</i>	21.63(320)	36.73(547)	18.9(419)	<b>24.80(1286)</b>

**Table 5.4:** Frequency of the different linguistic categories functioning as EMs in the NNGC

Linguistic Categories	Sociology	Economics	Law	Total
<i>Modal verbs</i>	21.56(286)	28.79(420)	33.33(563)	<b>28.23(1269)</b>
<i>Lexical verbs</i>	54.12(718)	70.26(1025)	40.85(690)	<b>54.37(2433)</b>
<i>Adverbs</i>	27.66(367)	25.91(378)	27.11(458)	<b>26.88(1203)</b>
<i>Adjectives</i>	9.21(121)	10.62(155)	8.29(140)	<b>9.30(416)</b>
<i>Nouns</i>	16.51(219)	17.96(262)	24.51(414)	<b>20.00(895)</b>

This finding is not so surprising given that, in written English in particular, lexical verbs are at the heart of clauses and sentences and are invariably present. It is therefore expected that in scholarly writing, where the use of epistemic resources are deemed crucial for conveying research claims, a considerable number of the verb forms chosen by writers to construct sentences would have epistemic properties. Following lexical verbs closely is modal verbs, occurring 60.99 times per 10, 000 words, then adverbs (39.37), nouns (24.80) and adjectives recording the least amount of epistemic uses (20.12).

Interestingly, the data in Table 5.4 show a similar distributional pattern according to linguistic category for the Ghanaian authors, although the total frequency in each category is lower than the results for the Anglo-American authors. Epistemic lexical verbs appear 54.37 times per 10, 000 words, but the other categories are far less; 28.23 times for modal verbs, 26.88 times for adverbs, 20.00 times for nouns, and 9.30 times for adjectives. The fact that the analysis showed that the distributional patterns of epistemic uses through these linguistic categories by the non-native Ghanaian authors are similar to those of the native English-speaking researchers is helpful. It portrays the Ghanaian authors in these social science fields as generally fairly aware of the most preferred linguistic forms for epistemic interpersonal communication in international discourse communities.

#### 5.4 Overall: Variation According to Epistemic Strength

Another dimension looked at in this study relates to the levels of epistemic strength (*strong, medium and weak*) employed across the three disciplines and between the two groups of writers. In subsequent chapters I will examine how the different levels of

epistemic strength are enacted through each of the linguistic categories. Here, I intend to present just the overall picture and distributional pattern across the three disciplines of the articles produced by the two groups of authors. *Strong* epistemic claims exploit such devices as *of course*, *certainly*, *obviously*, *will*, and *fact* to show a high level of confidence in the truth of the claim being made. A frequently used term in the literature for these epistemic devices is ‘boosters’ (e.g., Hyland, 1998a; Rizomilioti, 2006). *Weak* epistemic claims use such forms as *possibly*, *may*, *perhaps*, *might* and *suggest* to reduce significantly the level of commitment to the proposition that is expressed. This has often been talked about in terms of ‘hedges’ (e.g., Salager-Meyer, 1994; Hyland, 1998a). The category *medium* lies somewhere between *strong* and *weak*, and is expressed with such epistemic devices as *would*, *probably*, *largely*, *believe*, and *tendency*.

The analysis I carried out in the two sub-corpora of RAs of epistemic uses according their epistemic strength revealed some general patterns.

**Table 5.5:** Frequency of the levels of epistemic strength in the two corpora

Epistemic strength	Discipline	Anglo-American authors f/10,000 (no.)	Ghanaian authors f/10,000 (no.)
<i>Strong</i>	Sociology	59.02(873)	41.53(551)
	Economics	54.66(814)	46.68(681)
	Law	58.18(1245)	46.23(781)
	<i>total</i>	<b>56.55(2932)</b>	<b>44.98(2013)</b>
<i>Medium</i>	Sociology	76.13(1126)	59.47(789)
	Economics	93.13(1387)	68.20(995)
	Law	72.61(1609)	45.88(775)
	<i>total</i>	<b>79.51(4122)</b>	<b>57.19(2559)</b>
<i>Weak</i>	Sociology	74.50(1102)	28.04(372)
	Economics	62.31(928)	38.66(561)
	Law	85.92(1904)	42.03(701)
	<i>total</i>	<b>75.88(3934)</b>	<b>36.51(1634)</b>

Table 5.5 summarises the analysis of the use of EMs according to three levels of epistemic strength by the two groups of writers in the three disciplines. As Table 5.5 makes clear, the overall totals for the three levels of epistemic strength in the native articles suggest that in these international social science communities, authors tend to use considerably more weak epistemic forms (75.88) than they use strong forms (56.55), although there is a tendency for them to utilise more of the forms that are neither so strong nor very weak to convey research claims, as the medium forms tend to dominate all three categories (79.51). The Log-likelihood tests carried out for the differences of these epistemic strength in the international articles proved to be significant at  $p<0.01$  for strong vs. weak (146.75) and strong vs. medium (201.71) but not for medium vs. weak (4.39).

In scholarly communication, both strong and weak epistemic devices are deemed important strategies for reporting research claims, although their frequency of use may vary across academic discourse genres and disciplinary fields. Cameron and Panović (2014: 89) point out that weakened claims usually “signify an appropriate degree of caution or modesty” whereas strong claims “display the writer’s awareness of what is accepted by the community as established knowledge”. Wallwork (2011) has also noted that, rather than seeing them as contradictory skills, weakening and asserting research claims should be seen as complementary skills that should be employed where appropriate.

The present analysis reveals that in social science discourse communities, especially within the fields explored in this study, writers prefer more medium and weak epistemic forms to the very strong ones. It suggests that there is more effort by writers

to mitigate or soften the force backing their claims as they may be perceiving that knowledge sharing in these social science communities depends more on consensus building than on aggressive or forceful modes. Writers seem to be conscious and aware of the potential risk of their claims being opposed by other community members. Strong forms may only be used where authors are not only certain about a particular subject, but are also aware that it is no longer one that creates any doubt in the minds of discourse community members and other readers.

The overall distributional pattern of epistemic strength derived for the international discourse community writers is not quite similar with the pattern obtained for the Ghanaian writers, despite the already established fact that the Ghanaian writers used less EMs in all three disciplines. From Table 5.5 above we observe that there is a greater use of strong EMs (44.98) than weak ones (36.51) in the Ghana articles, while the highest incidences of EMs, as in the native articles, fall within the medium level (57.19). The observed differences between the three epistemic levels are all further shown to be statistically significant. Quite clearly, then, while the discourse community non-Ghanaian writers prefer the use of more weak EMs over strong ones, the picture which emerges for the Ghanaian writers is quite the opposite: they tend to use more strong forms than weak ones. From these figures, one can argue that generally there may be the need for the Ghanaian writers in these social science disciplines to attach more importance to (and use more of) all three epistemic levels. However, the use of more weak epistemic forms appears to be the most crucial and where a greater emphasis is required in order to meet international discourse community norms.

As regards the overall use of strong, medium and weak EMs across the three disciplines, some differences are noticeable, as Table 5.5 shows. Let us for a moment focus on the international community writers. For strong EMs, Sociologists used them (slightly) more (59.02) compared to Law scholars (58.18). However, both the Sociologists and Law scholars used strong EMs significantly more than Economists (54.66). With regard to weak EMs Lawyers tended to use them significantly more (85.92) than both Sociologists (74.50) and Economists (62.31), although the difference between these latter two professional groups of writers is also considerable. Medium level EMs are utilised the most by Economists (93.13) who use them significantly more than both Sociologists (76.13) and Law scholars (72.61).

It is hard to look at these overall occurrences of strong, medium and weak EMs and be able to say at first sight how their preferences help us establish a link with disciplinary knowledge. This might be more clearly established when we later look at these levels under the specific linguistic categories. Nevertheless one interesting point can be made here about the prevalence of weak EMs in the law articles produced by the discourse community native writers. The fact that Lawyers used weak EMs the most runs counter to the common perception that Lawyers, in their effort to advance convincing arguments, often tend to be authoritative, aggressive and confrontational (e.g., Wetlaufer, 1990). However, this perception may be true mainly in professional legal practice, especially within the context of a court room where practicing Lawyers act as counsel for their clients. Law scholars writing academic journal articles seem to position themselves differently. Although both case law presentations and academic law articles have as their main goal to argue and to persuade (Breeze, 2011), it would appear that writers of law articles choose more mitigating epistemic devices as a way

of meeting certain epistemological values of legal scholarship which, according to Wetlaufer (1990), include projecting a voice that is objective, consensual, neutral and impersonal within the community of legal scholars.

With regard to the figures representing the Ghanaian writers, while the distributional pattern of medium EMs is quite similar to that of the international writers, the patterns for strong and weak EMs appear quite different. For strong EMs, the Ghana Sociologists recorded significantly less uses (41.53) than both Economists (46. 68) and Lawyers (46.23) whose frequencies are nearly the same. As regards weak EMs while like the non-Ghanaian Law writers, the Ghanaian Law writers recorded the most uses (42.03) followed by Economists (38.66), and then Sociologists (28.04). In all, Table 5.5 presents a picture in which the distributional pattern of EMs across the three levels of epistemic strength is more for the two groups of Law writers than for their colleagues in Economics and Sociology.

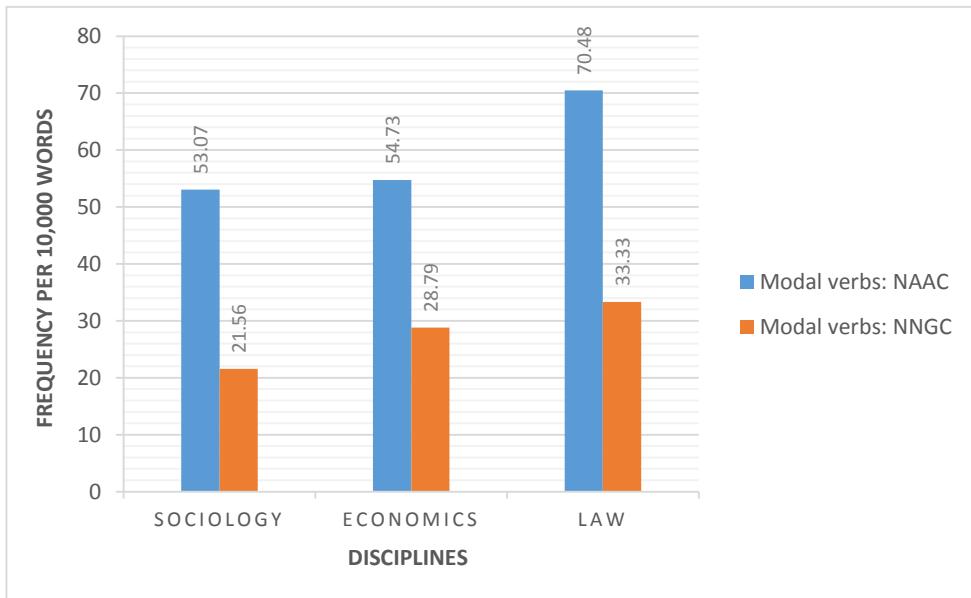
## 5.5 Epistemic Markers: Modal Verbs

Having summarised the overall distributional patterns of epistemic markers (EMs) in the two corpora, according to the five linguistic categories, and across the three levels of epistemic strength, I now turn to epistemic marking with specific reference to modal verb features.

### 5.5.1 Frequency of Epistemic Modal Verbs in the RAs

An examination of the overall incidence of epistemic modal verbs (hence, EMVs) in the RAs reveals a number of trends. First, as I have already noted, they are the second most frequently used epistemic devices in the RA corpora after lexical verbs. Figure 5.2 is a

breakdown of epistemic modal uses in both the Anglo-American and Ghanaian sub corpora across the three disciplinary fields.



**Figure 5.2:** Frequency of epistemic modal verbs (EMVs) in the two corpora

### 5.5.2 Variation across Disciplinary Fields

The occurrence of EMVs in the international community articles, as shown in figure 5.2, suggests a notable difference between the Law articles (70.48) on the one hand and both the Economics (54.73) and Sociology (53.07) articles on the other. While the log-likelihood tests carried out to compare the disciplines against one another as regards EMVs returned significant differences for Law vs. Economics (LL 35.14) and Law vs. Sociology (LL 43.28), the difference for Sociology vs. Economics (LL 0.38) turned out to be (statistically) not significant at the  $p<0.01$  level. It would appear, then, that at one independent end of the comparisons (i.e. Sociology vs. Economics), disciplinary variation is not affected by the use of modal verbs in the articles produced by the

discourse community native authors. However, this influence is most marked in the comparisons of Law vs. Economics and Law vs. Sociology.

The differential patterns of the use of EMVs by the international writers across the three disciplinary fields seem to correspond with the patterns of use by the Ghanaian writers, as here too, Law accounts for the highest uses of epistemic modals per 10, 000 words (33.33), followed by Economics (28.79) and then Sociology which records the lowest (21.56). However for the Ghanaian writers, the statistical tests carried out to determine whether the differences in the use of EMVs across the three disciplines were statistically significant or not revealed that while the differences for Law vs. Sociology (LL 37.50) and Economics vs. Sociology (LL 14. 46) are statistically significant, that for Law vs. Economics (LL 5.19) is not significant at the  $p<0.01$  level. The results here suggest that at two independent ends of the comparisons, the use of EMVs by the Ghanaian writers affects disciplinary variation. Thus while between the non-Ghanaian Economics and Sociology articles the difference in the use of EMVs is not wide enough to affect disciplinary variation, this difference between the two disciplines is quite marked in the Ghanaian articles, thus affecting disciplinary variation.

### *5.5.3 Similarities and Differences between Ghanaian and International Writers*

#### *5.5.3.1 Depth of epistemic modal verb (EMV) use*

Despite the considerable similarity in the distributional patterns of EMVs for the three disciplines between the two groups of scholars, the international writers of Law and Sociology, as we can see from Figure 5.2, used more than two times as many EMVs in their research claims compared with their Ghanaian colleagues in these fields. Besides, the international writers of Economics used nearly two times as many of this

grammatical form compared with the Ghanaian Economists. As Table 5.6 shows, the LL values suggest that, in terms of depth of use of EMVs, the differences between the two groups of authors in each discipline are marked and thus significant at the  $p<0.01$  level.

**Table 5.6:** LL values for EMVs between the two groups of writers

Discipline	Anglo-American writers	Ghanaian writers	LL-value	Significance level: $p<0.01$
Sociology	785	286	190.65	Sig.
Economics	815	420	120.58	Sig.
Law	1562	563	256.52	Sig.
Overall	3162	1269	587.69	Sig.

Thus for all three disciplines, EMVs were found to be used in much greater depth by the Anglo-American writers than their Ghanaian colleagues, a finding which quite clearly contributes to the general underuse of epistemic resources in the articles written by the Ghanaian authors.

#### *5.5.3.2 The commonly used epistemic modal verbs (EMVs)*

Tables 5.7 and 5.8 list the top five epistemic modal verbs used in the RAs written by the two groups of authors. Worthy of mention is the fact that such modal verb forms as *should* and *must* are generally infrequently used to express epistemic modality (Coates, 1983; Hoye, 1997; Collins, 2009). This is probably true of academic writing too. In the corpora of RAs examined, the majority of the uses of these modal forms were predominantly non-epistemic, often used to convey the sense of obligation/necessity, as in examples (1), (2) and (3) from Law, Economics and Sociology.

**Table 5.7:** Top five modals in NAAC

Anglo-American Authors			Ghanaian Authors		
Modal	Discipline	Epistemic occ. f/10,000	Modal	Discipline	Epistemic occ. f/10,000
<i>may</i>	Sociology	20.35	<i>may</i>	Sociology	5.73
	Economics	19.14		Economics	8.16
	Law	25.18		Law	10.54
<i>would</i>	Sociology	5.00	<i>will</i>	Sociology	5.43
	Economics	11.89		Economics	8.57
	Law	17.24		Law	8.05
<i>will</i>	Sociology	10.48	<i>would</i>	Sociology	5.73
	Economics	10.61		Economics	5.28
	Law	9.61		Law	9.35
<i>might</i>	Sociology	10.55	<i>could</i>	Economics	4.46
	Economics	4.63		Law	2.37
	Law	12.23		Sociology	1.36
<i>could</i>	Sociology	4.73	<i>might</i>	Economics	1.30
	Economics	6.18		Law	1.89
	Law	5.28			

**Table 5.8:** Top five modals in NNGC

- (1) Everyone agrees that some morally important issues should be settled by legislation. [LAW NA20]
- (2) In particular, the public good must be financed by a uniform head tax. [ECO NA08]
- (3) In thinking about menopause as a reproductive and aging experience, we must pay attention to structural and ideological shifts in US society. [SOC NA17]

Also, even though the contracted forms *won't*, *wouldn't*, *couldn't* and *shouldn't* were part of the epistemic resources examined in this study (because they have been listed as having epistemic value), they were conspicuously missing in the RAs explored here. But the nonoccurrence of these forms in the RA genre comes as no surprise as they are more likely to be used in conversational and spoken discourse rather than in written academic prose (Biber *et al.* 1999).

As Tables 5.7 and 5.8 show, the corpora of RAs examined revealed that the five most commonly used modal forms used to express epistemic modality are similar between the native and non-native authors although the frequencies in the use of these epistemic forms are radically different for the two groups of authors. In both sub-corpora of RAs, modal verb *may* is the most common epistemic resource, a finding which confirms its importance as a mitigating device for research claims in academic writing (Hyland, 1998a; Fløttum *et al.*, 2008). Fløttum *et al.* (2008: 28) actually note that “modal verb *may* is considered a typical and dominant marker of epistemic modality”. They go further to say that “by choosing epistemic *may*, the writer presents the content of his or her proposition as *possibly true*” (Ibid: 28).

But in the corpus data explored for this study, modal verb *may* exhibits subtle pragmatic differences within its general epistemic possibility (functional) use in these social science fields. The native Law articles, for instance, record the highest uses of modal verb *may* (25.18) and is used to express weakened prediction as in (4), speculate the cause of something as in (5) and interpret results of analysis as in (6).

- (4) International pressure may increase the danger of legislative inertia or non-responsiveness in the realization of socioeconomic rights. [LAW NA19]
- (5) The attraction of rights to public lawyers, and perhaps to theorists of law in general, may be due to their two-dimensional character. [LAW NA14]
- (6) That all but seven of the thirty-one developing states that have not become parties to the BWC over the last forty years have chosen to join the CWC regime since it was opened for signature in 1997 may reflect various calculations and assessments... [LAW NA01]

It must be established though that the overwhelming majority of the epistemic possibility uses of *may* in the Law articles relate to writers’ weakened prediction of what the outcome of an action, event or process might be, as illustrated in example (4).

Figure 5.3 is 20 randomly-selected concordance lines of this pragmatic use of *may* in the native Law articles. In fact, (5) is the only example of the 'speculation on a cause' use in the international Law articles whereas only 3 examples are noted of the 'interpretation of result' meaning. But the prevalence of the weakened prediction sense of epistemic possibility through modal *may* in the international Law articles is further testament that legal scholars demonstrate extreme caution in reporting claims.

The international Sociology and Economics writers also used modal verb *may* considerably, as can be seen from Table 5.7. In these fields too, the weakened prediction sense is predominant, but the 'interpretation of result' meaning seems more common in these fields than in Law.

N	Concordance	File
1	Further, a focus on any of these rights <i>may</i> produce significant disagreement	LAW NA19.txt
2	systems, extraordinary circumstances <i>may</i> occasionally warrant a	LAW NA02.txt
3	programs of action. These instruments <i>may</i> make it easier to press	LAW NA04.txt
4	of the spectrum, too high a threshold <i>may</i> leave a state at risk, especially	LAW NA03.txt
5	, it presents a problem that <i>may</i> impede efforts to strengthen the	LAW NA10.txt
6	fathers in prison about parenting <i>may</i> have a beneficial effect on their	LAW NA08.txt
7	be confusing since breaches of law <i>may</i> give rise to consequences that	LAW NA04.txt
8	threats and asymmetrical information <i>may</i> generate or enlarge incentives for	LAW NA01.txt
9	procedures, the requisite comparisons <i>may</i> fall prey to the will of majorities	LAW NA17.txt
10	in the employment context only. This <i>may</i> effectively coerce a claimant to	LAW NA15.txt
11	toward the judicial ideal. But opinions <i>may</i> differ on this last point.	LAW NA20.txt
12	experiences of mediation, therefore, <i>may</i> differ significantly according to	LAW NA07.txt
13	de Visscher that custom and treaties <i>may</i> create "objective" rules of	LAW NA04.txt
14	.207 In this regard, determinacy <i>may</i> contribute to improving the	LAW NA01.txt
15	, 1998). However, time spent in prison <i>may</i> also provide a suitable	LAW NA08.txt
16	how a pluralist constitutional ordering <i>may</i> allow for the coordination of the	LAW NA17.txt
17	have different institutional features that <i>may</i> alleviate, or worsen, particular	LAW NA19.txt
18	the need to protect intelligence assets, <i>may</i> adversely affect public reporting	LAW NA03.txt
19	homelessness, adopting one approach <i>may</i> advantage applicants in one case	LAW NA05.txt
20	fear that other states have achieved, or <i>may</i> achieve, significant technological	LAW NA01.txt

**Figure 5.3:** Sample concordance lines of the 'weakened prediction' sense of *may* in NES Law RAs

It occurs 19 times in the Sociology articles and 16 times in the Economics articles, as exemplified in (7) and (8)

- (7) These results may explain why, contrary to earlier impressions, there appears to be no relation between income distribution and summary measures of mortality across all ages among the countries covered by these data. [SOC NA08]
- (8) However, the central concern with the results in Table 1 is that the strong partial correlations between college entrance and civic behaviors may reflect the confounding influence of unobserved determinants of both schooling and civic engagement. [ECO NA16]

That the epistemic possibility of *may* used specifically to encode weakened prediction is the predominant and unmarked sense in the three disciplinary fields might be because these disciplines are all within the social sciences, and they tend to be more similar in the way the modal verb is used. We could see more diverging cases if we examined disciplines across the humanities, social sciences and natural sciences with respect to the epistemic uses of *may*. Also, perhaps the Sociology and Economics articles applied more of the ‘interpretation of result’ meaning than the Law articles because of the nature of their research data. Sociology and Economics tend to utilise more survey and experimental data whose outcome must invariably be directly interpreted by the analyst. It would seem that Law researchers engage more in content analysis, relying a lot on textual and observational data.

Let us now turn to modal verb *may* in the Ghanaian-authored articles in the three fields. As can be seen in Table 5.8 above, *may* is also the most frequently used EMV. However compared with the distributional pattern in the native articles, the pattern in the Ghanaian articles exhibits both similarities and differences across the disciplines. Like in the native articles, Law articles in the Ghana corpus record the highest uses of *may* with epistemic meaning (10.54). But unlike in the native articles where Sociologists used epistemic *may* slightly more than Economists, in the Ghana

articles there is a significantly greater occurrence of epistemic *may* in Economics articles (8.16) than the Sociology articles (5.73).

On the specific sub-meanings of epistemic *may*, the Ghanaian writers in all three disciplines, like their non-Ghanaian counterparts, also had the weakened prediction sense as the most dominant use. The ‘interpretation of result’ and ‘speculation on a cause’ meanings record low frequencies in the three disciplines especially in the Law articles where, while there is no example of the ‘interpretation of result’ sense, only one example of the ‘speculation on a cause’ meaning is observed, as shown in (9).

(9) In the light of the foregoing difficulties and injustices that may result from the extreme liberal approach to the party of autonomy, laissez fair and freedom of contract were attacked on grounds of monopoly problems ... [LAW GH8]

Furthermore, an interesting use which seems to be more common with the Ghanaian Economics writers relates to the use of epistemic *may* together with *be due to* as a way of expressing the ‘speculation on a cause’ meaning. While this phraseology occurs only once in the native Economics articles, it occurs 6 times in the Ghanaian Economics articles and is used by five different authors, as example (10) illustrates. Figure 5.4 is a screenshot of the 6 hits in the Ghanaian Economics articles.

(10) This is corroborated by the asset structure implying that MFIs in Ghana with a larger proportion of their assets representing fixed assets perform better in terms of both profitability and outreach. This may be due to the creation of branches across the nation and to furnish these offices with the needed equipment and logistics. [ECO GH7]

N	Concordance	File
1	authorities and the negative <b>influence</b> <b>may be due to</b> corruption on the part	ECOGH22.txt
2	of both profitability and outreach. <b>This</b> <b>may be due to</b> the creation of	ECOGH7.txt
3	on both profitability and outreach. <b>This</b> <b>may be due to</b> the simple reason that	ECOGH7.txt
4	returns would change by .03. <b>This</b> <b>may be due to</b> investor preference for	ECOGH4.txt
5	and investment in the short-run. <b>This</b> <b>may be due to</b> one or a combination	ECOGH3.txt
6	/NGOs in the water sector, <b>which</b> <b>may be due to</b> the high capital	ECOGH1.txt

Figure 5.4: screenshot of *may be due to* in Ghana Economics RAs

Given that this use of epistemic *may* occurred only once in the international discourse community articles written by Anglo-American authors, I decided to find out whether it is generally infrequent in academic prose. I therefore carried out a search on the word in the academic prose section of the British National Corpus (BNC). The analysis confirms that its rarity in the international Economics articles is a reflection of its infrequent use in academic discourse, even when epistemic *may* is generally predominant in this genre. Out of 35, 278 examples of modal verb *may* in this section of the BNC, only 76 (representing 0.22%) examples of *may be due to* are found.

With regards to modal verbs *will* and *would*, while both are known to be generally quite common in academic prose (Biber *et al.*, 1999), their overall frequencies, as seen in Table 5.7 above, suggest that the international writers in the three disciplines studied have a better preference for the more tentative form *would* to express epistemic modality compared with the stronger form *will*. It would seem that generally when writers use *would* in its epistemic sense, it portrays them to be more tactful and polite towards claims they make, as according to Collins (2009: 142,) the epistemic meaning of *would*, compared to *will*, “is less assured and forthright” and “is often used to reduce the [writer’s] level of confidence in the truth of the proposition”.

Sentences (11), (12) and (13) exemplify this tentative use of epistemic *would* by the international Law, Sociology and Economics scholars.

- (11) Setting international standards by reference to actual national practice would risk the adoption of very low targets. [LAW NA10]
- (12) One would imagine, for example, that the high figure for sociology is partly explained by the attraction of the subject to the politically inclined. [SOC NA11]
- (13) Less market power would lead to a smaller increase in the firm's price when there is a change in demand. [ECO NA20]

However, epistemic *will* expresses a prediction that is strong and more direct, and is used where writers have enormous confidence in the evidence and knowledge that warrants their claim. According to Collins (2009), the strength of epistemic *will* is comparable to that of *must*, which as I have already noted, is relatively uncommon in the social science fields explored in this present study. Typical examples of epistemic *will* in the RAs by the international writers are:

- (14) Modern sovereign bonds are atomized debt instruments: countries will often know neither the identities nor the nationalities of their bond holders. [LAW NA02]
- (15) This privatisation will be difficult to monitor as no official records are kept of private prescriptions. [SOC NA09]
- (16) The actual price change that results from this demand shift will also not be directly observable, but can be inferred for any given demand elasticity and supply change. [ECO NA04]

While epistemic *would* seems to be more preferred (compared to *will*) in the international community articles, the reverse, as Table 5.8 above shows, seems to be the case for the Ghanaian writers who tend to generally use *will* more than *would* for epistemic purposes. This finding further points to the idea that, despite their overall

underuse of epistemic resources, the Ghanaian social science authors are more inclined to choosing stronger epistemic devices to make research claims.

From the figures derived for modal verbs *might* and *could* in Tables 5.7 and 5.8, one can discern that these modal forms are relatively infrequent in these social science fields for both groups of authors. However, the overall occurrences of epistemic *might* and *could* differ between them. While it appears that the non-Ghanaian writers prefer the use of *might* more than *could* to express epistemic claims, the Ghanaian writers, on the other, tend to use *could* more than *might* for this purpose. But perhaps the low frequencies observed for these two epistemic modal verbs in these social science fields (compared to *may*, *would* and *will*) are not a surprising finding in view of the fact that epistemic *may*, whose epistemic value is similar to *might* and *could*, (Palmer, 1979; Coates, 1983) is an extremely common rhetorical device for these social science academic communities.

In terms of disciplinary variations in the use of the top five epistemic modal verbs, some interesting differences are noticeable, especially with *may*, *would* and *might*. If we consider, for example, *might* as a modal expressing epistemic possibility in the Sociology, Economics and Law articles written by the international community authors (see Table 5.7 above), we observe distributional differences in its use across the three disciplines. Per 10,000 words of running RA texts, *might* is highest in Law articles (12.23), followed by Sociology articles (10.55) which in turn use it more frequently than in Economics articles (4.63). Also, the frequency differences are statistically significant at the  $p<0.01$  when we look at Sociology vs. Economics (LL 35.13) and Economics vs. Law (LL 61.37), although the difference in respect of Sociology vs.

Law (LL 2.19) is not significant. However, if we consider the use of *might* by the Ghanaian writers across the disciplines at first glance, it appears to be equally distributed across the three disciplines, besides the fact that the frequencies are generally low. The on-the-surface frequency differences in the use of *might* between the Law articles (1.89), Sociology articles (1.36) and Economics articles (1.72) unsurprisingly turn out to be (statistically) not significant for each two-end comparison: Sociology vs. Economics (LL 0.02), Sociology vs. Law (LL 1.32) and Economics vs. Law (1.72).

With epistemic *will* and *could*, no clear distributional patterns across the three disciplines between the two groups of writers seem to have emerged, although if we consider *could*, for instance, its frequency is highest in Economics for both the non-Ghanaian writers (6.18) and the Ghanaian writers (4.46). However, whereas it occurs more frequently in non-Ghanaian Law articles (5.28) than in non-Ghanaian Sociology articles (4.73), the reverse is the case with the Ghanaian writers: Sociology articles (3.24) tend to use more of epistemic *could* than Law articles (2.37).

Overall when we examine the results of EMVs in the three disciplines of RA texts produced by the international discourse community writers, we can conclude that the Ghanaian writers based in Ghana are considerably aware of the most important modals often used for epistemic purposes to report research claims, given the range of epistemic modals used in their articles. The fact that the top five EMVs in the centre-based discourse community articles correspond to the top five used by the Ghanaian writers attests to this awareness. However, the evidence derived for the two groups of writers also strongly suggests that the Ghanaian writers in the three disciplinary fields

use these EMVs significantly less than would be suitable and expected in the respective international disciplinary communities.

### 5.6 Notable Lexical Co-occurrences of Epistemic Modals

The careful scrutiny of concordance lines of epistemic resources in this study also unexpectedly brought my attention to the occurrence of certain epistemic forms in the context of other lexical items in the RAs, resulting in interesting syntactic combinations that further revealed variations, especially between the two groups of writers. This further analysis accords with Gledhill's (2000) view that in specialised corpora (such as the RA texts being studied here), frequently occurring phraseological patterns offer insights which add to the defining characteristics of the language of such corpora. Unsurprisingly, it is mainly through corpus techniques that such phraseology (combination of lexical units) can be effectively uncovered. As Hunston and Francis (2000) and Römer (2009) have observed, meaning in language revolves more around recurrent phraseological units rather than individual lexical units, and corpus linguistics has offered massive insights to show this.

#### 5.6.1 *May + (Very) Well+ Main Verb/V*

An interesting phraseological pattern that epistemic modal *may* enters into in the articles produced by the native writers representing international discourse community norms is when it combines with the adverb *well* (with the possibility of the amplifier *very* preceding it) and the main verb. Ordinarily, as I have mentioned earlier, *may* in its epistemic sense generally expresses possibility and can have subtle pragmatic meaning differences. However, when the pattern *may + (very) well + V* is used, instead of the more simplified *may* followed by the main verb, the sense of epistemic modality

changes from one of possibility to probability, which in some way results also in the strengthening of the level of epistemicity (see, Coates, 1983; Hoye, 1997). Probability is epistemically stronger than possibility. Such specialised patterns may not be so usefully discussed quantitatively, but their discourse value is worth noting.

While in the international discourse community articles in all three disciplines, there are good examples of this use, as in examples (17), (18) and (19), not even a single example of this use occurred in the articles produced by the Ghanaian writers across the three disciplinary fields, although the same Ghanaian writers utilised *may* as the most frequent modal verb to express epistemic possibility.

- (17) ... or if some have more impact at the earlier stages than others do, conclusions based on current work may very well be mistaken. [SOC NA19]
- (18) The actions implemented may well involve lower levels actually carrying them out but this is not modelled. [ECO NA09]
- (19) ICSID jurisdiction may well extend to purely contractual disputes as long as the dispute arises directly out of an investment. [LAW NA02]

In the international Law articles, this pattern occurs 15 times (0.68), 8 times in the Sociology articles (0.54) and 1 example in the Economics articles (0.07). Figure 5.5 is a screenshot of the 15 examples observed in the international Law articles.

N	Concordance	File
1	adhere rigidly to a formalist approach <b>may well</b> threaten to undermine one of	LAW NA14.txt
2	. From a nation-state perspective, this <b>may well</b> seem a defect, although	LAW NA17.txt
3	again of the eggshell skull rule). This <b>may well</b> represent an explicit higher	LAW NA16.txt
4	directly as moral issues. Then we <b>may well</b> not think that courts are the	LAW NA20.txt
5	distinction that economic transactions <b>may well</b> "involve a fundamental public	LAW NA02.txt
6	bonds of varying intensity. These links <b>may well</b> include ethnic, religious,	LAW NA17.txt
7	from one another. Indeed, they <b>may well</b> have contributed to the	LAW NA07.txt
8	litigation under the Hague Convention <b>may well</b> have been avoided had the	LAW NA07.txt
9	contractual claims. ICSID jurisdiction <b>may well</b> extend to purely contractual	LAW NA02.txt
10	allowing legitimacy-based claims <b>may well</b> entail defeat, at least in the	LAW NA14.txt
11	objectives, a legitimacy-based system <b>may well</b> ensure greater overall	LAW NA14.txt
12	return proceedings in the first instance <b>may well</b> be discouraged from	LAW NA07.txt
13	. Under such circumstances, pluralism <b>may well</b> be better served by dividing	LAW NA17.txt
14	arise in moral life. Such presentation <b>may well</b> be artificial compared to	LAW NA20.txt
15	that this is not always the case. There <b>may very</b> well be a growing consensus	LAW NA11.txt

**Figure 5.5:** Screenshot of the *may + (very) well +V* pattern in NES Law RAs

I note also that modal verb *could* enters into a similar pattern, conveying a meaning almost equivalent to the pattern with *may*: epistemic probability. But there are only 6 examples of the use of modal *could* in this way in the entire corpus, and all 6 cases are in the Anglo-American Law articles, as exemplified in (20):

- (20) Willful refusal to abide by contractual obligations, abuse of government authority, and bad faith in the course of contractual performance could well lead to breach. [LAW NA02]

The complete absence of this epistemic pattern in the Ghanaian-authored articles (especially with modal verb *may*) may be bringing into focus the question of levels of sophistication in the use of certain epistemic forms. The fact that not even a single example occurred in any of the three disciplines of the Ghanaian articles is a strong signal to suggest a certain lack of awareness of the rhetorical effect of such an epistemic pattern in scholarly communication. This could be viewed in line with what Flowerdew (1999) considers to be the non-native speaker's inability to exploit a relatively wide range of expressions to construct certain meanings in English in a sophisticated manner.

### 5.6.2 Would + Seem + Complement (COMP)

Another visible pattern from the corpus data relates to modal verb *would* and its association with *seem* plus a complement which takes various forms. The use of *seem* in this pattern helps to stress the high level of diffidence, caution and modesty that characterises how academic writers position themselves when they are (confidently) uncertain about the evidence backing their argument or claim. This kind of positioning, while it helps writers to avoid personal responsibility for their uncertain claims, portrays them as “humble servants” (Hyland, 2001: 207) seeking agreement and acceptance from their peers in their respective discourse communities.

In the international articles, the pattern is found in all three disciplinary fields, occurring 11 times (0.74) in the Sociology RAs, 15 times (0.68) in the Law RAs and 2 times (0.13) in the Economics RAs. The complement in the sequence is mainly either a *that clause* or a *to-infinitive clause*, although it also rarely takes the structure of a *noun phrase* or an *adjective phrase*, as in examples (21)–(24). Figure 5.6 is the entire list of concordance lines of this epistemic pattern in the international Sociology articles.

- (21) Thus it would seem that a more relational approach is required to establish the flows and connections between the feeders of identity and cultural experience. [SOC NA13]
- (22) The main influences on prescribing behaviour would seem to be central government and local PCGs. [SOC NA09]
- (23) And at the moment occurs only upon the creation of a group character or common status strong enough to define a meaningful aspect of each individual member’s social identity. This would seem a rare occurrence. [LAW NA13]
- (24) Since the treaties and acts mentioned would also be likely to constitute breaches of UN Charter Article 103, it would seem unnecessary to resort to *jus cogens*. [LAW NA04]

N	Concordance	File
1	than they have so far. However it <b>would seem</b> likely that if PCGs fail to	SOC NA09.txt
2	(Mitchell et al, 2001: 231). Thus, it <b>would seem</b> that a more relational	SOC NA13.txt
3	curricula in particular subjects. Again it <b>would seem</b> that campus politicization	SOC NA11.txt
4	legal categorisation of medicines. It <b>would seem</b> that the potential for	SOC NA09.txt
5	the cost of medicines onto the user. It <b>would seem</b> that the rationale for	SOC NA09.txt
6	be remarkably similar to ego's face, it <b>would seem</b> that 'the clone' needs to	SOC NA07.txt
7	, although this distinction <b>would seem</b> to be a false one, since	SOC NA09.txt
8	influences on prescribing behaviour <b>would seem</b> to be central government	SOC NA09.txt
9	strong associations at younger ages <b>would seem</b> to explain the contrasting	SOC NA08.txt
10	associated 'disciplinarity' with a 'core' <b>would seem</b> to place me on the other	SOC NA06.txt
11	in parts of the EU already, then it <b>would seem</b> to be the most likely	SOC NA10.txt

**Figure 5.6:** Concordance lines for *would + seem + COMP* pattern in NES Sociology RAs

In the Ghanaian corpus, this epistemic pattern of *would* occurs in the Law articles 16 times (0.95). There is only 1 example in Sociology (0.08) and no example in the Economics articles. (25) is the Sociology example and (26) is one of the Law cases.

(25) Furthermore, it would seem that focusing on divine intervention to attain academic and financial success or secure a good job is the main preoccupation of the believer. [SOC GH4]

(26) The Lartey case would seem to have set the pace as a sequel to the decision of the Supreme Court v Shahin. [LAW GH16]

The pattern seems to be quite commonly used by the legal scholars on both sides (even higher with the Ghanaian writers), while it is not particularly utilised by Economists, occurring only twice in the native corpus and no hits in the Ghanaian corpus. The greatest disparity in the use of this pattern between the two groups lies in Sociology, where the number of instances is rather higher (0.74) in the international articles than in the Ghanaian articles (0.08). But generally, the evidence suggests that this is a pattern that is fairly known and used by the Ghanaian writers.

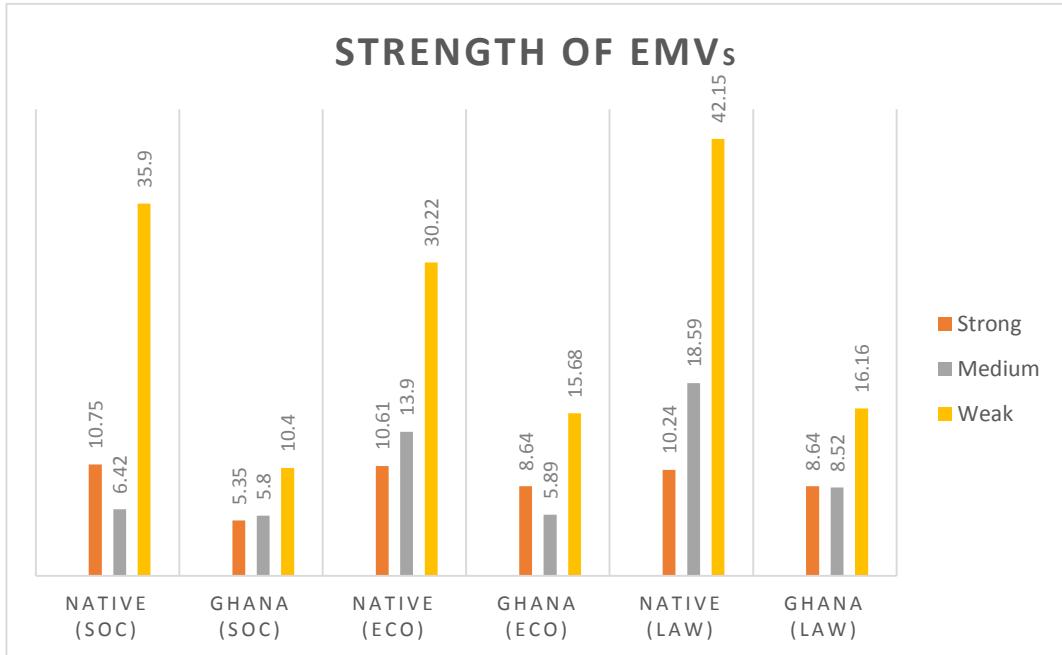
## 5.7 Epistemic Modal Verbs (EMVs): Strength of Epistemic Modality

This is the final section of this chapter and here I try to understand how, in terms of EMVs alone, weak, medium and strong levels of epistemic modality compare across the disciplinary fields and between the two groups of authors. Although I classify the epistemic modal forms that recorded hits in this study as expressing strong (*will, must*), medium (*would, should*) and weak (*may, could, might*) levels of epistemic modality (see Table 4.4), I was a lot more cautious in the actual analysis, as epistemic clustering altered the strengths of epistemicity slightly in some cases. I have already discussed in section 5.6.1 the case of *may* which typically expresses epistemic modality (a weak level), but which becomes stronger in the company of (*very*) *well* (a medium level). Another example is *will*, which in context alone expresses prediction (a strong level) but in the company of *perhaps* becomes more like probability (a medium level). Thus I was mindful of such nuances in classifying EMVs as expressing either a strong, medium or weak level of epistemic modality.

### 5.7.1 Disciplinary Variation

Considerable differences are observed in the way international discourse communities of Sociologists, Economists and Law scholars use EMVs for strong, medium and weak levels of epistemic modality in their RAs. Figure 5.7 below shows the frequency patterns of EMVs according to epistemic strength in the corpus under study. Clearly, in the international discourse community RAs weak EMVs are the most preferred in all the three disciplines and are used significantly more than medium and strong EMVs. Law records the highest frequency (42.15), followed by Sociology (35.90) and then

Economics (30.22). These high scores further stress the importance of the EMV forms *may*, *could* and *might* for weakening claims in RAs in these disciplines.



**Figure 5.7:** EMVs according to degrees of epistemic strength by the two groups of writers

Next, the medium level EMVs in the international Law articles are more frequent (18.59) than strong level EMVs (10.24). A similar pattern is observed in the international Economics articles, where medium level EMVs appear more frequently than (13.90) strong level EMVs (10.61). However, in the international Sociology articles an opposite trend emerges, where strong level EMVs are considerably more frequently used (10.75) than the medium level EMVs (6.42). A further observation is that the use of strong EMVs presents a more similar picture than difference in the native RAs, as their incidence is nearly the same in all the three social science fields. In fact, all of the differences in the distributional pattern between the disciplines turned out to be statistically insignificant at the  $p<0.01$  level.

For the Ghanaian writers, the frequency distribution of EMVs in terms of epistemic strength across the three disciplinary fields shows similarities and differences when compared to the figures obtained for the disciplines of the non-Ghanaian RAs. First, the weak level EMVs, like in the non-Ghanaian articles, are the most frequent in all three disciplines, with Law authors using them the most (16.16), followed by the Economists (15.68) and then the Sociologists who least number of weak level EMVs (10.40). The results suggest that while the non-Ghanaian Sociologists used weak EMVs significantly more than their Economics colleagues, the reverse is the case with the Ghanaian writers: the Ghanaian Economists used weak EMVs considerably more than their colleagues in Sociology. Also, while the non-Ghanaian Law scholars used weak EMVs significantly more frequently than their colleagues in Economics, the picture that emerges for the Ghanaian writers is different: the Law scholars used weak EMVs nearly in equal measure as the Economists, as the difference observed here proved insignificant.

As regards the use of medium and strong level EMVs by the Ghanaian writers, some disciplinary differences can be seen when compared with the frequency pattern in the international articles. For example from figure 5.7, we see that while medium EMVs are significantly more common than the strong EMVs in the international Law articles, these two level types are fairly equally used in the Ghanaian Law articles. Besides, while strong EMVs are significantly more common than medium EMVs in the international Sociology articles, the two level types are almost equally used in the Ghanaian Sociology articles.

### 5.7.2 Ghanaian vs. Anglo-American Writers

Overall as regards the levels of strength of EMVs, the most striking difference, in all three social science disciplines explored, between the Ghanaian writers and their Anglo-American counterparts lies with weak EMVs. Quite clearly, the findings point to a considerable underuse of these resources by the Ghanaian writers. From Figure 5.7, one can safely state that EMVs in particular contribute radically towards the generally low frequency of weak level epistemic modality found in the Ghana articles. It presupposes that the Ghanaian writers' use of modal verbs such as *may*, *could* and *might* for purposes of mitigating research claims need to be intensified in order to meet international discourse community expectations. While the medium and the strong epistemic modality levels between the two groups of writers are fairly matched, which seems a positive sign for the acceptance of the Ghanaian writers internationally, there may still be a need for the Ghanaian writers to use more of the modal verbs that help to achieve these levels of epistemic strength.

## 5.8 Conclusion

This chapter presented and discussed the findings of a) the overall use of epistemic markers (EMs) and b) the use of epistemic modal verbs (EMVs) in particular in the two corpora of RAs under study. The findings have offered insights into how Ghana-based English-speaking academics in the social sciences (Sociology, Economics and Law) utilise EMs generally and EMVs in particular to make research claims in RAs relative to the preferred practices in international discourse communities. The analysis reveals that in all three disciplines, EMs, the three levels of epistemic strength and EMVs in particular all tend to be far less used for rhetorical argumentation in the RAs authored by the

Ghanaian academics than would be expected in the centre-based international discourse communities.

With regard to the range of EMVs used the corpus evidence shows that the Ghanaian writers seem to be fairly aware of (and familiar with) most of the important EMVs used for rhetorical argumentation in their respective disciplines, using as wide a range of EMVs as their Anglo-American international colleagues. However, there is evidence to the effect that certain interesting qualitative EMV phraseological patterns that characterise international community practices are conspicuously missing in the articles produced by the Ghanaian writers. Also, disciplinary variations of EMV use are reported. Notably, the analysis reveals that while quite a number of the specific disciplinary distributional patterns of EMVs in the Ghanaian RAs do not conform to the patterns in the international community RAs, some do show similar patterns in the two sets of articles.

## CHAPTER 6 – EPISTEMIC MARKERS: LEXICAL VERBS

### 6.1 Introduction

The analysis carried out on epistemic lexical verbs (ELVs) in the two sub-corpora under study are reported and discussed in this chapter. Specifically, I look, both quantitatively and qualitatively, at how ELVs, notable ELV phraseological patterns, levels of strength of ELVs are used in the RAs produced by the two groups of writers across the three social science fields. As mentioned earlier (see 5.3), lexical (or main) verbs are the most commonly used lexical resources to mark epistemic modality in the corpora of RAs examined. My corpus analysis of ELVs was (slightly) different from the other linguistic categories in that, for each lexical verb, I had to extract from the corpus the various forms of the verb, as they all had both epistemic value and reflected the use of tense and aspect (e.g., BELIEVE – *believe, believes, believed, believing*; SUGGEST – *suggest, suggests, suggested, suggesting*). Thus this procedure was followed to ensure that I obtained accurate figures for the use of ELVs in the two sub-corpora.

### 6.2 Frequency of Epistemic Lexical Verbs (ELVs) in the RAs

One important issue I had to consider in analysing and counting genuine ELVs in my corpora of RAs related to: 1) writers using ELVs to make their own claim or proposition and 2) writers using ELVs to report on propositions made by other writers whom they cite. The second is still an unresolved matter in the literature. While Crompton (1997) thinks that this should not be seen as part of the writer's own use of epistemic modality, Varttala (1998) and Hyland and Milton (1997) think otherwise. For the present study, I did not follow Crompton's view. I included such instances where a writer used a lexical verb with epistemic value to report what another writer said as part of the incidence of

ELVs in my corpora, leaving out only cases which involved the writer directly quoting another. I took the view that a writer's own evaluation is usually active even when indirectly reporting a proposition by another writer, as exemplified with *suggest* in the following example taken from the Sociology part of the NAAC (SOC NA14) – 'However, Sylvia Walby (1997) *suggests* that some improvement for women is involved in the historical shift away from a private patriarchy ...'. So, the overall frequency of the use of ELVs between the two groups of writers for the three disciplinary fields is represented in Figure 6.1 below.

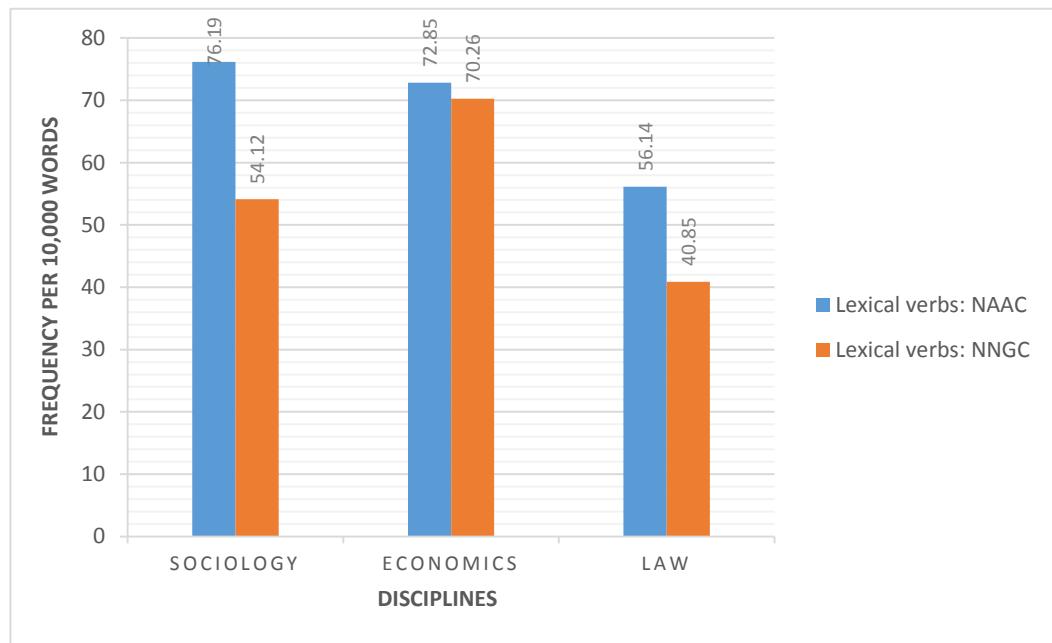


Figure 6.1: Frequency of ELVs in the two corpora per 10,000 words

The distribution of the use of ELVs in the RAs produced by the two groups of writers across the three fields offers some interesting trends and patterns. I shall now discuss the results, first in terms of disciplinary variation, and then second, by looking at the general quantitative and qualitative similarities and differences between the native

authors representing the international discourse communities and the locally-based non-native Ghanaian writers.

#### *6.2.1 Variation across Disciplinary Fields*

I begin with the patterns observed for the three disciplines of the international discourse community. As Figure 6.1 shows, the Anglo-American articles appear to use ELVs in varying degrees, with Sociology articles accounting for the highest instances of use per 10, 000 words (76.19), followed quite closely by Economics articles (72.85). The Law articles used the least amount of ELVs to make propositions (56.14). The statistical tests carried out for these observed differences between the disciplines indicate that while the difference in the incidence of ELVs between Sociology and Economics RAs is (statistically) not significantly at  $p<0.01$  level (1.11), the statistical difference between Sociology and Law RAs (54.71), and between Economics and Law (39.05) proves to be significant. Thus ELVs occur in both Sociology and Economics significantly more than they occur in Law. This implies that disciplinary variation has an influence on the use of ELVs at two independent ends of comparison (Sociology vs. Law and Economics vs. Law). However, at one independent end (Sociology vs. Economics) disciplinary variation does not seem to influence the use of ELVs.

This finding is interesting in that, as I have indicated earlier, lexical verbs and modal verbs are the two most commonly used epistemic resources for these fields in international discourse communities. It thus appears that while legal scholars have a considerably greater preference for EMVs than for ELVs, the opposite picture is apparent with Sociologists and Economists, who tend to use ELVs more than EMVs in their RAs.

The differential patterns in the use of ELVs across the three disciplines of the Ghanaian-authored articles are not entirely similar to those of the international discourse communities, as with this group, Economics accounts for the highest uses of ELVs per 10, 000 words (70.26), followed by Sociology (54.12) and then Law recording the lowest instances of ELVs (40.85). Statistically, these observed differences proved to be significant at the  $p<0.01$  level: (Sociology vs. Economics, LL 24.70; Sociology vs. Law, LL 27.80; Economics vs. Law, LL 124.16), indicating that along all three two-way independent comparisons, disciplinary variation appears to influence the use of ELVs in the articles written by the Ghanaian scholars. Thus between Sociology and Economics, while the amount of ELV use is similar in the Anglo-American RAs, it is different in the Ghanaian RAs. The results show that the Ghanaian Sociology scholars use far less ELVs in their articles than their other members of the discipline internationally.

### *6.2.2 Similarities and Differences between Ghanaian and International Writers*

#### *6.2.2.1 Depth of Epistemic Lexical Verb (ELV) Use*

Figure 6.1 shows the gap between the native writers and their Ghanaian counterparts in terms of the use of ELVs is not as marked as the gap between them in the use of EMVs. The Ghanaian writers seem to compare more with the native writers when it comes to ELVs in their respective articles, even though, again, in all three disciplines ELVs are more frequent in the articles written by the native speakers. As Table 6.1 shows, the overall difference in the use of ELVs between the two groups of writers is statistically significant. However, in terms of specific disciplines, whereas the Sociology and Law native authors use ELVs significantly more than their Ghanaian colleagues, the difference between the two groups of Economics authors is negligible.

**Table 6.1:** LL values for ELVs between the two groups of writers

Discipline	Anglo-American writers	Ghanaian writers	LL-value	Significance level: $p<0.01$
Sociology	1127	718	52.41	Sig.
Economics	1085	1025	0.70	Not Sig.
Law	1244	690	46.07	Sig.
Overall	3456	2433	59.91	Sig.

Thus from the findings, it is quite clear that the Ghanaian Economists are similar to their fellow writers in their international disciplinary communities in the extent of use of ELVs in Economics RAs. The Ghanaian Sociologists and legal scholars might still have to aim at deploying more ELVs in their RAs to meet the norms of international discourse communities.

#### *6.2.2.2 The Commonly Used Epistemic Lexical Verbs (ELVs)*

Table 6.2 displays the top 10 ELVs per 10, 000 words in the international disciplinary community articles written by the Anglo-American scholars, and Table 6.3 shows the top 10 ELVs by the Ghanaian authors. For both tables, the raw frequencies are in parenthesis. Although the group of lexical verbs that realise epistemic modality in this study are 30 in total (see Table 4.4), I discuss in detail here these top 10 ELVs because, for each of the three disciplines, they constitute more than 80% of all occurrences of ELVs in the data analysed. I focus first on the international discourse community articles produced by the Anglo-American authors. As Table 6.2 makes clear, the use of ELVs brings to the fore some notable similarities and differences across the three disciplinary fields. Some of the differences in particular allow for interesting linkages to be made between certain ELVs and the nature of disciplinary knowledge.

**Table 6.2:** Top 10 ELVs in the NAAC for the three disciplines

Anglo-American Authors		
Sociology	Economics	Law
suggest 11.63(172)	show 11.28(168)	suggest 8.26(183)
show 11.02(163)	suggest 10.14(151)	consider 7.45(165)
argue 8.38(124)	estimate 8.40(125)	seem 6.81(151)
seem 6.81(93)	assume 7.39(110)	argue 5.23(116)
expect 6.15(91)	expect 4.77(71)	appear 4.42(98)
tend 5.48(81)	consider 3.83(57)	think 4.06(90)
appear 5.21(77)	seem 3.63(54)	show 2.89(64)
indicate 4.46(66)	appear 3.36(50)	tend 2.40(53)
consider 2.70(40)	indicate 3.36(50)	assume 2.21(49)
think 2.37(35)	suppose 2.95(44)	indicate 1.94(43)

First, it would appear that *suggest* is an important epistemic device for the social science fields explored in this study, as it is the second most common ELV in Economics and the most common in both Sociology and Law. Hyland (2009: 12) has explained that in social science fields, verb forms such as *suggest* are often used for “writing activities”, and writers not only exploit these writing activity verbs to express their argument but also “to discursively explore issues while carrying a more evaluative element in reporting others’ work”.

**Table 6.3:** Top 10 ELVs in the NNGC for the three disciplines

Ghanaian Authors		
Sociology	Economics	Law
show 7.61(101)	show 15.01(219)	consider 6.51(110)
consider 5.73(76)	indicate 11.24(164)	argue 5.74(97)
indicate 5.58(74)	suggest 8.84(129)	seem 4.74(80)
argue 5.20(69)	estimate 8.09(118)	suggest 3.55(60)
suggest 3.47(46)	expect 4.11(60)	appear 3.37(57)
know 3.47(46)	consider 3.98(58)	show 2.90(49)
expect 3.24(43)	tend 3.22(47)	know 2.43(41)
tend 2.71(36)	argue 2.95(43)	indicate 2.37(40)
appear 2.56(34)	seem 2.81(41)	tend 1.07(18)
believe 2.41(32)	appear 2.74(40)	expect 1.01(17)

According to Pérez-Llantada (2010: 26), ELV forms like *suggest*, *assume*, *believe*, *consider*, *know*, *predict*, *think*, *speculate*, etc. are used by writers to “express opinions and mark the mode of knowing through confidence or degree of commitment”. Here are examples of the use of *suggest* as an ELV in the NAAC:

- (1) Lauer and Boardman (1971) suggested that reflexivity and identification are necessary but insufficient conditions of this more sensitive, “synesic” role-taking. [SOC NA15]
- (2) These results suggest that price increases accompanying model substitutions should be treated as quality improvements because substitutions do not reduce market share. [ECO NA05]
- (3) This statement suggests that obligations erga omnes have specific and broad procedural consequences because of the substantive importance of the norms they enunciate. [LAW NA04]

As can be seen from Table 6.2, the epistemic verb *show* is also crucial in Economics and Sociology, although not as important an epistemic resource in Law. *Show* is the most frequently used ELV in the Economics articles and the second most frequent in Sociology. It finds itself, however, in the seventh position in the Law articles. The explanation for the predominance of ELV *show* in Economics and Sociology over Law articles could be attributed to the way analyses and results of research are presented in these disciplinary fields. Economics in particular, and Sociology to a considerable extent, has a strong preference for verbs like *show* to represent research itself, as is typical with many natural science fields, where research findings are often presented in an objective, impersonal manner. According to Hyland (2009: 12), ELVs like *show* in academic writing “represent real world actions”. This can be seen in several of the concordance lines where epistemic verb *show* is preceded by nominal subjects such as *table, figure, graphs, study, results, findings, evidence, papers*, etc., all of which directly report aspects of the research itself, as in examples (4) and (5) in Economics and (6) in Sociology.

- (4) Overall, Table IV shows that the estimated increases in land improvement are robust, whereas increases in land settlement are less robust to some specifications. [ECO NA06]
- (5) Figure I shows that most of the growth in institutional ownership was driven by increases in the holdings of the largest managers. [ECO NA04]
- (6) First, our findings show that Levi-Strauss’s (1969) prediction of greater solidarity in generalized exchange holds even when tested under conditions that abstract the structure of direct and indirect reciprocity from the rich context in which Levi-Strauss originally established his thesis. [SOC NA02]

Figure 6.2 is a screenshot of 20 concordance lines from the Economics articles in the NAAC, illustrating how ELV *show* co-occurs with such nominal subjects. *Show* is one of

a group of reporting verbs referred to in the literature as evidential ELVs (Hyland, 1998; Pérez-Llantada, 2010). As Pérez-Llantada (2010: 26) notes, ELVs such as *show* “indicate writers’ commitment on the basis of evidence or perceptions of unproven facts”.

In the international Law articles, this nominal pattern associated with ELV *show* is very rare. In fact, none of the noun forms as subject in the Economics articles, as shown in Figure 6.2, is found with ELV *show* in the 64 examples recorded for the Law articles. Instead, in the Law articles ELV *show* occurs more in contexts where writers make personal, evaluative claims, as in (7) and (8).

- (7) Such provisions and their cognates could also presumably be used to implement regimes of terror. This shows only that Judge Dread-type provisions are instrumentally connected to illiberality and domination rather than being the source of these vices. [LAW NA16]
- (8) The exploration of rights has shown that men may be disadvantaged by not being allowed to establish contact in the first place and that direct contact rights are highly gendered in a penal context. [LAW NA08]

It would appear, then, that while Economists and Sociologists commonly use the ELV *show* to construct knowledge as a product of an objective, empirical and impersonal research activity and procedure, legal scholars use it more to “represent knowledge as proceeding from ... the interpretations of researchers” (Hyland, 2010: 12).

N	Concordance	File
1	while out of the labour force. Table 1 shows that this broader measure of	ECO NA01.txt
2	the form of infections avoided. Table 4 shows that a focus on prevention in	ECO NA14.txt
3	of aggregation and Tables 8 and 9 show that it is robust to a between	ECO NA17.txt
4	of these kinds. Our results clearly show that job seekers from a	ECO NA03.txt
5	stocks as everyone else? The evidence shows that institutions have different	ECO NA04.txt
6	in the scatterplot. The graphs show that the cross-country	ECO NA12.txt
7	, and the whole 13F sample. Figure 1 shows that most of the growth in	ECO NA04.txt
8	the price increases. && Table II showed that forced substitutions for	ECO NA05.txt
9	woodland group and decade. Figure IV shows that medium- and	ECO NA06.txt
10	any railroad track.45 Overall, Table IV shows that the estimated increases in	ECO NA06.txt
11	below some critical level. The paper showed that the incumbent may react	ECO NA18.txt
12	of workers at each level. The paper shows that the span of control rises	ECO NA09.txt
13	to increased resource use. This result shows some of the inefficiencies that	ECO NA18.txt
14	1 and 3 in Table 4). The results show that, in the majority of countries	ECO NA02.txt
15	prices and returns. Regression results show that the level of institutional	ECO NA04.txt
16	the average coefficient. The results show a strong and consistent	ECO NA04.txt
17	non-marketed output. The results show that whether the respondent's	ECO NA02.txt
18	expenditure by category. This study shows that their results are replicated	ECO NA17.txt
19	from multi-store operation. The table shows, however, that results only	ECO NA10.txt
20	. Overall, the evidence in Table V shows that the level of institutional	ECO NA04.txt

Figure 6.2: Typical subject position nouns co-occurring with *show* in NES Economics RAs

A further point of note on these top 10 ELVs in the articles produced by the Anglo-American writers is in relation to the use of *estimate* and *assume*. Clearly, these ELVs are typical in Economics RAs, occurring as the third and fourth most frequent ELVs respectively, but are not in Sociology and Law RAs. As figure 6.2 shows, while both do not feature in the top 10 list of ELVs in Sociology, only *assume* appears in the Law articles list, but appearing only in the ninth position. Again, one can explain this relatively high use of ELVs *estimate* and *assume* in Economics RAs as a representation of the nature of the disciplinary knowledge. Although a social science field, Economics tends to rely heavily on mathematical models and theorems as basis for the knowledge claims it makes. As Dahl (2009: 384) notes, “In economics, the validity of the claim ... is typically set forth with a basis in the output of a mathematical model”. As a result, it is common for Economics writers to make a lot of assumptions, estimations and hypotheses which are reflected in the considerable use of such ELVs as *estimate* and *assume*. Here are examples in the Economics subsection of the NAAC:

(9) I examine this possibility by estimating how the effects of stricter child-labor laws varied across respondents with low and high levels of parental education. [ECO NA16]

(10) The paper estimates a structural model in which the existence of stockout probabilities and fixed inventory ordering costs predicts periods of price reduction after an order is placed. [ECO NA10]

(11) Equation (8) is estimated for the natural log of land value, per acre. [ECO NA06]

(12) The formulation also assumes that the speed at which tasks are processed is independent of the number of workers on a level. [ECO NA09]

(13) This assumes that the unemployed want to work the same hours per week as the employed within the same cell. [ECO NA01]

Other more general points of note on the top 10 ELVs by the Anglo-American writers across the three disciplines include the use of *consider*, another speculative ELV according to Pérez-Llantada (2010). While *consider* appears a very important epistemic resource for legal scholars, taking the second position (7.45) on the list, it is relatively uncommon in Economics and Sociology RAs, occurring with low frequencies at sixth position in Economics RAs (3.83) and ninth position in Sociology RAs (2.70). Example (14) is a typical use of ELV *consider* in the non-Ghanaian Law articles.

(14) These rules represent fundamental values such that violations are considered to stock the conscience of human kind; they therefore bind the international community as a whole ... [LAW NA04]

Finally, here, the patterns for the ELVs *argue*, *seem* and *appear* in the NAAC deserve comment. These three verbs are all notable examples of evidential ELVs (Hyland, 1998; Pérez-Llantada, 2010), although *argue* is a lot stronger in its epistemic value than both *seem* and *appear*. We see from Table 6.2 that *argue* as an ELV is quite important in Sociology (8.38) and Law (5.23), positioning third and fourth respectively. In the Economics articles, *argue* does not appear as one of the top 10 ELVs but in the

complete list of ELVs it records a frequency of (2.89) per 10, 000 words. Thus disciplinary differences in the frequency of *argue* is apparent, occurring considerably more in Sociology than in both Law and Economics, while Law also uses it significantly more than Economics. (15), (16) and (17) are examples in the disciplines.

(15) In effect, I argue that contemporary studies of male sexuality are at least as pragmatist as symbolic interactionism. [SOC NA15]

(16) I have argued that legal rights may constitute social groups, but what of community? [LAW NA13]

(17) We argue that this is a very accurate characterisation of the youth labour market, ... [ECO NA03]

ELVs *seem* and *appear*, as seen in Table 6.2, are fairly important rhetorical resources in all three disciplines. They appear, however, to be utilised more by legal scholars and Sociologists than by Economists. That these ELVs, which writers often use strategically to mark their tentativeness and noncommittal attitude towards their claims, are less frequent in Economics articles further strengthen the view that Economists tend to report research more directly and confidently due to the application of pure science (mathematical) models, thereby relying less on ELVs like *seem* and *appear*. Even so, these ELVs are still used by Economists where necessary. I would say, therefore, that social scientists generally find ELVs *seem* and *appear* as useful mitigating resources for reporting research claims in RAs.

I turn now to the top 10 ELVs used in the Ghanaian-authored articles in these fields to see how they compare with the patterns of use in the international discourse community ones. As Table 6.3 makes clear, the range of ELV resources appearing in the top ten in the Ghanaian RAs is very similar to those in the centre-based articles,

although generally their frequencies tend to be lower. A good example can be seen in the use of *seem*, which occurs as the third most frequently used ELV in the Law RAs for both groups of writers. However, it is still more prevalent in the Anglo-American Law articles (6.81) than in the Ghanaian ones (4.74). An interesting exception, though, lies with *show*, which happens to be the most frequent ELV in Economics RAs by both groups of writers. However, its instances in the Ghana Economics RAs are considerably higher (15.01) than in the RAs authored by the native speakers (11.28).

While it is good that the Ghanaian authors in Economics demonstrate awareness of the importance of ELV *show* in reporting research claims, in the eyes of the international community of Economists, they might just be overly utilising this epistemic device. The seeming overuse of ELV *show* by the Ghanaian authors is immediately striking when we look at its co-occurrence with the head noun *results* in subject position. This pattern alone occurs 25 times in the Ghanaian Economics RAs, whereas there are only 6 examples in the native Economics RAs. Figure 6.3 is a screenshot of the 25 concordance lines of this pattern (e.g., these *results show* that ....) in the Economics articles written by the Ghanaian scholars.

N	Concordance	File
1	procedure. Our result (table 3) shows that in the short run the overall	ECOGH22.txt
2	consumption), the results from Table 8 show an improvement in welfare for all	ECOGH9.txt
3	prices. The results of the VECM also show that the first lag of exchange	ECOGH4.txt
4	1966-2003. The short run results also show that the total tax system and	ECOGH22.txt
5	than triple. However, the results also showed that despite the increase in oil	ECOGH11.txt
6	less than unity. && The result also show that in the short run, GDP in	ECOGH22.txt
7	Confirming other studies, the result shows that for effective performance of	ECOGH7.txt
8	AND RECOMMENDATIONS Our result shows that in the short run the overall	ECOGH22.txt
9	(1969) definition of causality. Result show that there exist a unidirectional	ECOGH6.txt
10	are presented in Table 3. These results show that the variables, LEIRATIO,	ECOGH10.txt
11	of the model (Table 2.3). The results show that the only significant variable	ECOGH18.txt
12	using regression analysis the results show that there is not strong	ECOGH14.txt
13	the economy. For example, the results show that the project has the potential	ECOGH11.txt
14	is roughly as expected. The results show, for example, that the actual	ECOGH18.txt
15	on the Kendrick index. The results show that TFFPG during the period of	ECOGH14.txt
16	guide for risk management. The results show also that the relationship	ECOGH4.txt
17	. Based on the ADF test, the results show that while the variables are	ECOGH10.txt
18	the governance variables. The results show that the size of the board is	ECOGH7.txt
19	, performance is worse. The results show that CEO duality has negative	ECOGH7.txt
20	two variables. OLS regression results show that a percentage growth in GDP	ECOGH6.txt
21	over 30 years. The regression results show further that board size is	ECOGH7.txt
22	energy consumption. However, if results show that equation 8 holds true but	ECOGH6.txt
23	other things. The results of the study showed that total factor productivity	ECOGH14.txt
24	the variables. The results of the VECM show that the difference of GSE index,	ECOGH4.txt
25	(1995). Results of this empirical work showed that there exist a long-run	ECOGH6.txt

Figure 6.3: Uses of ELV *show* with *result* as subject in Ghana Economics RAs

Also from the corpus analysis as seen in Table 6.3, ELV *suggest*, which clearly makes a strong presence in the centre-based articles in all three disciplines, seems to be less preferred and used by the Ghanaian writers. The difference in the use of ELV *suggest* between the two groups of writers is particularly wide in the disciplines of Sociology and Law, where the Ghanaian writers make far less use of the device. The Ghanaian Economists compare more with their native English-speaking counterparts in the use of ELV *suggest*, as the difference between them is not great. I would argue, then, that the Ghanaian Sociologists and legal scholars (especially) would probably be more effective if they deploy more of this apparently important speculative ELV when they write articles for centre-based international journals.

Another interesting observation to make relates to the ELV *consider* which has both points of similarity and difference when the two groups of writers in the three disciplines are compared. Obviously, like their NES colleagues who use *consider* 7.45 times per 10,000 words, the Ghanaian legal scholars regard it a priority ELV as it records

the highest frequency (6.51) on the top ten list. And while we can observe a slight difference in the use of ELV *consider* by the two groups of legal scholars, this difference proves to be (statistically) not significant (LL 1.19) at the  $p<0.01$  level. Thus the Ghanaian legal scholars use ELV *consider* in nearly equally to their NES colleagues. A similar scenario can be seen in the Economics RAs by the two groups of writers from Tables 6.2 and 6.3. *Consider*, though less preferred in Economics than in Law, occurs in sixth position on the top ten list of ELVs for both groups of Economics authors, achieving almost the same frequencies of occurrence (3.83 in NAAC and 3.98 in NNGC).

As can be seen in Tables 6.2 and 6.3, it is Sociology that presents a radical difference in the use of ELV *consider* between the two groups of writers. While the NES Sociology researchers do not exploit it much (occurring in ninth position with a relatively low frequency (2.70)), their Ghanaian colleagues give it considerable priority in their RAs, as it records a significantly higher frequency (5.73) in second place on the top 10 list of ELVs. Thus from the corpus analysis, while the extent of use of epistemic *consider* is similar for both groups of writers in Economics and Law, a strong difference is seen in Sociology, where the Ghanaian authors use it much more than the non-Ghanaians studied.

Another ELV that reveals patterns of similarity and divergence between the two groups of writers in the three disciplines is *indicate*. ELV *indicate* is classified among the group of ELVs used to make deductive inferences from established or known facts (Pérez-Llantada, 2010). As Tables 6.2 and 6.3 show, *indicate* is one of the top 10 ELVs used by both groups of writers in all three fields. But in the discourse community articles ELV *indicate* records relatively low frequencies for Law (1.94), Economics (3.36),

Sociology (4.46) and is down in the rankings at number ten, nine and eight respectively. This suggests that it is not a strongly preferred epistemic resource in these international disciplinary communities.

Looking at *indicate* in the Ghanaian RAs, one can immediately observe that the Ghanaian legal scholars use it just as much as their NES colleagues, recording a slightly higher frequency (2.37). However, the Ghanaian Economists and Sociologists use it far more than their NES colleagues. The disparity is particularly huge in Economics, where *indicate* is the second most common ELV used by the Ghanaian writers, occurring 11.24 times per 10, 000 words as against the much lower rate of 3.36 for the native writers. So this might be another ELV being overly exploited by the Ghanaian authors, with the overuse being particularly strong with the Economics authors.

Again, we have seen the crucial role ELVs *estimate* and *assume* play in centre-based Economics RAs, as their pervasiveness seems to be a reflection of the disciplinary knowledge. The Ghanaian writers on Economics show considerable awareness on this with particular reference to the use of *estimate*. So its rate of occurrence in the Ghanaian Economics RAs (8.09) is almost exactly the same as that of the native writers (8.40). However surprisingly, *assume* is conspicuously missing in the list of the top ten most frequent ELVs used by the Ghanaian writers on Economics. It actually only appears in the eleventh position in the overall list of ELVs and scores a relatively low frequency of 2.60. Thus the cases of ELV *assume* in the Economics RAs by the Ghanaian authors are significantly fewer than its rate of occurrence in the international community of Economics RA writers.

Furthermore, as seen from Tables 6.2 and 6.3, the ELVs *argue*, *seem* and *appear* also show both similarity and difference between the two groups of writers. The use of ELV *argue* is fairly matched between Ghanaian and native writers in all of the three disciplines. Although it is not among the ten most frequent ELVs for the native Economics RAs, its frequency (2.89) suggests that it occurs almost as much as it is used by the Ghanaian Economists (2.95). As regards ELVs *seem*, its rate of occurrence in the Ghanaian Sociology RAs (1.73 – outside top ten) clearly marks significantly less use. The analysis also shows that while ELV *seem* occurs quite considerably in the Ghanaian Law RAs (4.74), it is still statistically less frequent when compared to its rate of occurrence in the international Law RAs (6.81), the difference in its use between the two groups of legal scholars being significant at the  $p<0.01$  level. The Ghanaian writers on Economics and their colleagues from outside Ghana, however, were far more identical in the use of ELV *seem*. Although it occurred slightly less in the Ghana Economics RAs (2.81) than the international ones (3.63), the difference proved statistically marginal. For *appear*, the corpus analysis shows it to be among the top 10 ELVs used by the Ghanaian writers in all three disciplines, yet it is less frequent when compared to its incidence in the native RAs for each discipline. But while the difference in the use of ELV *appear* between the two groups of Economists and legal scholars is not substantial and therefore not significant, the difference between the two groups of Sociologists is quite marked. The Ghanaian Sociologists employ ELV *appear* significantly less than would probably be expected within the international community of Sociologists.

On the whole, the corpus analysis reveals that the range and diversity of ELVs used in the RAs of the three fields is largely similar between the Ghanaian writers and their international discourse community mates, which indicates that these non-native

writers demonstrate considerable awareness of the range of notable ELVs suitable in international publication. Where the Ghanaian writers show signs of the need to improve and be more effective as regards ELVs relates to achieving an appropriate balance in the depth of use of these epistemic lexical resources to communicate research claims. In many instances across these fields, they have tended to use significantly fewer ELVs (e.g., *suggest* in all three fields, *seem* in Sociology and Law, *assume* in Economics) than would be suitable in international discourse communities. To a much lesser extent, they have also tended to significantly overuse certain ELVs (e.g., *show* in Economics, *consider* in Sociology).

### 6.3 Typical Phraseological Patterns of Core ELVs in the RAs

A further detailed qualitative analysis carried out involves common phraseological patterns associated with the very commonly used ELVs in the RAs produced by the two groups of writers. I specifically looked at the case of ELVs *suggest*, *show* and *argue*. I focus on these ELVs because the concordance analysis highlights them as exhibiting certain clausal patterns that have implications for disciplinary variation. So I examine the clausal patterns of these ELVs in the native RAs and then study how the Ghana ones compare to them. Patterns of reporting ELVs are important in that they determine clausal structure, essentially triggering what follows the reporting ELV, and also selecting a preferred grammatical subject that precedes the ELV.

The main pattern observed in the corpora of RAs for these reporting ELVs takes the structure of *a grammatical subject + ELV + a that-complement clause*, with or without intervening elements, as in (18), (19) and (20) from the three fields.

- (18) Theoretical work in political science suggests that political organizations will have little impact when public opinion is taken into account, ... [SOC NA19]
- (19) It was shown that under some conditions as delay becomes more important, abler workers tend to be employed with fewer levels in the hierarchy. [ECO NA09]
- (20) Whereas both Fedax and CSOB depend on special considerations, I argue below that both cases were wrongly decided for a more fundamental reason. [LAW NA02]

Following Charles (2006: 313), I distinguished three main grammatical subject types for this reporting clause pattern, and then looked at their frequency distributions in the clause pattern of *a grammatical subject + ELV suggest/show/argue + that-complement clause* across the three disciplines. These are: a) NP with a human reference, as in (20); b) NP with a non-human reference, as in (18); and c) Introductory *it* followed by a passive construction, as in (19). Biber *et al.* (1999: 372), making a more general claim about academic prose, note that when verbs such as *suggest*, *show* and *argue* are used to report communication activities, “they are often attributed to some inanimate entity as subject of the verb”. It would be interesting to see the types of grammatical subject that commonly occur with these reporting ELVs in the above clausal pattern in the specific academic fields explored here.

### 6.3.1 Grammatical Subject (NP) + ELV Suggest + That-Complement Clause

Table 6.4 shows the frequency per 10, 000 words (raw scores in parenthesis) of the three subject types that co-occur with ELV *suggest* and followed by a that-complement clause in the international RAs across the three disciplinary fields. One can see from the table that, for this pattern, ELV *suggest* seems to have a strong co-occurrence with a non-human NP subject, especially in the disciplines of Economics and Sociology where

the difference between this clause type and the other two (human NP subject and introductory *it* in passive construction) is considerably marked. However, in the Law articles while the non-human NP subject is the most frequent, it is far less marked when compared to the other clause types.

**Table 6.4:** Frequency of clause types for the *subject + suggest + That-clause* pattern in NAAC

Clause pattern type	Sociology	Economics	Law
Human NP subject	2.03(30)	1.01(15)	1.85(41)
Non-human NP subject	6.15(91)	6.51(97)	2.80(62)
<i>It</i> with passive	0.41(6)	0.07(1)	0.23(5)

It is also clear that in all three disciplines, the human subject clause type is relatively more important for writers than the passive construction introduced by *it* which is rarely used in these social science disciplines.

The disparity in the distributional patterns for these clause types (especially on the predominance of the non-human subject cause type in Economics and Sociology, and considerably less of it in Law) could be explained in terms of how they reflect disciplinary knowledge construction. Social science subjects, (Economics in particular and Sociology to a great extent) tend to model their knowledge construction practice along the lines of the natural science fields, where being impersonal, objective, and reducing researcher presence to the barest level possible is a priority. So to exhibit these impersonal and objective characteristics, Economists and Sociologists, more than legal scholars, commonly use in subject position non-human nouns like *research, result, evidence, data*, etc., as in (21) and (22).

(21) These results suggest that land protection plays an important role in facilitating agricultural development. [ECO NA06]

(22) All the evidence suggests, however, that sociology is not a strong, coherent discipline and that its strength and coherence has been declining. [SOC NA06]

Legal scholars tend to use the non-human NP subject less, and it occurs only slightly higher in their articles than the human NP subject probably because in legal scholarly writing, as Wetlaufer (1990: 1568) notes, objective truth may be “buttressed by sometimes awesome claims of authority” that are derived either through the author’s own voice or through other qualified experts the author cites. This seems to find support in the use of the personal pronoun *I* as subject, which occurs relatively more commonly in the pattern containing a that-clause complement in the Law RAs, as in (23) and (24).

(23) I suggest that these qualities – a preoccupation with authority and the partly self-referential nature of the inquiry – are defining characteristics of judicial review. [LAW NA14]

(24) I suggest that a more rewarding way to proceed is to work with a hypothesis of differential politicization. [LAW NA05]

Such examples underline the importance of personal voice in legal scholarly discourse. Although, as Hyland (2001) points out, authorial presence (or personal voice) is very common in social science fields generally, it seems to be more preferred in some disciplines than others (as in the present case where it is used more in Law than in both Economics and Sociology). This is true also with other reporting verbs such as *argue*, which will be discussed shortly.

I turn now to look at this clause pattern involving ELV *suggest* in the Ghanaian-authored articles across the disciplines for potential areas of similarity and/or

difference. Table 6.5 shows the number of occurrences of the three types of NP in subject position co-occurring with *suggest* and a that-complement clause in the Ghana RAs.

**Table 6.5:** Frequency of clause types for the *subject + suggest + That-clause* pattern in NNGC

Clause pattern type	Sociology	Economics	Law
Human NP subject	0.53(7)	1.23(18)	0.89(15)
Non-human NP subject	1.88(25)	5.41(99)	1.07(18)
<i>It</i> with passive	0.00(0)	0.14(2)	0.53(9)

A careful look at the distribution of ELV *suggest* in this phraseological pattern in the RAs written by the Ghanaian scholars underscores a number similarities between them and their international community colleagues. First it seems clear that, for both groups of writers, the *it* with passive construction is the least preferred subject type for this clause pattern in all the three disciplines.

Second, the knowledge production process that called for a radically greater use of non-human NP subjects than human ones in the NES Economics RAs is made manifest in the Ghanaian-authored Economics RAs, where also non-human NP subjects occur significantly more frequently than human NP subjects. Also, as in the NES articles, noun forms like *result*, *data*, *evidence*, *research*, etc., are commonly used as headword of the non-human NPs in subject position in the Economics RAs by the Ghanaian writers. For example, Figure 6.4 illustrates the cases of *evidence* found in the concordance lines for this pattern, and indeed more of such uses are noted with other lexical verbs.

N	Concordance	File
1	the aid-growth relationship The evidence <b>suggests that</b> aid and growth are	ECOGH15.txt
2	literature. The empirical evidence <b>suggests that</b> industrial technologies	ECOGH10.txt
3	expected returns. Their evidence <b>suggests that</b> consumption, oil prices	ECOGH4.txt
4	that conservative empirical evidence <b>suggests that</b> aid prices are	ECOGH16.txt
5	economic policies. Existing evidence <b>suggests that</b> among African countries	ECOGH18.txt

**Figure 6.4:** Concordance lines for *suggest* co-occurring with *evidence* in subject position in the Ghana Economics RAs

Another area of similarity between the two groups of writers involves the pattern *subject + suggest + that-clause* in the Law articles. We have seen from the corpus evidence in the NES RAs that, compared with Economics and Sociology, Law generally uses fewer non-human NP subjects in this pattern, but also its incidences are only slightly higher than the human NP subjects. As Table 6.5 makes clear, the story is fairly similar with the Ghanaian legal scholars too, who tend to use both subject types much less and in a fairly balanced way.

It is in Sociology RAs where the use of this phraseological pattern is radically different between the two groups of writers. Like their NES Economics colleagues, the NES Sociologists used the non-human NP subject type considerably more than the human type to mark disciplinary knowledge. In contrast, the non-human pattern is far less utilised in the Sociology RAs produced by the Ghanaian writers, so that the difference between the two types of subject is not as wide as it is in the native Sociology RAs.

### 6.3.2 Grammatical Subject (NP) + ELV Show + That-Complement Clause

As an epistemic modality resource, *show* carries a much stronger epistemic force than *suggest*. However, both *show* and *suggest* share a lot in common, especially in terms of

the potential structural elements that they take in subject position. It would appear then that in the clausal pattern *grammatical subject + ELV+ that-complement*, the reporting verb *show* behaves in similar ways to *suggest*. Table 6.6 displays the frequency of ELV *show* for the different subject types in this clause pattern in the NES RAs across the three disciplines.

**Table 6.6:** Frequency of clause types for the *subject + show + That-clause* pattern in NAAC

Clause pattern type	Sociology	Economics	Law
Human NP subject	0.95(14)	1.61(24)	0.27(6)
Non-human NP subject	2.37(35)	4.16(62)	0.63(14)
<i>It</i> with passive	0.14(2)	0.54(8)	0.00(0)

As in the pattern involving *suggest*, non-human NP subjects are the most preferred type to co-occur with *show* in all three disciplines, but as Table 6.6 shows, there are fewer cases of non-human subjects with *show* than we observed with *suggest* in the NES RAs. This is probably because NES writers generally tend to display a preference for weak epistemic devices over strong ones as a way of anticipating opposition by readers, so that in the same clausal pattern (e.g., the results *shows that* ..., the results *suggest* that ...) it is not surprising to find *suggest* occur more frequently. Sociology in particular records far less uses of *show* compared to *suggest* in this pattern, which further reinforces this weak epistemic preference for the NES writers on Sociology.

Again, we see a similarity between *show* and *suggest* in this pattern in terms of the relatively few instances of human NP and *it* passive subjects they co-occur with in the RAs. For *show*, Human NP subjects are most visible in Economics and most of the instances here involve writers citing and mentioning other authors. Out of the 24

examples of human NP subjects found in the NES Economics RAs, 14 examples involve writers mentioning other authors as in-text citations. Figure 6.5 samples 10 such cases in the concordance lines for illustration. It would appear that a key rhetorical practice in Economics is the avoidance of self-mention as much as possible.

N	Concordance	File
1	of the market. For example, Bresnahan showed that the elasticity of the	ECO NA20.txt
2	counterpart; for example, Ramey (2009) shows that results are sensitive to	ECO NA13.txt
3	as 2 <sup>1</sup> years. Lothian and Taylor (2004) show that the	ECO NA12.txt
4	model. Armstrong and Vickers (2000) show that whether a multi-product firm	ECO NA15.txt
5	are exerting. In addition, Green (1999) shows that self-reported effort levels	ECO NA02.txt
6	rate change. For example, Ball (1999) shows that the coefficients in the	ECO NA20.txt
7	. However, Burdett and Wright (1998) show that it is possible to have an	ECO NA03.txt
8	example, Kremer and Morcom (1998) show that if HIV-negative people	ECO NA14.txt
9	said to be submodular if Topkis (1978) showed that if /is twice continuously	ECO NA09.txt
10	consumer risk neutrality. Stiglitz (1969) shows that a consumer who is risk	ECO NA15.txt

**Figure 6.5:** Concordance lines for *show* with author citation as subject in the NES Economics RAs

This is also evident even in the rest of the 10 examples of *show* occurring with human NPs in this pattern: 5 cases did not involve specific self-mention of writers – these take the form of ‘generic’ one as subject to precede ELV *show* in the expression of the epistemic claim, as in (25).

- (25) One can show that in equilibrium (a) the output process of an M/M/I server is Poisson and that (b) the number of tasks at the server at time  $t$  is independent of the departure process before that date. [ECO NA09]

Thus only 5 of the 24 examples of human subjects occurring with *show* + that-complement clause are clear cases of self-mention (e.g., we *show* that ..., I *show* that...). All of this evidence explains Economics as a discipline that relies more on impersonal and scientifically objective ways of constructing reality, much like in most fields within the natural sciences.

As Table 6.6 shows, *it* passive is the least common in this pattern. We see, for instance, that it does not occur at all in the Law RAs and occurs only twice in the Sociology RAs. The evidence simply makes clear that it is not a particularly productive subject type in these social science disciplines.

I turn now to look briefly at the pattern *grammatical subject + show + that-complement clause* in the Ghanaian RAs. As can be seen from Table 6.7, like in the NES articles, non-human NP subjects are the most typical in this pattern, here too, recording the highest frequency in Economics, followed by Sociology and then Law.

**Table 6.7:** Frequency of clause types for the *subject + show + That-clause* pattern in NNGC

Clause pattern type	Sociology	Economics	Law
Human NP subject	0.23(3)	0.82(12)	0.24(4)
Non-human NP subject	4.37(58)	6.44(94)	1.54(26)
<i>It</i> with passive	0.00(0)	0.14(2)	0.18(3)

Although the non-human NP subject type is used by the Ghanaian writers considerably more than it is used by the NES (especially in Economics and Sociology), the findings regarding ELV *show* in this pattern portray the Ghanaian writers as being aware of certain preferred international community patterns and practices. What appears as an extensive use of ELV *show* might just be a reflection of a general tendency by the Ghanaian social scientists to deploy much more strong epistemic linguistic choices in their RAs, as I previously noted.

### 6.3.3 Grammatical Subject (NP) + ELV Argue + That-Complement Clause

A final ELV example I look at in this clausal sequence is *argue*. This presents quite a different picture compared to ELVs *suggest* and *show*. Table 6.8 displays the frequency

of occurrence of *argue* in the sequence of *grammatical subject + argue + that-complement clause* in the NES RAs.

**Table 6.8:** Frequency of clause types for the *subject + argue + That-clause* pattern in NAAC

Clause pattern type	Sociology	Economics	Law
Human NP subject	4.60(68)	1.88(28)	2.80(62)
Non-human NP subject	0.81(12)	0.20(3)	0.54(12)
<i>It</i> with passive	0.68(10)	0.34(5)	0.41(9)

Unlike in the sequence involving *suggest* and *show* where non-human NPs are the most common in subject position, the analysis reveals that human NP subjects are the most preferred in the pattern involving ELV *argue* in all three disciplines of the NES RAs. This finding is not so surprising given that, as a reporting verb, *argue* is typically associated with communication activities which most often involve human agents. That is, arguing is more of a human activity than a non-human one. Thus the non-human and *it* passive subject types are far less preferred in this sequence.

As table 6.8 makes clear, there are clear disciplinary variations in the use of the human NP subjects in the *argue* sequence, occurring much more in Sociology than in Law but least of all in Economics. The low frequency of the pattern in Economics supports the point already established – that impersonalisation features strongly in the way Economists construct reality and knowledge in their discipline. I find it rather surprising that human NP subjects in the *argue* sequence occur significantly higher in Sociology than in Law, given that one would assume that the use of *argue* to mark authorial presence would be much more prevalent in Law, especially when in the

patterns involving *suggest* and *show*, non-human NP subjects are more pronounced in Sociology than in Law.

Although in the entire NES corpus the use of self-reference pronouns *I* and *we* is common in both Sociology and Law, careful scrutiny reveals that these pronouns as subject in the specific ELV *argue* sequence examined, as in (26) and (27), are slightly more frequent in Law (14 times, 0.63 per 10,000 words) than in Sociology (7 times, 0.47 per 10,000 words). Meanwhile, the majority of the examples of human NP subjects in these two disciplines take the form of writers citing and mentioning other authors, as in (28) and (29).

(26) We have argued in this article that there is frequently a profound lack of understanding of the rights and obligations attaching to a tendency, certainly so on the part of students. [LAW NA06]

(27) I argue that failure to pay a sovereign bond does not engage the state's international responsibility, even if it constitutes a contractual default under the bond. [LAW NA02]

(28) In essence, Heckman argues that the racial gaps in employment and earnings are adequately explained by individual differences in human capital formation. [SOC NA03]

(29) T. M. Scanlon has argued that rights are best seen as responses to specific serious threats and generally embody specific strategies for dealing with these threats. [LAW NA14]

Thus despite that in the sequence *subject + argue + that-complement clause*, Sociology tends to utilise more human NP subjects, as Table 6.8 shows, the specific use of self-reference pronouns *I* and *we* in this sequence appears to be slightly more preferred in Law than in Sociology.

Finally, as regards the sequence of *subject + argue + that-complement clause* in the Ghanaian-authored articles, a similar pattern is observed, as seen from Table 6.9.

**Table 6.9:** Frequency of clause types for the *subject + argue + That-clause* pattern in NNGC

Clause pattern type	Sociology	Economics	Law
Human NP subject	3.09(41)	1.65(24)	2.72(46)
Non-human NP subject	0.30(4)	0.07(1)	0.53(9)
<i>It</i> with passive	0.98(13)	0.69(10)	1.01(17)

Clearly, the Ghanaian writers, like their native counterparts, use more human NP subjects for this sequence in their RAs than they do for the two other types. It is interesting also that despite the relatively lower frequencies in the use of human NP subjects, there is a similar distribution across disciplines: Sociology records the most frequent uses, followed by Law and then Economics. This finding thus points again to a good convergence in the use of ELV *argue* in this phraseological sequence. One point of departure, however, relates to the relatively high use of the *it* passive type, where the Ghanaian writers, especially the legal scholars, seem to be exploiting it more than their international community colleagues.

From the analysis carried out on the patterns for ELVs *suggest*, *show* and *argue*, one can argue that the findings here support Biber *et al's* (1999) claim that usually inanimate subject items precede a reporting communicative verb in subject position. We have shown that for the sequence *subject + suggest/show/argue + that-complement clause*, a common pattern in these social science disciplines, while *suggest* and *show* most typically prefer non-human NP subjects, *argue* most commonly co-occur with human NP subjects.

## 6.4 Epistemic Lexical Verbs (ELVs): Strength of Epistemic Modality

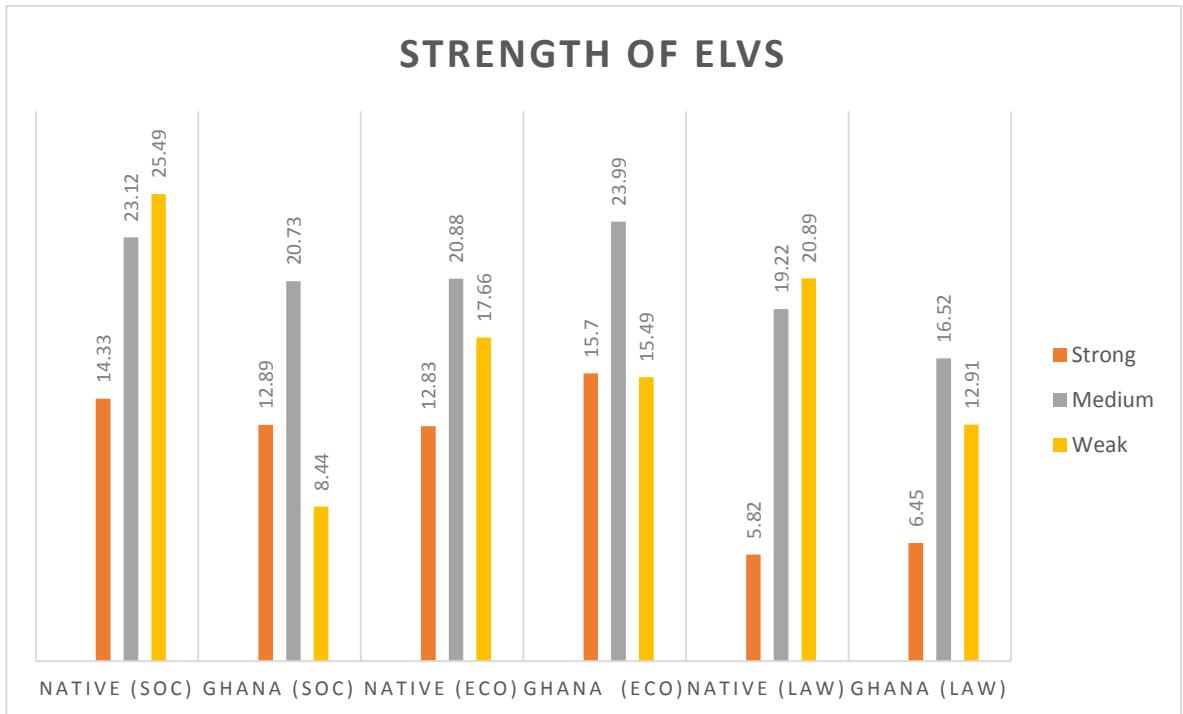
In this last main section of the chapter I give a brief account of how ELVs are patterned according to their levels of epistemic strength in the RAs produced by the two groups of writers, aiming to observe how the uses by the Ghanaian writers compare with those by their Anglo-American colleagues. Owing to the vast differences in the numbers of linguistic items that express the strength levels, I decided to focus on the top five most frequent ELVs for each level of epistemic strength. This decision was not only a pragmatic one to make the analysis tractable; it was also to ensure a more balanced comparison of these levels.

Out of a total of 30 ELV items, only 6 are strong items while there are 10 weak and 14 medium items. The five most frequent items for each epistemic level upon which the analysis is based are as follows: strong (*show, claim, know, attest, and assure*); medium (*argue, consider, assume, tend, and indicate*); and weak (*suggest, seem, appear, propose, and hope*). In effect, these are the most important epistemic verbs for the three levels of strength used in these disciplinary communities

### 6.4.1 Disciplinary Variation

With regard to the international community NES writers, the corpus analysis reveals notable disciplinary variations in the way the different levels of epistemic strength by ELVs are used. However, some patterns of similarity across the three disciplines can also be discerned. Figure 6.6 is a representation of the ELVs analysed according to their degree of epistemic strength in the corpus of RAs for this study. It is clear from Figure 6.6 that, as far as ELVs are concerned, the non-Ghanaian writers in all three fields seem to have a marked preference for the weak and medium epistemic level devices over the

strong ones. In Sociology and Law, weak ELVs are the most common, followed by medium ELVs, and then strong ELVs in that order. In Economics, however, the medium ELVs are more prevalent than the weak ones, with strong ELVs occurring the least.



**Figure 6.6:** ELVs according to degrees of epistemic strength by the two groups of writers

The findings here of epistemic strength of ELVs might be a reflection of social science mainstream community practices, where there seems to be a greater emphasis on toning down research claims over strengthening them. As I have already noted, both weakening and strengthening claims are important communicative strategies in scholarly writing, but of the two, the latter is the riskier tactic (Hyland, 1998b) that could work against a writer if not controlled properly.

By way of contrast to the NES RAs, the patterns of the degree of strength of ELVs across the three fields of the Ghanaian-authored RAs present a somewhat different picture. As Figure 6.6 makes clear, in all three disciplines medium level ELVs occur more

frequently than weak ELVs. And while strong ELVs record higher incidences in the Ghanaian Sociology and Economics RAs than weak ELVs, the opposite scenario is manifest in Law where weak ELVs tend to be more common than the strong ELVs. However, if one considers the use of weak ELVs by the two groups of legal scholars, it becomes apparent that the Ghanaian legal scholars still make far less use of them. Also, a log likelihood statistical analysis points to the fact that the NES writers on Economics and Sociology use weak ELVs significantly more than the strong ELVs. In contrast, the Ghanaian writers on Sociology use strong ELVs significantly more than weak ELVs, and while the difference is (statistically) not significant in the case of the Economics writers, strong ELVs maintains a slightly higher frequency than weak ones.

#### *6.4.2 Ghanaian vs. Anglo-American Writers*

Based on the corpus evidence for this study, we might conclude that the Ghanaian social scientists are similar to their Anglo-American colleagues in terms of the amount of ELVs they use to mark medium and strong level probability. However, as with epistemic modal verbs, the difference lies with the use of ELVs to mark weak epistemic strength. There are fewer uses of weak ELVs by Ghanaian writers than would be conventional in international discourse communities. Thus what is further discernible is that the Ghanaian writers seem to disprefer such ELVs as *suggest*, *appear* and *seem* – epistemic resources that are deemed crucial for softening and toning down research claims. I would argue that in order to meet international discourse rhetorical conventions and expectations, Ghanaian writers might have to engage with a greater use of such weakening ELVs in their RAs.

## 6.5 Conclusion

This chapter has focused on the use of ELVs in the three disciplinary fields by the non-native Ghanaian writers of RAs. On the basis of the corpus evidence derived for the use of ELVs by NES scholars, whose writings essentially reflect the ideal disciplinary discourse practices internationally, I have tried to show in this chapter the extent to which the locally-based Ghanaian scholars' rhetorical application of ELVs in RAs deviate from international community practices and conventions in terms of the range and diversity, depth or frequency, phraseological patterns certain ELVs enter into, and degrees of epistemic strength through ELVs.

From the corpus analysis, ELVs emerge as the most commonly used epistemic modality markers in the international disciplinary communities of Sociology, Economics and Law. While the Ghanaian writers seem to demonstrate considerable awareness of the range and diversity of ELV devices required in the RAs of these disciplines, using as vast a range of ELVs as their Anglo-American colleagues, they tend to use, in the most part, fewer or less ELVs than would probably be expected in mainstream disciplinary communities (while there also cases of apparent preference for certain ELVs). In terms of the patterned analysis carried out on ELVs *suggest*, *show* and *argue*, the RAs produced by the Ghanaian writers to a large extent conform to the phraseological patterns found in the high-impact international RAs written by the NES authors. The corpus analysis also reveals that, as regards the degrees or levels of epistemic strength of ELVs, the Ghanaian writers fairly matched their international community mates in the use of medium and strong level ELVs. However, they used significantly fewer weak ELVs than would be the norm in the relevant international disciplinary communities.

ELVs thus seem to be a key area contributing to the overall relatively low frequency of down toning devices in the RAs written by the Ghanaian scholars, and this offers added support to past studies (e.g., Panacová, 2008; Englander, 2006) that report considerable underuse of epistemic (hedging) rhetorical devices in articles written by non-native English-speaking researchers.

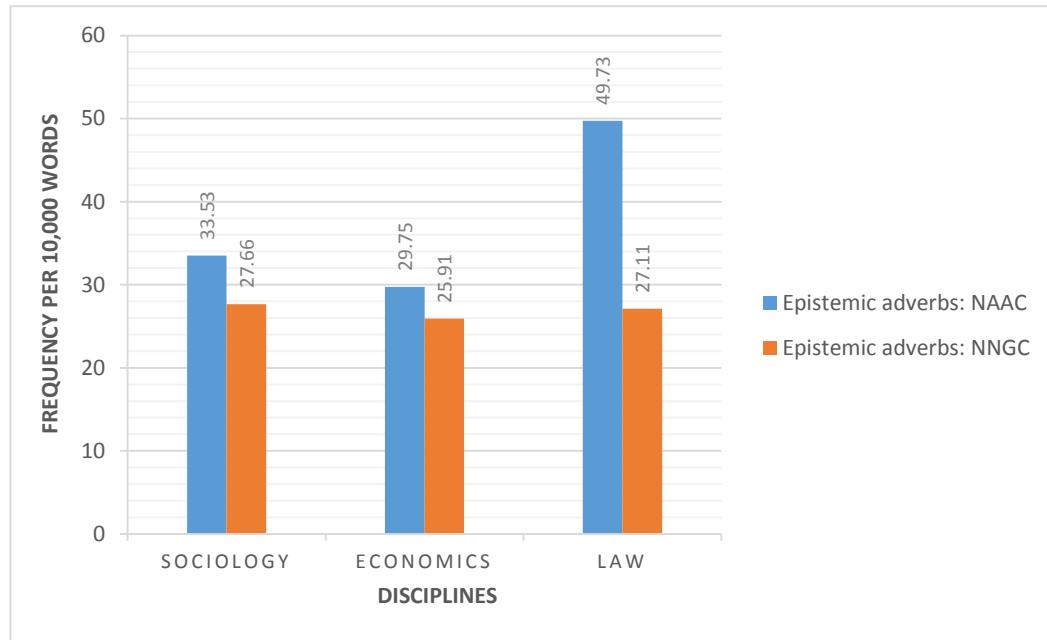
## CHAPTER 7 – EPISTEMIC MARKERS: ADVERBS

### 7.1 Introduction

This chapter presents and discusses the results of the corpus analysis carried out on the use of adverbs with epistemic value in the RAs written by the two groups of authors across the three fields. First, it focuses on the articles written by the international discourse community authors, looking at the frequency and use of epistemic adverbs (EADVs) as well as the kinds of disciplinary variations that they exhibit in terms of depth and range of use, the typical clause structure positioning associated with certain EADVs, and the degrees of epistemic strength by EADVs. Next, I then move on to look at how the Ghanaian authors utilise these EADVs rhetorical resources, seeking to spot points of similarity and divergence, and to note the extent to which the deployment of EADVs in their RAs matches the uses in the NES-authored RAs that reflect suitable international disciplinary practices.

### 7.2 Frequency of Epistemic Adverbs (EADVs) in the RAs

Of the five lexical categories explored to determine cases of epistemic modality, adverbs constitute the third most frequently used forms in the RAs, after lexical verbs and modal verbs. As can be seen from Table 4.3 in chapter 4, a total of 38 epistemic adverb forms were analysed. The overall distribution of EADVs in the corpora representing the two groups of RA writers across the three fields is shown in Figure 7.1 below. The results offer some disciplinary variations in the use of EADVs. First, when we look at the three disciplines of the international community RAs, and then second, when we compare the disciplinary frequency patterns there to those in the RAs written by the Ghanaian researchers.



**Figure 7.1:** Frequency of EADVs in the two corpora per 10,000 words

### 7.2.1 Variation across Disciplinary Fields

If we look at the normed frequencies of EADVs in the NES-authored articles, it becomes apparent that Law accounts for the highest uses (49.73), followed by Sociology (33.53), and then Economics (29.75). While the difference for Sociology vs. Economics is (statistically) non-significant (LL 3.37), the differences for Sociology vs. Law (LL 55.52) and Economics vs. Law (LL 88.99) are significant at the  $p < 0.01$  level. It thus seems that in these international communities RAs while disciplinary variation is not influenced by the overall use of EADVs between Sociology and Economics articles, the influence is strong between Law and these two. It is not immediately clear why the high frequency of EADVs in Law over Sociology and Economics, both of which use EADVs less and in fairly equal proportion. But this could probably also be attributed to the point that in the legal context (more than in Economics and Sociology), personal, researcher interpretation of legal issues seems paramount as a disciplinary culture. By their nature,

EADVs, as with other adverbials, typically function as a comment, or opinion on the content of a whole clause or part of it (Biber, *et al.*, 1999). Of course, here the comment or opinion will be one expressing some degree of epistemicity, as (1) and (2) show. Thus the high use of EADVs by the legal scholars may be a useful strategy of fulfilling this kind of researcher involvement.

- (1) That is probably how judges ought to proceed in moral argument when they are arguing in the name of a whole society. [LAW NA20]
- (2) Systems of law usually establish a hierarchy of norms based on the particular source from which the norms derive. [LAW NA04]

In contrast to the NES articles, the distributional pattern of EADVs across the three disciplines of the articles written by the Ghanaian scholars presents a somewhat different picture. It is apparent from Figure 7.1 that EADVs are nearly equally used in all three disciplines. Sociology accounts for the highest uses of EADVs per 10, 000 tokens (27.66), followed by Law (27.11), and then Economics (25.91). But the statistical analysis carried out for these occurrences indicate that the slight frequency differences observed between the disciplines all proved to be (statistically) not significant, i.e. below the  $p < 0.01$  level. Sociology vs. Economics returned an LL score of 0.80, Sociology vs. Law (LL 0.08) and Economics vs. Law (0.43). This finding suggests that disciplinary variation is not particularly influenced by the use of EADVs in the Ghanaian-authored RAs.

## 7.2.2 *Similarities and Differences between Ghanaian and International Writers*

### 7.2.2.1 *Depth of Epistemic Adverb (EADV) Use*

As in the cases of EMVs and ELVs, the corpus analysis reveals that EADVs occur more frequently per 10, 000 tokens in the Anglo-American RAs in all three disciplines than in the Ghanaian RAs, adding to the overall underuse of epistemic modality devices in these social science fields. Figure 7.1 makes it clear that the difference in the use of EADVs between the two groups of scholars is most wide in Law articles where the Ghanaian scholars use far less EADVs than would probably be expected as an academic practice and style in international Law RAs. The differences are not as wide when we look at the disciplines of Sociology and Economics. Table 7.1 is a log likelihood statistical analysis of the differences in the use of EADVs by the two groups of writers in each discipline.

**Table 7.1:** LL values for EADVs between the two groups of writers

Discipline	Anglo-American writers	Ghanaian writers	LL-value	Significance level: p<0.01
Sociology	496	367	7.88	Sig.
Economics	443	378	3.90	Not Sig.
Law	1102	458	127.80	Sig.
Overall	2041	1203	113.16	Sig.

The statistical tests offer LL scores that suggest that while the Ghanaian writers in the fields of Law and Sociology use EADVs significantly less than their NES colleagues, the writers of Economics come closest to using as many EADVs to qualify their research claims as the international writers of Economics, as the statistical difference in the use of EADVs between these two groups of Economists is not significant. From these results, it could be argued that while there may be the need for Ghanaian writers in all three fields to attach more importance in the use of EADVs, it is the legal scholars in particular who need to consider deploying considerably more EADVs in their RAs in order to meet

international discourse community practices, especially as we have shown that there seems to be some interesting connection between the high incidence of these epistemic adverb resources in the Law RA and its knowledge processing culture.

#### 7.2.2.2 *The Commonly Used Epistemic Adverbs (EADVs)*

Out of the 38 EADVs included for analysis in this study, the top 15 most commonly used forms in the RAs for each discipline produced by both groups of writers accounted for 80% or more of the entire uses of EADVs in the two sub-corpora. Thus in discussing the more detailed quantitative and qualitative points of similarity and divergence between the Ghanaian authors and their Anglo-American counterparts, I focus on these top 15 EADVs. However, it is important not to entirely ignore the remaining 23 EADVs analysed, which in some cases did not occur at all while in many other cases they produced extremely low frequencies in these social science RAs. The rarity of these epistemic adverb forms offers some insights into their place in scholarly writing, at least within the social science fields explored here. Before I turn to the most commonly used EADVs, I wish to focus on these relatively uncommon EADVs.

In the NES-authored articles, the EADV forms *unarguably*, *undeniably* and *unquestionably* immediately draw attention to themselves and therefore deserve comment. While the first two are not used by the NES writers in all three fields, *unquestionably* occurs only once each in Sociology and Law, with no uses at all in Economics. I hypothesise that writers consider these EADVs to be excessively strong and emphatic and thus deliberately avoid their use in RAs. As Simon-Vandenbergen and Aijmer (2007: 193) note, these forms can all be paraphrased as “it cannot be V-ed that”, as in the example: *it cannot be denied that* ... (*undeniably*) or *it cannot be argued that* ... (*unarguably*), and their use suggests “the impossibility of countering the proposition,

i.e. stating that an alternative viewpoint is impossible". Thus while such authoritative epistemic adverbs might be useful persuasive resources in casual conversation and other less formal speech genres, their use in writing (and here academic writing in particular) could risk threatening the consensual nature of argument construction, while also down playing on the solidarity a writer stands to enjoy from readers.

Thus in scholarly writing, at least within the social science fields studied here, the rarity of EADV forms *unarguably*, *undeniably*, and *unquestionably* seems to reflect writers' awareness of how their use could potentially exclude dissenting viewpoints. And since dissenting views and perspectives almost invariably arise, even on very convincing arguments, academics tend to be cautious by avoiding the use of such EADVs. A closer examination of these EADVs in a much bigger corpus of general academic prose – the academic prose section of the BNC, which constitutes approximately 15.8 million running words – confirms that they are indeed not preferred epistemic rhetorical options in academic discourse. Unsurprisingly, *unarguably* is completely non-existent in this section of the BNC while *undeniably* and *unquestionably* occur only 28 times (1.77 per million tokens) and 55 times (3.49 per million tokens) respectively.

For similar reasons as the very strong EADVs *unarguably*, *undeniably* and *unquestionably*, other slightly less strong forms such as *definitely*, *beyond doubt* and *no doubt* are rarely used in these social science articles, while an EADV like *maybe* occurs with very low frequencies in the three disciplinary RAs due to perhaps it being more generally associated with spoken discourse.

As regards the RAs produced by Ghanaian writers, I find that a similar rarity characterises the use of the uncommon EADVs *unarguably*, *undeniably*, and *unquestionably*. Notably, while *unarguably*, which is conspicuously missing in all three disciplines of the non-Ghanaian RAs, is entirely absent in the Ghanaian Sociology RAs, it occurs once each in the articles on Economics and Law, as shown in (3) and (4).

- (3) This latter view, which unarguably is the more influential, has given rise to a robust set of theoretical propositions encapsulated in the following headings: 'X-efficiency', 'foreign exchange constraint' and 'technological catch up'. [ECO GH19]
- (4) Nevertheless, the omission of assignment and subrogation of liens from the GSA, and reluctance of the law-makers to create a few unarguably useful national maritime liens constitute blind spots in the Act which must be healed. [LAW GH2]

The indications are that *unarguably* simply appears to be an unattractive EADV in international academic communities and, while the Ghanaian writers generally seem to be aware of this, the writers of examples (3) and (4) could have been more strategic by using a less strong epistemic device. *Undeniably*, as in the international RAs, is entirely absent in all three disciplines of RAs by the Ghanaian scholars. Also, while no cases of *unquestionably* are found in Sociology and Economics, it occurs only once in the Law RAs. In addition, the very low frequencies of EADV forms *definitely*, *beyond doubt*, *no doubt*, and *maybe* in the RAs by the Ghanaian writers fairly match the low occurrences we observe in the NES-authored articles. Clearly then, the Ghanaian writers, like their NES colleagues, show considerable awareness of the adverse effects of prioritising such EADV forms in their articles and accordingly tend to use them minimally or avoid them entirely, as is the practice also in international disciplinary communities.

I turn now to the top 15 EADVs in the RAs produced by the two groups of writers, first looking at the uses in the NES international community RAs, and then showing how the uses in the Ghanaian RAs compare to them. Tables 7.2 and 7.3 show the 15 most common EADVs in the articles of the two groups of writers across the three fields.

**Table 7.2:** Top 15 EADVs in the NAAC for the three disciplines

Anglo-American Authors		
Sociology	Economics	Law
perhaps 3.58 (53)	almost 2.29 (34)	generally 5.51 (122)
indeed 2.97 (44)	in fact 2.01 (30)	indeed 5.01 (111)
usually 2.91 (43)	indeed 1.88 (28)	perhaps 4.92 (109)
in fact 2.43 (36)	approximately 1.81 (27)	clearly 3.16 (70)
clearly 2.23 (33)	actually 1.81 (27)	of course 3.11 (69)
necessarily 2.16 (32)	generally 1.75 (26)	necessarily 2.44 (54)
generally 1.83 (27)	about 1.68 (25)	largely 2.40 (53)
actually 1.63 (24)	perhaps 1.61 (24)	actually 2.08 (46)
of course 1.55 (23)	clearly 1.54 (23)	almost 1.99 (44)
almost 1.28 (19)	usually 1.54 (23)	certainly 1.90 (42)
certainly 1.01 (15)	largely 1.48 (22)	surely 1.62 (36)
largely 0.95 (14)	of course 1.34 (20)	in fact 1.53 (36)
probably 0.88 (13)	around 1.28 (19)	Inevitably 1.44 (32)
frequently 0.88 (13)	essentially 1.07 (16)	usually 1.40 (31)
apparently 0.74 (11)	frequently 1.01 (15)	probably 1.31 (29)

As can be seen from Table 7.2, there are noticeable disciplinary variations of EADV use in the NES international community RAs. First, *generally* and *of course* both appear among the top EADVs in the three disciplines, but they clearly show themselves to be more typical of Law than Economics and Sociology RAs.

**Table 7.3:** Top 15 EADVs in the NNGC for the three disciplines

Ghanaian Authors		
Sociology	Economics	Law
generally 3.92 (52)	about 4.87 (71)	indeed 5.15 (87)
indeed 3.69 (49)	generally 3.15 (46)	generally 3.02 (51)
largely 2.94 (39)	largely 3.15 (46)	clearly 1.78 (30)
about 2.26 (30)	indeed 2.60 (38)	actually 1.54 (26)
usually 2.19 (29)	almost 1.51 (22)	usually 1.48 (25)
in fact 1.58 (21)	clearly 1.10 (16)	in fact 1.30 (22)
almost 1.58 (21)	usually 0.89 (13)	necessarily 1.24 (21)
frequently 1.21 (16)	approximately 0.82(12)	largely 1.12 (19)
necessarily 1.13 (15)	actually 0.82 (12)	almost 1.12 (19)
actually 1.13 (15)	around 0.82 (12)	about 1.07 (18)
perhaps 1.06 (14)	probably 0.75 (11)	certainly 0.95 (16)
clearly 1.06 (14)	necessarily 0.62 (9)	essentially 0.95 (16)
probably 0.53 (7)	essentially 0.62 (9)	perhaps 0.89 (15)
essentially 0.53 (7)	obviously 0.55 (8)	of course 0.77 (13)
obviously 0.38 (5)	perhaps 0.48 (7)	obviously 0.65 (11)

While the epistemic use of *generally* allows writers to state the likelihood of a proposition in more general terms, indicating what might apply in most cases, *of course* is often pragmatically used by writers as a solidarity mechanism to show that their readers, as intelligent equals, might already know that what they are claiming is true (Simon-Vandenbergen and Aijmer, 2007). Given that of the three fields Law tends to be the most reader-engaging, it is not so surprising the legal scholars exploit these forms more, as exemplified in (5) and (6).

- (5) The view that a perfected law would be all criminal owes something implicit to the fact that international law generally does not have a law of civil damages, a law of non-criminal tort. [LAW NA09]
- (6) Of course, rights are strongly individualistic, at least insofar as they are founded upon the interests of individuals, and insofar as they afford individuals freedom to behave and believe in distinct and unpopular ways. [LAW NA13]

Two other very important EADVs in these NES RAs are *perhaps* and *in fact*, epistemic devices that are seemingly different in terms of strength of force. But their distributional patterns across the three disciplines offer further indications of how rhetorical preferences might relate to disciplinary knowledge. Clearly, *perhaps* is an epistemic device whose rhetorical force lies in its ability to considerably weaken and reduce the assertiveness of a claim. On the other hand, *in fact* is often relied upon to stress the truth of an assertion or a proposition. As Table 7.2 makes clear, of the three disciplines *perhaps* happens to occur most commonly in Law (4.92), although it occurs in the number 1 position on the list of EADVs used by the Sociologist (3.58). The writers on Economics tend to use it the least (1.61). As regards *in fact*, we see it to be far more important in Economics (2.01) and Sociology (2.43) than in Law (1.53). The patterns of occurrence for these two EADVs seem to further strengthen the idea that Economics in

particular (and to a large extent, Sociology) more than Law is constructed as a discipline where the personal intervention of writers and the level of interactiveness with readers are much stronger in the evaluation of the information and material discussed. Here are some examples of the use of *perhaps* and *in fact* as epistemic devices in the NES RAs:

- (7) More crucial, perhaps, is that the mediator has some insight into the cultural, social and economic environment in which parties are situated. [LAW NA07]
- (8) In fact it is optimal to have a revenue cap, i.e.  $pq = p(T - t)$  is fixed and (13) becomes  $p(t) = p/q$ . [ECO NA15]
- (9) It is interesting to see this natural response being pitched against cultural practices that are in fact sites of power struggle, in this case within the family, work and school, regarding correct posture. [SOC NA10]

Yet another interesting observation in the NES RAs, as can be seen from Table 7.2 above, involves the use of closely related EADV forms *about*, *approximately* and *around* – epistemic devices which are relevant for making approximation statements. It does not seem to be mere coincidence that all three forms are among the top EADVs in the Economics RAs, yet are visibly missing in the top EADVs used by both the legal scholars and Sociologists. That these three EADVs are more common in Economics could be a reflection of how Economics writers process and evaluate the discipline's knowledge. As Dahl (2009) has observed, the field of Economics relies a lot on quantitative data – percentages and numbers, which are often derived from mathematical theorems and formulas. Thus it is common practice for writers' reporting of such research findings to be characterised by several approximation statements through these EADVs, as exemplified in (10) to (12).

- (10) Allowing for these factors, I calculate that about a third of the price changes with model substitutions might reflect transitory demand increases with the model cycle, ... [ECO NA05]
- (11) In the final model, I control for all the unobserved determinants that might be specific to a particular Census division in a particular year (e.g., weather, close political races, etc.) by including approximately 200 fixed effects for each unique Census-division and survey-year combination. [ECO NA16]
- (12) It hovered around the 63.5% level until early 1993 when it began a steady upward climb. [ECO NA01]

Quite clearly, the epistemic senses conveyed by the forms *about*, *approximately* and *around* are similar in the way they are used in these NES Economics RAs. As Table 7.2 shows, we see a fairly equal representation of these EADVs: *about* (1.68), *approximately* (1.81) and *around* (1.28). This distributional pattern seem to point to the idea that the international community of Economics writers use a fairly good amount of each of these forms for variety rather than monotonously relying on any one form.

A final, more general, point about the patterns of occurrence for the top EADVs in the NES RAs relates to the forms *usually* and *indeed*. Both epistemic items are part of the top EADVs in all three disciplines. However, some disciplinary differences in the use of these items are notable. *Usually* seems to be favoured most by Sociologists as it occurs considerably often in the Sociology RAs (2.91) than in Economics (1.54) and Law (1.40), the differences being statistically significant at the p<0.01 level (i.e., Sociology vs. Economics, LL 6.79; Sociology vs. Law, LL 9.81). On the other hand, *indeed*, by virtue of its position in the list of most common EADVs, might be said to be an important device in all three disciplines, although its frequency of use suggests that Law scholars tend to use it significantly more (5.01) than both the Sociologists (2.97) and the Economists (1.88), the two of which are not significantly different in the incidence of

*indeed.* The LL scores obtained for these differences are as follows: (Law vs. Sociology, LL 9.14; Law vs. Economics, LL 25.49; Sociology vs. Economics, LL 3.70).

I turn now to look at how the EADVs I have discussed in the NES RAs are used by the Ghanaian writers. The distributional patterns of the top 15 EADVs in the Ghanaian RAs are shown in Table 7.3 above. The first point to note is that some of the most commonly used EADVs in the discourse community RAs authored by the native speakers are also preferred options for the Ghanaian writers, though as with modals and verbs, the frequencies in most cases are lower in the Ghanaian RAs. As can be seen from Tables 7.2 and 7.3, the majority of the top 15 most frequently used EADVs occur in the RAs produced by both groups of writers: 11 in Sociology, 12 in Economics and 12 in Law. Importantly, this may suggest a considerable level of awareness on the part of the locally-based Ghanaian authors of the most preferred EADVs in these disciplines. However, various aspects of frequency and qualitative variations in the use of specific EADVs can also be observed from the corpus analysis. And here I focus on the specific EADVs which I looked at in detail in the NES RAs.

First, the rhetorical importance that the international community of Law scholars attach to the use of the epistemic device *of course* is not replicated by the Ghanaian Law scholars, as they tend to use *of course* far less. It occurs with a very low frequency (0.77), suggesting that its values of establishing solidarity and equality with readers are very much unexploited by the Ghanaian Law scholars. On the other hand, the EADV form *generally* is clearly important for Ghanaian Law scholars, although their NES colleagues exploit it considerably more. The Ghanaian Sociologists and Economists however seem to be using *generally* far more than their NES colleagues. It does appear

that while the Ghanaian writers on Law might be underusing *generally* in their RAs, those writing on Sociology and Economics are overly prioritising its use in their RAs. Thus we see a more balanced frequency of *generally* in all three disciplines of the Ghanaian-authored RAs, not allowing us to picture the clear disciplinary variation we observed of its use in the international community RAs.

Furthermore, there does not appear to be a similar pattern in the use of EADVs *perhaps* and *in fact* in the RAs by the Ghanaian writers. It is clear that in the international community RAs *perhaps* comes along as a very crucial epistemic marker to reduce the level of certainty backing claims, especially in Law and Sociology. This seemingly important EADV is far less utilised in the Ghanaian-authored Law and Sociology RAs, as it occurs with lower frequencies in these disciplines. For instance, while it is used 4.92 times per 10,000 tokens by the international Law community, the Ghanaian Law researchers use it only 0.89 times per 10,000 tokens, a difference that is statistically significant (LL 57.19) at the  $p<0.01$  level. This signals a clear underuse of *perhaps* by the Ghanaian Law researchers. Similarly, though less radically, we see the Ghanaian Economics and Sociology writers using less of *in fact* compared to their NES colleagues. It is interesting, for instance, that while *in fact* makes a strong appearance in the NES Economics RAs (occurring as the second most common EADV with a frequency of 2.01), it does not feature at all in the top 15 most common EADVs in the Ghanaian Economics RAs, recording a frequency as low as 0.41 in the Economics section of the Ghanaian corpus.

The use of EADV forms *about*, *approximately* and *around* in Economics in particular presents yet another interesting case of difference between the two groups

of writers on Economics. I have tried to show how, in the international community of Economics authors, these three forms are fairly equally distributed to perform the common task of reporting and making approximation statements. A similar pattern in the use of these three EADVs is not perceived in the articles written by the Ghanaian Economics researchers. There seems to be preference for *about* and considerably less use of *approximately* and *around*. The frequencies of these epistemic forms in the Ghanaian Economics articles, as shown in Table 7.3 above, attest to this difference: *about* (4.87), *approximately* (0.82) and *around* (0.82). Log-likelihood tests indicate that *about* is significantly more frequent than both *approximately* and *around* (LL 46.47). The corpus evidence thus supports the idea that the Ghanaian writers on Economics do not, as their counterparts in the international community do, effectively exploit the stylistic options that these epistemic rhetorical devices offer – as writers, they rely in this context mostly on one form, *about*.

The last two EADVs I examine here – *usually*, *indeed* – seem to be fairly represented in the Ghanaian RAs, and similar when contrasted with their incidences in the NES articles. Thus these two EADVs seem to present more areas of similarity than difference. One area of similarity between the two groups of writers relates to the use of EADV *indeed*. For example, the strong preference for *indeed* across the three disciplines of the international community articles is also seen with the Ghanaian writers. Ghanaian Law scholars used *indeed* almost as frequently as their NES colleagues, although the Ghanaian writers in Sociology and Economics tended to use it more than their NES colleagues. However, the differences in the incidence of *indeed* between the two groups of writers on Sociology (LL 1.09) and Economics (LL 1.73) proved (statistically) not significant. *Usually* is also fairly similarly distributed between

the two groups of writers, especially writers in Economics and Sociology. The difference in the use of this device between the Ghanaians and their international counterparts is (statistically) not significant at the  $p<0.01$  level.

### 7.3 Epistemic Adverbs (EADVs) and Positioning in Clause Structure

One peculiar aspect of EADV analysis carried out in this study involves looking at how adverbs are positioned within clause structure in order to convey epistemic modality. Thus rather than exploring phraseological patterns of EADVs, I focus on the structural positioning of the dominant EADVs in the social science RAs examined in the present investigation. Studies carried out by Hunston and Francis (e.g., Hunston and Francis, 1999; Hunston, 2006) have suggested that, unlike verbs, adjectives and nouns, which are very rich lexical resources for exploring phraseological patterns, adverbs are particularly unproductive in terms of yielding such patterns. Hunston (2006) exemplifies this with the word *fact*, explaining that while *in fact*, which is a fixed phrase acting more like a single word (adverb), is not phraseologically productive, *fact* as a noun, as in *the fact that* or *a fact that*, has interesting patterns of phraseology. The unsuitability of adverbs for phraseological pattern analysis may arise from their mobility attribute which makes it quite difficult to see how certain words repeatedly associate with adverbs in order to contribute to their meaning. So, it seems more useful to focus on the structural positions of notable EADVs in the NES RAs, and to compare them with those of Ghanaian writers.

The mobility feature of adverbials has led grammarians to offer various classification schemes of the positions in which adverbials occur. Most typically, three positions are identified. Biber *et al.* (1999) specifically label these as *initial*, *medial* and

*final*. Huddleston and Pullum (2002) prefer the terms *front*, *central* and *end*, whereas Quirk *et al.* (1985) stick to *initial*, *medial* and *end*, although they argue that certain adverbials could occur in up to seven different positions depending on the type of verb phrase in the clause, which could yield variants of the three main positions (i.e., *initial-medial*, *medial-medial*, *end-medial* and *initial end*). Having considered these various classification types, I find it more convenient to adopt a modified version of the labels and classification proposed by Biber *et al.* (1999) to discuss some of the most commonly used epistemic adverb items in the RAs. Thus rather than classifying the structural positions of EADVs in terms of initial, medial or final, I further group the medial type into *pre-verbal* and *post-verbal* in order to more realistically capture the positions of EADVs that occur within the clause. So the analysis presented here makes use of four position types as follows: *initial*, *pre-verbal*, *post-verbal* and *final*. This means *initial* applied to EADVs that begin a clause, as with *clearly* in (13); *pre-verbal* applied to EADVs that precede the main verb but do not start a clause, as with *clearly* in (14); *post-verbal* means that an EADV occurs after the main verb but before the end of the clause, as with *clearly* in (15); and *final* refers to an EADV occurring at the end of the clause (no corpus example was found with *clearly* in this position anyway).

(13) Clearly, for this third category, there is no wage recorded in the data. [ECO NA03]

(14) These analyses clearly support the prediction that indirect reciprocity generates greater feelings of social solidarity than forms of exchange with direct reciprocity. [SOC NA02]

(15) This value is clearly a means of upholding other values, particularly those of stability and autonomy. [Law NA16]

My intention here is not really to focus on the quantification (and frequency differences) of the four position types between the two groups of writers, as we have already seen that Ghanaian writers generally use less of these resources. Rather, I aim to find out the patterns of distribution of specific EADVs according to the four position types in the RAs and to observe how the patterns are similar or different when the two groups of writers are compared.

### 7.3.1 Case Study 1: *In Fact*

*In fact* happens to be a very important EADV in the social science RAs, used by writers mainly to assert the actuality or factuality of their claims. Table 7.4 shows the distribution of *in fact* according to the clause position types in the RAs written by the two groups of authors. For this part of the analysis, I did not consider disciplinary variation because the feature under investigation seems to be more grammatically constrained than is influenced by disciplinary stylistic choices.

**Table 7.4:** Distribution of clause position types for *in fact* in the two corpora

EADV	Clause Position Type	Anglo-American RAs	Ghanaian RAs
<i>In fact</i>	Initial	1.0 (52)	0.72 (32)
	Pre-Verbal	0.54 (28)	0.27 (12)
	Post-Verbal	0.39 (20)	0.11 (5)
	Final	0.00 (0)	0.00 (0)

The pattern of distribution of EADV in the native writer RAs shows that the prototypical position of EADV *in fact* within a clause is initial, although it is also permissible with less frequency in pre-verb and post-verb positions. But whether *in fact* occurs in initial position as in (16) or occurs in the pre-verb or post-verb position as in (17), the assertion in the claim affects the entire clause. Also, it is customary for commas to set it apart

from the main clause although this may not be obligatory. Clearly, *in fact* does not seem to occur in final clause position, as no cases for this position were recorded.

(16) *In fact*, no ATS case has turned on the character of the violated norm as *jus cogens* or “ordinary” custom. [LAW NA04]

(17) Whether such a threat does create exclusionary desires is, *in fact*, an empirical question. [SOC NA18]

The positional patterning of *in fact* in the RAs of the international writers is synonymous with that of Ghanaian writers, in spite of the lower frequencies recorded. While no examples were found in final position, *in fact* occurred most frequently in initial position, followed by pre-verb position and least of all in post-verb position. Thus there is similar pattern observed for both groups of writers in the use of *in fact* in the four structural positions.

### 7.3.2 Case Study 2: *Actually*

The epistemic sense of *actually* is similar to that of *in fact*. In fact, both are foremost on the list of adverbial examples used to illustrate a writer’s assertion of the truth or reality of a proposition (Biber *et al.*, 1999). Yet the structural positioning of *actually* in a clause presents a markedly different picture from that of *in fact*. Table 7.5 shows the pattern distribution of *actually* in the RAs produced by the two groups of writers according to its position in the clause.

**Table 7.5:** Distribution of clause position types for *actually* in the two corpora

EADV	Clause Position Type	Anglo-American RAs	Ghanaian RAs
<i>Actually</i>	Initial	0.02 (1)	0.00 (0)
	Pre-Verbal	1.45 (75)	1.01 (45)
	Post-Verbal	0.41 (21)	0.18 (8)
	Final	0.00 (0)	0.00 (0)

In the articles produced by the native writers, the prototypical clause position for *actually* is pre-verbal, either before the entire verb phrase as in (18) or between an auxiliary and its main verb as in (19). It is not conventional for *actually* to be set out in commas when it occurs in pre-verb position.

(18) ... unlike interest groups and SMOs, parties actually control the government.  
[SOC NA19]

(19) But the text holds out no hope of truly settling the matter ... because the Bill of Rights was actually drafted in a way that was intended to finesse major disagreements about rights in the community. [LAW NA20]

As can be seen from Table 7.5, post-verb is the next preferred position of occurrence for *actually*. In fact the frequencies in the international RAs suggest that pre-verb and post verb are the conventional positions for this EADV in social science academic writing, as only 1 example is found in initial position and none at all in final position. In the post-verb context, the main verb that precedes *actually* is notably a copula (or linking) verb, which most commonly is a finite form of BE (e.g., is, are, were), as in examples (20) and (21). In these main clause positions (pre-verb and post-verb), *actually* relates more closely to its main verb rather than to the entire clause.

(20) In fact, there is some suggestive evidence that most private schools are actually more effective than public schools in promoting civic engagement. [ECO NA16]

(21) I have drawn out the hypothetical conversation above not to suggest that we drop the idea of international criminal justice – far from it – but instead to make explicit the moral ideal that is actually correct. [LAW NA09]

As regards the use of *actually* in the Ghanaian corpus, we see a similar pattern of distribution for the clause position types. That pre-verb is its typical position in these social science academic articles is confirmed also in the Ghanaian corpus, and that post-

verb is its next most preferred slot is equally reflected in the RAs by the Ghanaian researchers. Here too, clearly, one observes that the initial and final positions are not slots for the EADV *actually*, as no examples are recorded. The Ghanaian writers also conformed to the practice where no commas set out *actually* when it occurs in pre-verb or post-verb position.

### 7.3.3 Case Study 3: *Generally*

The form *generally* is a very common epistemic resource in the social science fields examined here, most especially in LAW RAs. As mentioned earlier (see 7.2.2.2), the epistemic sense of *generally* allows writers to make claims that apply overall to the phenomenon being talked about. It thus presents the likelihood of a proposition in more general terms. In terms of its structural positioning in the clause, as we can see from Table 7.6 below, it represents a more versatile case as it occurs in all four clause position types, although the corpus evidence suggests that the pre-verb position is its prototypical slot in the RAs for the two groups of writers.

**Table 7.6:** Distribution of clause position types for *generally* in the two corpora

EADV	Clause Position Type	Anglo-American RAs	Ghanaian RAs
<i>Generally</i>	Initial	0.41 (21)	0.74 (33)
	Pre-Verbal	1.76 (91)	1.65 (74)
	Post-Verbal	0.77 (40)	0.78 (35)
	Final	0.44 (23)	0.16 (7)

In the Anglo-American RAs, *generally* is clearly most common in pre-verb position, but also occurs quite often in post-verb position. The final and initial positions are the least preferred for its occurrence and for these two clause positions the writers deploy *generally* almost equally. In pre-verb and post-verb positions, the structural behaviour

of *generally* is similar to *actually*, as it normally relates more closely to the main verb and is rarely set apart with commas from the rest of the clause. When it does occur in initial position, it is usually marked apart by a comma as in (22), but in final position it is usually not separated from the rest of the clause with a comma, as in example (23).

(22) Generally, they place a high value on family relationships and friendships. [SOC NA12]

(23) And any such compromise would depend on acceptance of the pluralist ethos as applicable to intercommunal dealings generally. [LAW NA17]

One interesting feature of *generally* is that (in initial or final position especially) it can easily co-occur with *more* to emphasise the generality of what is being claimed, as with the examples shown in (24) and (25).

(24) Risk primarily affects trust, but the other two mechanisms affect social solidarity more generally. [SOC NA02]

(25) More generally, abstracting entirely from applicable municipal law is impossible. [LAW NA02]

In the Ghanaian RAs, the distribution of *generally* in the position types largely matches the findings in the international RAs, although some pattern differences are noted. Here too, pre-verb position is predominant followed by the post-verb position. However, while the NES authors utilised *generally* in the final and initial positions fairly equally with the former being (slightly)more frequent, the gap for these two clause positions appears rather wide for the Ghanaian writers: they tend to exploit the initial position far more than the final position. A direct consequence of this also is that Ghanaian writers, unlike their international counterparts, use *generally* in the initial and post-verb positions almost in equal measure, as Table 7.6 makes clear.

### 7.3.4 Case Study 4: *Indeed*

As an epistemic device, *indeed* is often classified together with other actuality adverbs such as *in fact*. While both *in fact* and *indeed* may be regarded as strong EADVs on the epistemic strength continuum, the former is characterised as slightly stronger than *indeed*. But as Simon-Vandenbergen and Aijmer (2007) observe, it is the ‘confirmatory’ meaning of *indeed* that sets it apart from other actuality adverbs. According to them, *indeed* has a strong presence in debates and argumentation (which probably explains its high frequency in academic writing) and may be used pragmatically to either “reply to an earlier statement by another speaker or writer” or follow “expectations raised by a preceding proposition” or confirm “that something seems to be the case contrary to what is expected” (p. 105).

In the international community RAs examined, and as Table 7.7 shows, the structural positioning of *indeed* reveals that it typically occurs in initial position, almost invariably set apart from its main clause with commas, as in (26) and (27).

**Table 7.7:** Distribution of clause position types for *indeed* in the two corpora

EADV	Clause Position Type	Anglo-American RAs	Ghanaian RAs
<i>Indeed</i>	Initial	2.45 (127)	3.04 (136)
	Pre-Verbal	0.62 (32)	0.34 (15)
	Post-Verbal	0.46 (24)	0.42 (19)
	Final	0.00 (0)	0.09 (4)

(26) Indeed, the ubiquitous comparator in antidiscrimination law, the white male, implicitly reflects a multiple construction of race and sex. [LAW NA15]

(27) Indeed, constitutive and institutional theories of law have been developed across a wide spectrum of schools of legal, political, and social thought. [LAW NA13]

The pre-verb and post-verb positions do take *indeed* but with considerably lower frequency compared to the initial position. We see though that in the native RAs *indeed* occurs slightly higher in pre-verb than in post-verb position. And in final position there are no recorded examples of *indeed*, which suggests that it might be quite unusual to use this epistemic device in final clause position. As the analysis of concordance lines shows, in pre-verb position it is not unusual for *indeed* (where it occurs in between an auxiliary verb and the main verb) to enter into epistemic harmony with the auxiliary verb, which may be a modal verb (e.g., may, might, could). While such cases are not common in the RAs, their incidence tends to mitigate or reduce the epistemic strength of *indeed* in the clause, as seen in (28).

- (28) We may indeed solve such problems in the future, even as today we treat current massive violation and the possibility of outside military intervention as quite separate from post hoc criminal liability. [LAW NA09]

I turn now to look briefly at the distributional patterns in the Ghanaian RAs. With *indeed* too, the structural positioning in their RAs matches to a large extent with the pattern observed in the native RAs. As can be seen from Table 7.7, the clear predominance of *indeed* in initial position in academic writing is made manifest in the Ghanaian RAs. Also, the fact that *indeed* occurs with considerably low frequencies in pre-verb and post-verb positions is reflected in the Ghanaian RAs. By contrast however, its occurrence in post-verb position is (slightly) higher than in pre-verb position. What might appear unique in the Ghanaian RAs, and probably unusual, is the incidence of *indeed* in final position. I found 4 such examples although these were produced by only two writers in the Law RAs. Here are two examples in (29) and (30).

(29) If we add to this fact that many cases of a civil nature are reported to and dealt with by the police all over the country, the police must be considered a complex state institution indeed. [LAW GH3]

(30) In traditional Africa, the line between moral and legal obligation was insignificant, or to say the least very thin indeed. [LAW GH4]

As the corpus evidence makes clear, final positional occurrence of *indeed* as an epistemic resource is not particularly idiomatic in international scholarly writing, and I would imagine that the Ghanaian writers are generally aware of this, making the 4 examples of *indeed* used in final position by the two writers exceptions rather than regular practice on the part of Ghanaian social science authors.

### 7.3.5 Case Study 5: *Perhaps*

My final case study examines yet another very predominant EADV in the RAs: *perhaps*. This adverb is a core member of epistemic rhetorical resources. It is mainly used by writers to weaken authorial commitment, leaving claims open to potential intervention or discussion from readers. Thus, writers strategically deploy *perhaps* in order to avoid a direct categorical attitude towards claims and arguments. On the clause positioning of its occurrence in the corpora of RAs examined, Table 7.8 summarises the results.

**Table 7.8:** Distribution of clause position types for *perhaps* in the two corpora

EADV	Clause Position Type	Anglo-American RAs	Ghanaian RAs
<i>Perhaps</i>	Initial	1.39 (72)	0.40 (18)
	Pre-Verbal	0.68 (35)	0.22 (10)
	Post-Verbal	1.52 (79)	0.18 (8)
	Final	0.00 (0)	0.00 (0)

In the international RAs, there is a clear tendency for *perhaps* to occur in post-verb and initial positions, only slightly higher in the former. Evidently, unlike many other EADVs that occur pervasively in initial clause position, as with for example *in fact* or *indeed*,

*perhaps* in initial position mainly appears integral within the clause as in the majority of cases it is not set apart with commas. In post-verb position, it usually comes between the main verb (often a copula) and a complement that is either adjectival or nominal in outlook. Typical uses of *perhaps* in these two major positions are (31) to (33).

(31) Perhaps the most important “qualitative” change to these programmes occurred with Superannuation. [ECO NA01]

(32) The Scotland Act, however, is perhaps the most interesting of the three statutes, ... [LAW NA18]

(33) The International Monetary Fund is perhaps the most potent organizational symbol of the anti-inflationary project at the heart of neo-liberalism. [SOC NA01]

*Perhaps* occurs less frequently in pre-verb position while the evidence shows that it is not used in final position, just as we have seen with several EADVs. By contrast, the structural positioning of *perhaps* in the Ghanaian RAs does not tally with those in the native RAs, although it might be difficult to make this claim strongly since *perhaps* occurred with extremely low frequencies in the Ghanaian RAs. It would appear the Ghanaian writers favour its use in initial position far more than in post-verb position, as we see *perhaps* recording a slightly higher frequency in pre-verb position than in post-verb position. What appears more certain is that, like their international counterparts, Ghanaian writers do not use *perhaps* in final clause position.

To sum up, the case studies of EADVs looked at: (*in fact, actually, generally, indeed, perhaps*), in terms of their structural positioning within the clause in the RAs explored, offer strong evidence to suggest that most epistemic EADV forms most typically occur in initial position, although the medial slot (pre-verb and post-verb) also accommodate EADVs quite often. We see that the final clause position is an extremely

rare place for EADVs to occur, and for most adverbs it seems simply not to be a grammatically permissible slot. The findings here largely tally with Biber *et al.* (1999: 872), who have reported that in academic prose while the initial and medial positions are common places where epistemic stance adverbials occur, they have “a very low percentage... in final position”.

The case studies also indicate that the ways that Ghanaian writers distribute EADVs structurally are largely similar to international practices, except for one or two cases, such as the use of *indeed* in final position. The similar distributional variability observed for the different clause positions in the RAs of the two groups of writers portrays the Ghanaian writers as authors who deploy these epistemic adverb resources in ways that generally conform to the way it is used in international discourse communities.

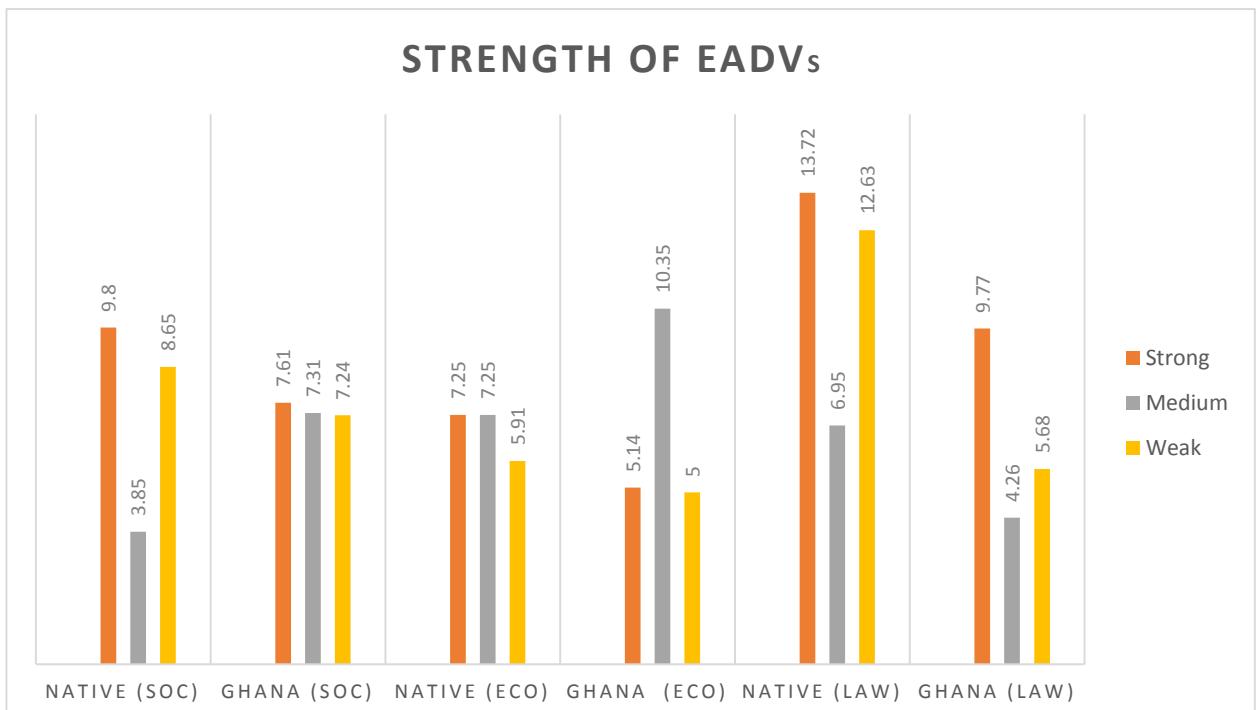
#### **7.4 Epistemic Adverbs (EADVs): Strength of Epistemic Modality**

In this final section of the chapter, I look at strength-ordering of EADVs compared across the three fields and between the two groups of writers. Again for a much fairer assessment of the frequency distribution of the three levels of EADVs, I have focused the analysis here on the 4 top items for each of the levels (strong, medium, weak) in each discipline. This is because of the 38 EADVs included for analysis in this study, only 5 are clear examples of weak EADVs while there are 19 strong EADVs and 14 medium-level EADVs. The weak EADVs in the list are *perhaps*, *possibly*, *generally*, *usually*, and *maybe*. As an extremely unproductive form, *maybe* is left out of the analysis, and so the remaining 4 weak forms served as basis for deciding to take into account the top 4 EADVs for each level of epistemic strength. Thus while the analysis does not cover every

EADV in the corpus, it reflects the most important EADVs used by writers at each epistemic strength level.

#### 7.4.1 Disciplinary Variation

Some patterns can be observed in the three disciplines of RAs by the international community writers as regards the strength-ordering of EADVs. Unlike with modals and lexical verbs where writers deploy weak forms more than strong ones, with EADVs the writers make (slightly) more use of the strong forms than the weaker ones, as can be seen from Figure 7.2. The frequent use in all three disciplines of strong EADVs such as *indeed*, *in fact*, *clearly* and *actually* contributes to this trend. Also, in both Sociology and Law RAs both strong and weak level EADVs occur significantly more than the medium level ones whereas in Economics the incidence of strong and medium level EADVs is the same, leaving weak level EADVs the least frequently used by the Economists.



**Figure 7.2:** EADVs according to degrees of epistemic strength by the two groups of writers

The variation of EADV strength-ordering in the international community RAs is quite different from that for Ghanaian writers. As Figure 7.2 shows, the Ghanaian Sociologists tend to use all three levels of epistemic strength in nearly equal measure. Their colleagues in Economics deploy significantly more medium level forms than they do for both the strong and weak levels. A major contributing factor for the high incidence of medium strength EADVs in the Ghanaian Economics RAs is the seeming preference for the medium strength form *about*, which we made reference to earlier on. The distributional pattern for the Ghanaian legal scholars is where there seems to be a close match with the pattern of the native legal scholars, as here also, strong forms are the most frequent, followed by weak forms, and then medium forms, though the overall frequencies are lower as in almost all other instances.

#### 7.4.2 Ghanaian vs. Anglo-American Writers

Based on the analysis of the top EADVs in terms of strength-ordering, there seems to be marked differences between the two groups of writers. From the frequency distributions of the three levels of epistemic strength, it would appear the Ghanaian writers still under exploit adverbs that express weak and strong epistemic rhetorical meanings, though it might be wrong to assume that this under exploitation is radical. Even so, the evidence would suggest that it may be advisable for Ghanaian social science writers to attach more importance to both weak and strong EADV forms in their RAs in order to conform to international discourse practices. They seem to prefer low uses of weak and strong EADVs and very high uses of medium-level strength EADVs, a situation which has led to certain forms (e.g., *about* in Economics) to be selected

frequently at the expense of others. Thus overall, medium-level EADVs tend to be higher in the Ghanaian RAs than in the Anglo-American RAs.

## 7.5 Conclusion

This chapter has accounted for the rhetorical application of EADVs in the two sub corpora of RAs examined. Of the five main categories of lexical epistemic resources studied, the corpus evidence shows EADVs to be the third most commonly used resources after lexical verbs and modal verbs. In most parts of the analysis, the use of EADVs by the Ghanaian authors matched approximately with the uses typical of the international writers, though there are noticeable areas of variation too.

First, they not only use a range of fairly similar EADVs in making rhetorical claims, but also the majority of the most commonly used (top 15) EADVs in international communities are observed in Ghanaian scholars' academic writing practice too. Secondly, the analysis shows that in the international community RAs, certain EADVs (in particular *unarguably*, *undeniably*, *unquestionably*) seem to be deliberately avoided by scholars in these social science fields due to their excessive epistemic value, meaning that their use would make counter arguments almost impossible. The Ghanaian writers seem to show considerable consciousness of the epistemic implication of such forms as these are not a particularly common feature in their RAs, though while no examples of *unarguably* were found in all three disciplines of the native RAs, an instance each of this EADV was used by a Ghanaian Economist and a Lawyer. A third aspect where both groups of writers appear to converge is with regards to structural positioning. Ghanaian writers, much like their international community colleagues, used mainly initial, pre-

verb and post-verb positions and demonstrated considerable awareness that EADVs are mostly not preferred or permissible in clause final position.

However, an area where Ghanaian writers might need to focus in order to meet international community practices relates to the overall depth of use of EADVs, a situation which, as we have already mentioned, also applies to ELVs and EMVs. With EADVs, it emerges that while in all three disciplines Ghanaian writers used significantly fewer EADVs, the gap is wide with the legal scholars. The finding thus suggests that Ghanaian writers may be generally preferring less EADVs in their RAs compared to what is the norm internationally. Closely related to this is also the proportion of weak and strong EADVs deployed by Ghanaian writers, both epistemic strength levels being used less than the international norm in rhetorical argumentation.

## CHAPTER 8 – EPISTEMIC MARKERS: ADJECTIVES

### 8.1 Introduction

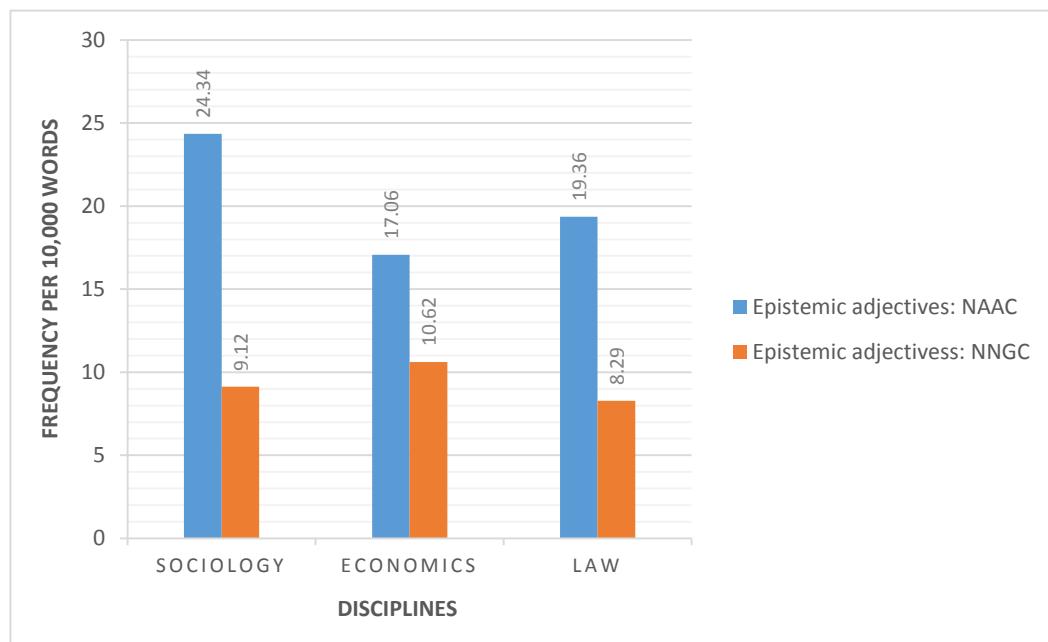
In this chapter I continue the analysis of epistemic modality in the two sub-corpora of research articles (RAs), focusing on epistemic adjectives (EADJs). These are adjectives that encode epistemic meanings in context, much like modal verbs and lexical verbs do. In the RAs examined, EADJs are the least productive type of lexical epistemic modality markers in the articles of both groups of writers, as Tables 5.3 and 5.4 in Chapter 5 make clear. But the uses of EADJs in the articles offer some interesting dimensions for comparison between the Ghanaian and Anglo-American writers studied. Thus in this chapter I first look at the overall incidence of EADJs in the RAs by the two groups of writers across the three fields, identifying and discussing points of similarity and difference. I then move on to look at i.) noticeable phraseological patterns EADJs enter into and ii.) the strength-ordering patterns of EADJs, with the aim of showing how the use of these rhetorical resources by the Ghanaian writers compare with their incidence in the international community RAs.

### 8.2 Frequency of Epistemic Adjectives (EADJs) in the RAs

Figure 8.1 shows the overall distribution of EADJs in the RAs by the two groups of writers for each of the fields. I shall first discuss how the distributional patterns revealed influence discipline variations, and then discuss the general quantitative and qualitative similarities between the Anglo-American authors and the Ghanaian authors.

### 8.2.1 Variation across Disciplinary Fields

Considering the overall use of EADJs in the Anglo-American sub-corpus in figure 8.1, we can observe apparent differences across the three disciplinary fields, with Sociology recording the most frequent uses per 10, 000 running words (24.34) followed by Law (19.36), and then Economics registering the least amount of EADJs (17.06).



**Figure 8.1:** Frequency of EADJs in the two corpora per 10,000 words

As is evident from the log-likelihood tests carried out on these frequencies, while the statistical differences between Sociology vs. Economics (LL 19.12) and Sociology vs. Law (LL 10.17) are significant at the  $p<0.01$  level, the difference between Economics vs. Law (LL 2.59) is not. It would seem that at one independent end of the comparisons (Economics vs. Law), disciplinary variation is not affected by the use of EADJs in the international community RAs. However, this sort of influence is marked in the comparison between Sociology vs. Economics and Sociology vs. Law. This means that EADJs are used less by Economists and Law scholars as compared to Sociologists.

I turn now to look at the overall frequencies of EADJs in the Ghanaian RAs across the three disciplines. For a start, the normed frequencies present a different picture from those of the native writers. As figure 8.1 shows, the highest uses of EADJs occur in Economics (10.62) followed by Sociology (9.12), and then Law recording the least amount of uses (8.29). The statistical analysis carried for these disciplinary differences in the use of EADJs by the Ghanaian writers reveals that all three independent disciplinary comparisons proved to be (statistically) not significant at the  $p<0.01$  level: Economics vs. Law (LL 4.54), Sociology vs. Economics (LL 1.59) and Sociology vs. Law (LL 0.80). The results thus suggest that in the Ghanaian RAs disciplinary variation does not influence the use of EADJs at all the three independent ends of comparison: Economics vs. Law, Sociology vs. Economics and Sociology vs. Law. Quite clearly then, the findings in the Anglo-American RAs as regards the pattern of disciplinary variation in the use of EADJs do not match with the results derived in the Ghanaian RAs.

### *8.2.2 Similarities and Differences between Ghanaians and International Writers*

#### *8.2.2.1 Depth of Epistemic Adjective (EADJ) Use*

As can be seen from Figure 8.1 above, there seems to be a marked difference between the Ghanaian writers and their NES colleagues as regards the amount of EADJs deployed in their respective RAs. Evidently, the Ghanaian writers, especially of Sociology and Law, use significantly fewer amounts of EADJs in their RAs. Table 8.1 displays the LL results of the overall distribution of EADJs in the RAs of the two groups of authors for each discipline.

**Table 8.1:** LL values for EADJs between the two groups of writers

Discipline	Anglo-American writers	Ghanaian writers	LL-value	Significance level: $p < 0.01$
Sociology	360	121	99.64	Sig.
Economics	254	155	22.21	Sig.
Law	429	140	85.85	Sig.
Overall	1043	416	194.04	Sig.

These log-likelihood statistical scores show quite strongly that the Ghanaian writers, compared with the international community writers, underutilise adjectives that convey epistemic meanings in their RAs. Although the Ghanaian Economists come closest to using as much EADJs as their non-Ghanaian counterparts, the authors in all three fields in reporting their research claims tend to use less EADJs than would be used on average in the relevant international disciplinary communities. Clearly at this point in this study, the evidence to support the underuse of epistemic rhetorical resources by the Ghanaian writers is overwhelming and EADJs in particular contribute quite significantly to establishing this.

The findings here tally with a recent study (Ağçam, 2014) of EADJs in doctoral dissertations in English produced by Turkish and Spanish researchers. Ağçam (2014) concludes that both the Turkish and Spanish researchers generally use significantly less EADJs in their dissertations relative to native English-speaking researchers. Clearly, the fresh evidence emerging from the present study shows that the challenges posed by the use of epistemic modality in the academic writing of non-native authors cannot be confined to countries of the *expanding circle* (Kachru, 1986) such as Turkey and Spain where the general feeling is that English is a foreign language and it is difficult to acquire in a native-like manner. In countries of the *outer circle* (Kachru, 1986) too, such as we see in this study on Ghana, where English has wider communicative functions and

where users feel more confident about their communicative competence in English, similar difficulties with respect to the effective deployment of epistemic and other rhetorical features of academic discourse may not be uncommon. As I pointed out already in sections 3.3.2 and 3.4, studies by Mirahayuni (2002) and Nkemleke (2010) on academic writing in outer circle countries point to such potential rhetorical difficulties that authors in these contexts may have to address.

#### 8.2.2.2 *The Commonly Used Epistemic Adjectives (EADJs)*

The corpus analysis revealed clearly that certain EADJs are consistently more preferred in the three disciplinary discourses, and by the two groups of writers, than others. I discuss here the top 10 EADJs used in each discipline of both set of writers. In total, 18 EADJs are originally included for analysis. However, some of these occur with very low frequencies or in some cases are not used at all. Examples of such unproductive EADJs are *improbable*, *probable*, *a certain extent* and *speculative*. That said, the 10 most commonly used EADJs in each discipline of the two sets of corpus data represent over 90% of the overall instances of EADJs recorded in each case. Thus the list of items examined more closely here represents the most important EADJs used in these disciplinary fields. The top 10 EADJs and their normalised frequencies in the NAAC and NNGC are shown in Tables 8.2 and 8.3 respectively. In parenthesis are the raw frequencies. As I have done consistently throughout my analysis, I first look at the disciplinary distributional patterns in Table 8.2 which represents mainstream international disciplinary practices, and then turn to look how these distributional patterns of most commonly used EADJs compare with those representing the non-native Ghanaian writers in Table 8.3.

**Table 8.2:** Top 10 EADJs in the NAAC for the three disciplines

Anglo-American Authors		
Sociology	Economics	Law
likely 13.39 (198)	likely 5.71 (85)	likely 5.10 (113)
possible 2.91 (43)	possible 4.16 (62)	possible 3.02 (67)
clear 2.03 (30)	clear 2.35 (35)	clear 2.66 (59)
evident 1.15 (17)	true 1.61 (24)	obvious 1.76 (39)
obvious 1.01 (15)	unlikely 0.81 (12)	apparent 1.58 (35)
apparent 0.88 (13)	suggestive 0.67 (10)	unlikely 1.31 (29)
unlikely 0.81 (12)	obvious 0.60 (9)	true 0.86 (19)
true 0.68 (10)	apparent 0.40 (6)	well-known 0.54 (12)
well-known 0.41 (6)	convincing 0.34 (5)	evident 0.50 (11)
sure 0.34 (5)	well-known 0.20 (3)	inevitable 0.50 (11)

Despite that adjectives, overall, record the lowest instances of epistemic uses in the RAs examined in this study, certain EADJs exhibit a strong presence. From Table 8.2, we see very obvious preferences in the international community RAs of the devices *likely*, *possible* and *clear* across all three fields although in some cases the amount of incidence of these epistemic resources varies across the fields. For example, the importance of *likely* is visually apparent as it is the most preferred EADJ in all three social science fields. However, it is clear that Sociologists exploit this resource considerably more than their colleagues in Economics and Law who tend to use it in nearly equal measure per 10,000 running words. *Possible* is the second most commonly preferred EADJ in these

fields, but tends to be most frequent in Economics (4.16) followed by Law (3.02) and then Sociology (2.91), although statistically are not proven to be significant.

**Table 8.3:** Top 10 EADJs in the NNGC for the three disciplines

Ghanaian Authors		
Sociology	Economics	Law
likely 4.22 (56)	clear 2.54 (37)	clear 2.19 (37)
evident 1.43 (19)	likely 2.12 (31)	likely 1.12 (19)
possible 0.83 (11)	possible 2.06 (30)	obvious 1.01 (17)
obvious 0.60 (8)	obvious 0.69 (10)	true 0.89 (15)
clear 0.53 (7)	evident 0.69 (10)	apparent 0.71 (12)
true 0.45 (6)	true 0.62 (9)	possible 0.65 (11)
apparent 0.38 (5)	apparent 0.55 (8)	evident 0.47 (8)
well-known 0.15 (2)	well-known 0.48 (7)	well-known 0.36 (6)
inevitable 0.15 (2)	unlikely 0.27 (4)	unlikely 0.24 (4)
probable 0.08 (1)	suggestive 0.14 (2)	inevitable 0.24(4)

Corpus examples (1) to (4) illustrate the use of EADJs *likely* and *possible* in the native RAs across the disciplines.

- (1) Such conflicting findings are likely to be a result of contact occurring in some neighborhoods and not in others ... [SOC NA18]
- (2) Transaction costs are likely to differ across goods, and so the speed at which price differentials are arbitrated may differ across goods. [ECO NA12]
- (3) It is possible that lobbying can have no effect on equilibrium policy choices. [ECO NA08]

- (4) It is also possible that what the Tribunal meant was simply that there had to be some positive action rather than a mere omission. [LAW NA02]

It comes as no surprise that *likely* and *possible* appear as the two most crucial EADJs for the social science writers examined in this study. These results signal their importance as hedging devices used more in social science fields (compared to the hard sciences) by writers to avoid categorical involvement and commitment of research claims, and this supports the findings by Hyland (2009: 13) who has specifically identified the devices *possible* and *likely* (among others) as being “twice as common in humanities and social science papers than in hard sciences”. Hyland (2009: *Ibid*) explains this trend by arguing that in the softer sciences “there is less control of variables, more diversity of research outcomes, and fewer clear bases for accepting claims than in the sciences”. In the present study, while one can appreciate the predominance of *likely* and *possible* in these social science fields, it is hard to explain why, for instance, they are (slightly) more frequent in Economics than in Law, especially as we have shown with several examples in this thesis that Economics (more than Law) tilts towards the hard science as regards the way that research claims are made. But this perhaps also reflects the challenge and subtle constraints that there are in comparing linguistic and rhetorical features in fields within one broad domain.

*Clear* is the third most important EADJ in the RAs and it seems to be fairly equally distributed across the three fields although it occurs (slightly) higher in Law (2.66) than in Economics (2.35) which in turn records more uses than Sociology (2.03). Log-likelihood comparative tests however show that none of the differences in the use of epistemic *clear* between the three disciplines are statistically significant at  $p<0.01$  level.

Academic writers use *clear* epistemically to make strong claims when they are highly confident in the available evidence warranting the claims. While Hyland (2009) recognises *clear*, among others like *evident* and *obvious*, as important adjectives for boosting research claims, Biber *et al.* (1999: 517) describe their value in academic prose in terms of expressing an assertive epistemic stance. Below are examples of epistemic uses of *clear* in the NAAC.

- (5) A recent analysis of the public use of Micro Sample from the 2000 census by Greenman and Xie (2008) found a clear pattern across a broad range of minority groups. [SOC NA03]
- (6) By the late 1980s, it was clear that this scheme was becoming fiscally unsustainable. [ECO NA01]
- (7) The general claim by proponents of such defences is clear. [LAW NA16]

Another EADJ that occurs in the top 10 for each of the three disciplines but which does not show a clear preference in a particular discipline is *well-known*. It is not a particularly productive form in these social science disciplinary fields, and it occurs in the ninth position for Sociology, tenth for Economics and eighth for Law. Clearly, since RAs are more concerned with contributing new knowledge that might itself be contested, one can appreciate why writers do not employ much of a form like *well-known* which primarily signals or points to established knowledge. Writers seem to resort to it mainly when reporting established literature, as with examples (8) and (9).

- (8) As is well-known, there is much disagreement about whether any general hierarchy of norms in international law exists. [LAW NA12]
- (9) It is well known that in cross-sectional regressions like (2), the residuals are not independent. [ECO NA04]

Beyond the 4 EADJs (*likely, possible, clear, well-known*) I have discussed, other EADJs in the top 10 list for the international writers reveal more striking differences across the three fields. Again, we see, for instance, that *evident* is not generally a very pervasive EADJ in these social science disciplines, yet it is used more frequently by Sociologists than by both Lawyers and Economists. While *evident* is not among the 10 most frequently used EADJs by the Economists (and in fact it records 0 hits on the complete list of EADJs), it occurs with a very low frequency (0.50) at ninth position in the list for the Law scholars. Indeed, when we compare the differences in the use of *evident* between Sociology vs. Economics (LL 23.68) and between Sociology vs. Law (LL 4.86), the results confirm that *evident* as an epistemic resource is used significantly more by the Sociologists than by both the Economists and the legal scholars. An example of its use in the Sociology RAs is (10).

(10) It is evident that the bundle of anxieties and insecurities attached to the risk society predate its emergence. [SOC NA13]

Two other EADJs in the top 10 list which visually exhibit differences across the three fields are *obvious* and *apparent*. Their patterns of distribution indicate that legal scholars exploit them considerably more than their colleagues in Economics and (slightly) higher than the Sociology authors. The log-likelihood tests carried out for the frequency differences in the use of these two items confirm that they are used significantly more by the legal scholars than by the Economists. Although we can also observe that *obvious* and *apparent* record higher frequencies in Law than in Sociology, these differences are shown to be (statistically) not significant at the  $p<0.01$  level, indicating that the on-the-surface difference is firmly established only when we look at the legal scholars relative to the Economists who use these forms the least. Epistemic

uses of *obvious* and *apparent* in Law RAs (where they are most common) are exemplified in (11) and (12) below.

(11) The point of this question is obvious in the case of legislators. [LAW NA20]

(12) Categories indicating the grounds protected from discrimination are apparent in the SDA, the RRA and the DDA. [LAW NA15]

A final EADJ that clearly exhibits a disciplinary preference in the native RAs is *true*. As an EADJ, *true* behaves much like the adverb forms *in fact* and *actually* as it is used by writers to make claims for which they believe are in accordance with fact or reality. Writers might rely on the use of *true* as a strong epistemic device to discursively signal to readers that their claim is accurate or perhaps even verifiable. As Table 8.2 shows, the highest proportion of its incidence in the native corpus occurs in the Economics RAs: 1.61 per 10,000 words. It is used relatively less by the legal scholars (0.86) and the Sociologists (0.68). Log-likelihood scores indicate that the Economists use *true* significantly more than both the legal scholars (LL 7.26) and the Sociologists (LL 8.84), although between these latter two groups of academics the statistical difference (LL 0.38) in the incidence of *true* is not significant.

The implication of this finding is that the use of *true* as an epistemic rhetorical marker is relatively more common in Economics knowledge claims. This further seems to support the picture that has emerged consistently in this study about the disciplinary discourse of Economics: moreso than Lawyers and Sociologists, Economists tend to be concerned with reporting directly real-world truths, and make verifiable claims often associated with the hard sciences. This is not only attested through the use of reality devices like *true*, but also seen in the fact that, generally, epistemic rhetorical devices

are low in Economics relative to Sociology and Law, as, for instance, the overall frequencies of EADJs across the disciplines show (Figure 8.1). Examples (13) and (14) illustrate the epistemic uses of *true* in the international Economics RAs.

- (13) ... floorspace has a positive effect on expenditure, parking has a positive effect on store choice, and distance has a negative effect on store choice. This is true for all (unreported) regional parameters. [ECO NA10]
- (14) If prices are set for several periods in advance, then the lower persistence will result in smaller pass-through ... This is true whether the cost increase is coming from a change in import prices due to a depreciation of the exchange rate or to a change in commodity prices or wages. [ECO NA20]

I turn now to Table 8.3 to look at the distributional patterns of EADJs in the articles authored by the Ghanaian academics. A preliminary visual inspection of the top 10 EADJs used by the Ghanaian writers across the three disciplines shows that nearly all the range of top EADJ items used in the international disciplinary community RAs (shown in Table 8.2) are also the preferred devices in the Ghanaian RAs. Despite that, here too, as with other epistemic categories, the Ghanaian writers deploy these items far less. If we consider the disciplinary field of Sociology, for example, it becomes apparent that 8 EADJs (*likely, possible, evident, obvious, clear, true, apparent well-known*) appear in the top 10 list of EADJs for both groups of writers.

However in contrast with the international community RAs, some similarities and differences in terms of distributional pattern for certain EADJs are observable in the Ghanaian RAs. First, we see from Table 8.3 that the top 5 EADJs used by the Ghanaian Sociologists match with those of NES colleagues in Table 8.2. Also, the forms *likely* and *possible* occupy the first and third positions in the list, similar to that in the international Sociology list. Some positional differences are visible though. For instance,

the Ghanaian Sociologists tend to prioritise *evidence* ahead of *possible* and *clear* although we see that the opposite is true with the international writers. As regards the Ghanaian Economists and Law scholars, it is interesting to note that they have a stronger preference for *clear* compared to *likely* and *possible*. But both groups of writers of Economics rely on the same set of top 3 EADJs in their RAs. For the Ghanaian Law scholars, *obvious* occurs as the third most important EADJ ahead of *possible* which is less utilised and placed at the number 6 position on the list of top 10 EADJs. It is clear, however, that the range of top 5 EADJs is largely similar for both groups of Law writers.

One further distributional difference in the Ghanaian RAs relates to the epistemic form *true*. The clear disciplinary preference we see regarding its use by the native Economists (as the fourth most important EADJ) is not replicated in the Ghanaian RAs. Surprisingly, *true* is most common in the Law RAs (0.89), occurring in fourth position while it occurs even less frequently in sixth position both in Economics (0.62) and in Sociology (0.45). Thus unlike the international Economics authors, the Ghanaian Economists do not use it as frequently as to show that it is distinctively associated with Economics research claims.

Two final EADJs I wish to foreground in the Ghanaian RAs are *well-known* and *unlikely*. The distributional pattern of the former across the three fields is similar to those in the international RAs. While *well-known* occurs in the top 10 EADJs for each of the disciplines of the two groups of writers, it is not a very productive epistemic marker, as it occurs at the bottom of the list with very low frequencies that are not statistically significant when we compare the two groups of writers. Similarly, the differences in the use of *unlikely* between the two groups across all disciplines are not statistically

significant, although the normed frequencies show a (slightly) lower preference in the Ghanaian RAs (compared to the international RAs). Thus we see a picture of similarity rather than difference in the use of *well-known* and *unlikely* between the two groups of writers, drawing attention to instances in the use of EADJs where the Ghanaian writers behave similarly to their international community colleagues.

To end this section, it can be said that as far the use of EADJs by the Ghanaian writers is concerned, the corpus evidence suggests that they seem to be conscious of the most important EADJs used in international discourse communities. The frequencies of these adjective rhetorical resources are, however, far lower in the Ghanaian RAs than in the native ones. Also, while certain distributional patterns of EADJs in the Ghanaian RAs largely correspond with those produced by the native authors (such as *likely*, *possible*, *well-known*), the distributional patterns of other epistemic forms (e.g., *clear*, *true*) are markedly different when compared to the pattern derived for the international authors.

### **8.3 Typical Phraseological Patterns of Core EADJs in the RAs**

Adjectives, unlike adverbs, are an important lexical category for pattern analysis (Hunston and Francis, 1999; Hunston, 2002; Groom, 2005). Thus a further dimension of EADJ devices I look at relates to the kinds of phraseological pattern they enter into. Such patterns may contribute to the epistemic meanings EADJ devices encode in the RAs. This dimension is achieved through a qualitative concordance analysis of the most frequently used EADJs in the RAs. In particular, I first examine phraseological aspects of EADJ forms *possible*, *likely*, *clear*, *true* and *obvious* in the articles written by the international community authors, and then move on, next, to see the extent to which

the observed patterns are similar or different when compared to the articles produced by the Ghanaian authors.

### 8.3.1 *It + V-link +Adjective + That Clause (It v-link ADJ that)*

In the international community social science RAs, a close inspection of the concordance analysis reveals that a number of EADJs including the most dominant ones – *likely, possible, clear, true* and *obvious* – do enter the pattern *it v-link ADJ that*, a phraseological pattern that has been previously discussed in other contexts and shown to be one which writers rely on to emphasise the epistemic validity of a claim or proposition (see for example, Hunston and Francis, 1999; Charles, 2000; Hunston, 2002; Groom, 2005). Sentence examples (15) and (16) illustrate this pattern with *clear* in Sociology and Economics, which are used by the writers to make readers see that the claim being made is obvious and transparent.

(15) It is also clear that each instantiation of ‘being ethical’ was presented by interviewees within a larger account of a particular context ... [SOC NA05]

(16) By the late 1980s, it was clear that this scheme was becoming fiscally unsustainable. [ECO NA01]

The corpus evidence suggests that in these social science fields this pattern is not as common with the epistemic forms *true* and *obvious* as it is with *possible, likely* and *clear*. For instance in Sociology, while *obvious* records no corpus examples for this pattern, *true* has only 1 example, which, in fact, has a (zero) that clause following the adjective.

(17) Yet, while it is true the dichotomy has been a feature of philosophy since Kant and of the social sciences since Weber, disciplinary assertions about its significance remain in unknown correspondence ... [SOC NA05]

Also, I note no examples for *true* and only 1 example of *obvious* for this pattern in Economics, while in Law *obvious* is used in this pattern 2 times, with no corpus examples for *true*. Example (18) illustrates the use of this pattern with *obvious* in the Law RAs.

- (18) It is obvious that the above division into three categories is reflected in the constitutional ordering that is typical on the scale of the nation-state. [LAW NA17]

As stated above, the epistemic forms *possible*, *likely* and *clear* are more typical of the collocational pattern *it v-link ADJ that* and it is important to note that the epistemic senses of possibility and probability inherent in *possible* and *likely* respectively are not particularly dependent on these words per se; significantly, as Groom (2005) notes, the validity of the epistemic meanings is constraint by the pattern, such that certain syntagmatic changes in this pattern can drastically affect the epistemic meaning. As regards the specific case of *possible* for instance, the epistemic meaning would change to a root possibility meaning if we replaced the *that-clause* following ADJ with a *to/for* phrase or clause, as in (19), which expresses a root rather than an epistemic possibility (glossed as something like 'one can cite several factors ...', which is clearly non epistemic).

- (19) In the case of graduates, it is possible to cite several factors which might encourage a flexible use of their labour that might reduce the rewards to having a degree. [SOC NA04]

So the *that-clause* in the *it v-link ADJ that* pattern, like the other parts of the syntagm, is equally important in deriving the epistemic meaning expressed by *possible*. In the international social science RAs, this pattern is used by authors in all the three fields as a mitigating epistemic resource to signal a less confident position in the claim being made. This epistemic pattern of *possible* is represented in 8 concordance lines in

Sociology; 13 in Economics and 11 in Law. While these frequencies are not large enough to account for any meaningful disciplinary variation, we can argue that qualitatively, the international authors in these social science fields find the use of *possible* in this collocation pattern a useful rhetorical strategy for negotiating research claims. Figure 8.2 is a snapshot of the 13 concordance lines for the pattern *it v-link possible that* in the native Economics RAs, for example.

N	Concordance	File
1	of the marginal exiting firm. It is <b>possible</b> <b>therefore</b> that the	ECO NA19.txt
2	state, etc.). <sup>5</sup> However, it is also <b>possible</b> <b>that</b> additional	ECO NA16.txt
3	from 1870-1988 so it is entirely <b>possible</b> <b>that</b> their findings are	ECO NA17.txt
4	in slack labour markets. It is <b>possible</b> <b>that</b> the matching	ECO NA03.txt
5	data to test the assertion, it is <b>possible</b> <b>that</b> the correlation of	ECO NA17.txt
6	of public goods declines. It is <b>possible</b> <b>that</b> increases in the	ECO NA17.txt
7	the technology of taxation. It is <b>possible</b> <b>that</b> the expansion of	ECO NA17.txt
8	considered in this paper, it is <b>possible</b> <b>that</b> the resource is	ECO NA18.txt
9	not necessarily hold, since it is <b>possible</b> <b>that</b> common changes	ECO NA12.txt
10	affects policy outcomes. It is <b>possible</b> <b>that</b> lobbying can have	ECO NA08.txt
11	to externalities. First, it is <b>possible</b> <b>that</b> gains from	ECO NA19.txt
12	the opposite. It is quite <b>possible</b> <b>that</b> both effects	ECO NA17.txt
13	regression not shown). It remains <b>possible</b> <b>that</b> this term is	ECO NA07.txt

**Figure 8.2:** Concordance lines for the *it v-link possible that* pattern in the NES Economics RAs

With regard to the epistemic form *likely*, a constraint of a different kind can be seen when it occurs in the pattern *it v-link ADJ that*. The epistemic meaning expressed by *likely* in this pattern is one of probability, a much stronger epistemic force than epistemic possibility. When the pattern has *likely* as its ADJ, it is less rigid. This is because the epistemic meaning of probability conveyed is less affected by the *that-clause*, unlike with *possible*, so that in the absence of the *that-clause* which follows the ADJ, the epistemic sense is still intact, as in (20) from Law.

(20) Provided that the vehicle has legal personality, it is likely to enjoy standing before ICSID. [LAW NA02]

However, certain kinds of structural adjustment in the occurrence of *likely* in this pattern could change the epistemic value. A typical case in point involves the negation

of *likely* in the pattern, expressed either as *it is not likely that* or in the form of derivational affixation (*it is unlikely that*). In this negation pattern, it is apparent that there is absence of probability, yet the pattern still encodes an epistemic meaning, one of doubt or improbability, which is weak (in terms of epistemic strength) and far less certain. It essentially assumes the function of a hedge, as in (21) in Economics and (22) in Law.

- (21) Until then, given the very large gap between the cost-effectiveness estimates for prevention and treatment, it is not likely that correcting measurement errors will reverse the ranking. [ECO NA14]
- (22) It is unlikely that this fagade of administrative objectivity will serve for long to deflect judicial review. [LAW NA11]

There are only few instances of this negative pattern in the international corpus of RAs examined, but the few examples noted also show that authors seem to prefer the affix negation type of (22) over the clausal negation type of (21). In total, I found 3 examples of the negation pattern in the Sociology RAs, all of the affix type; 7 examples in the Law RAs, all of the affix type; and 3 examples in the Economics RAs, where 2 are of the affix type and 1 of the clausal type (i.e. example 21 above).

Despite the use of this negative pattern, the positive use of *likely* in the pattern *it v-link ADJ that* to mark the epistemic meaning of probability remains a feature of the RAs explored here, especially in Sociology. My corpus reveals 15 concordance lines with this pattern in the international Sociology RAs, although there are less examples in Economics (2 concordance lines) and Law (3 concordance lines). Thus while qualitatively the *it v-link likely that* pattern is one that is found in the RAs of all three disciplines, the authors of Sociology seem likely to use it more than their colleagues in Economics and Law. However, again, I acknowledge that this preference can only be

regarded as a tendency; to make firmer quantitative claims about such phraseological patterns across these social science disciplines would require much larger corpora for these disciplines. Figure 8.3 shows the 15 concordance lines for the pattern *it v-link likely that-clause* in the international Sociology RAs.

N	Concordance	File
1	significant degree, however, it is just as <i>likely that</i> those motivated to	SOC NA11.txt
2	for their own purposes. By then it is <i>likely that</i> some other member of the	SOC NA12.txt
3	has both functionality and appeal. It is <i>likely that</i> the velocity of employment	SOC NA13.txt
4	disadvantaged groups. It is <i>likely that</i> race/ethnicity and gender	SOC NA03.txt
5	between two discursive traditions. It is <i>likely that</i> there is no single	SOC NA05.txt
6	practitioners constitute a majority. It is <i>likely that</i> the first major task of the	SOC NA09.txt
7	the general notion of prejudice, it is <i>likely that</i> they are somewhat distinct	SOC NA18.txt
8	Ireland) is not especially religious, it is <i>likely that</i> fairly unfamiliar religions such	SOC NA18.txt
9	to claim no religion. In many cases it is <i>likely that</i> significant others are	SOC NA20.txt
10	(Savage, 2000:118). Contra Beck, it is <i>likely that</i> the range, intensity and	SOC NA13.txt
11	to the country, it still seems <i>quite likely that</i> context has a direct impact	SOC NA18.txt
12	have so far. However it would <i>seem likely that</i> if PCGs fail to deliver the	SOC NA09.txt
13	positive emotions. Thus, it <i>seems likely that</i> participants in our negotiated	SOC NA02.txt
14	the empirical evidence, it <i>seems likely that</i> an increase in patterns of	SOC NA13.txt
15	with the advent of NICE. It <i>seems likely that</i> the decision to place Viagra	SOC NA09.txt

Figure 8.3: Concordance lines for the *it v-link likely that* pattern in the NES Sociology RAs

An additional feature in Figure 8.3 can be seen in lines 11–15 where the *v-link* item ‘seem’ or ‘would seem’ enter into a kind of epistemic partnership with the ADJ *likely*, which serves to further mitigate the probability meaning expressed in the pattern.

So far, my analysis on the *it v-link ADJ that* pattern has centered on the international community RAs by the native authors. The pattern is commonly encountered in the Ghanaian RAs too, although some noticeable qualitative variations are worth reporting. First, while in the international RAs the pattern is associated more with *possible*, *likely* and *clear* (than with *true* and *obvious*), the Ghanaian authors tend to associate it more with only *clear*. For instance surprisingly, *possible*, which is quite commonly used in this pattern in the international RAs, occurs in only 2 concordance lines in the Ghanaian RAs, both examples found in the Sociology RAs, one of which is (23).

(23) Also, males recognize symptoms of most STIs more easily than females; therefore it is possible that some girls may be harbouring infections without knowing that they are indeed infected. [SOC GH19]

There are no corpus examples of *possible* in this pattern in the Economics and Law RAs produced by the Ghanaian authors.

Again, EADJ form *likely* in this pattern is not as productive in the Ghanaian RAs as in the international ones. While there is no corpus example for Law, it occurs only once in Sociology, 3 times in Economics. Example (24) is one of the cases in the Ghanaian Economics RAs.

(24) As stated earlier, it is likely that a significant number of Chinese investors come into Ghana with capital provided by the Chinese government and this would definitely give them an advantage. [ECO GH17]

A further feature in the international RAs which is absent in the Ghanaian RAs involves the negation of *likely* in this pattern, which, as I have noted, tends to reduce the epistemic strength from probability to one of doubt or impossibility. The concordance analysis does not reveal any examples in the Ghanaian sub corpus of RAs of this negative pattern associated with *likely*, be it the clause negation type (*not likely*) or the derivational affix type (*unlikely*).

As I stated above, the Ghanaian authors show a strong preference for the use of EADJ form *clear* in this pattern, especially in the fields of Law and Economics where the pattern is seen in several concordance lines. In fact, there are 19 concordance lines for the *it v-link clear that* pattern in the Ghanaian Law RAs, 17 in Economics and 2 in Sociology. Thus overall, the frequencies suggest that the occurrence of *clear* in this pattern is even favoured by the Ghanaian authors more than their international colleagues. Figure 8.4 is the 17 concordance lines of *clear* in this pattern in the Ghanaian

Economics RAs. A closer inspection of these lines (and those found in the Law RAs) points to some interesting qualitative peculiarities in the RAs produced by the Ghanaian authors when compared with the ones by NES in international communities. There is a tendency for them to (unconventionally) exert extreme force in the communication of research claims when deploying this pattern. This can be confirmed by the following in the Ghanaian RAs: 1) less use of *possible* in the *it v-link ADJ that-clause* pattern; 2) the absence of negative *likely* in this pattern; 3) the dominance of the strong epistemic form *clear*; and 4) the use of intensifiers such as *very*, *starkly* and *abundantly* to further enhance the epistemic strength of *clear* in this pattern, as in (25) and (26).

N	Concordance	File
1	the trend is stationary or not. It is <i>clear</i> all the logs of the variables in	ECOGH8.txt
2	and institutional factors. It is already <i>clear</i> from the above that the effect of	ECOGH8.txt
3	Policies and Trends It is <i>clear</i> from the foregoing that the main	ECOGH18.txt
4	on aggregate investment. ' It is quite <i>clear</i> from this exposition that the	ECOGH13.txt
5	two mature in four months. It became <i>clear</i> that male groundnut farmers in	ECOGH21.txt
6	continues. It has therefore, become <i>clear</i> that just increasing production	ECOGH21.txt
7	the value of cash holdings. Thus, it is <i>clear</i> that poorly governed institutions	ECOGH7.txt
8	promote exports. From the above, it is <i>clear</i> that the term economic	ECOGH14.txt
9	respectively. From the figures, it is <i>clear</i> that the plots of both CUSUM	ECOGH4.txt
10	of determination ( $R^2 = 0.83$ ), it is <i>clear</i> that the overall goodness of fits	ECOGH4.txt
11	Janvry, 1995). For example, while it is <i>clear</i> that the current levels of spending	ECOGH9.txt
12	in the groundnut market. It is <i>clear</i> that the women do most of the	ECOGH21.txt
13	in Appendix 1, Table 4). It is quite <i>clear</i> that, until just recently, the mining	ECOGH17.txt
14	Introduction It is starkly <i>clear</i> that China has become	ECOGH17.txt
15	the efficiency of the market. It is very <i>clear</i> that women in the Bolgatanga	ECOGH21.txt
16	From the discussions thus far, it is very <i>clear</i> that groundnut is a very important	ECOGH21.txt
17	; Caprio et al. 1994). Hence it was <i>clear</i> to Ghanaian policymakers both	ECOGH18.txt

**Figure 8.4:** Concordance lines for the pattern *it v-link clear that* in the Ghana Economics RAs

(25) It is starkly clear that China has become increasingly involved in sub-Saharan Africa (SSA) over the past decade. [ECO GH17]

(26) It is abundantly clear that English Courts scrutinize guarantees whenever there is a challenge before they can be enforced. [LAW GH20]

As we have already shown in previous sections, the Ghanaian professional writers in the social science fields explored here generally deploy less epistemic resources in their RAs. We see this in the overall distribution of adjective markers too. However in specific instances where they are seen exploiting a range of epistemic devices, they show a

tendency to use much stronger epistemic forms, as the above features of the *it v-link ADJ that* pattern reveal. It is no coincidence that epistemic intensification in the form of (25) and (26) above does not occur at all in the Anglo-American RA corpus which reflects international disciplinary conventions: it would appear writers simply do not find this kind of intensification a helpful rhetorical strategy, as it seems to unnecessarily emphasise authorial commitment.

### 8.3.2 *Be + (less/more/most) + ADJ Likely + To-Infinitive Clause*

Another notable epistemic phraseology in the international community RAs studied involves the adjective *likely*, commonly occurring in the sequence *be + (less/more/most) + likely + to-clause*. While in this pattern, we may consider the adverb modifiers occurring between 'be' and 'likely' – i.e., *less*, *more* or *most* – as optional elements, it is interesting to observe how the incidence of each in the pattern slightly affects the probability sense chiefly glossed by *likely*. While *less* rhetorically weakens the probability meaning in the pattern, the modifiers *more* and *most* enhance it further, with *most* being the stronger of the two. Examples (27) to (30) drawn from Sociology illustrate the four variants of this pattern observed in the international RAs.

- (27) The nature of prescribing in UK general practice, however, is likely to change in the near future and these conclusions can only be provisional. [SOC NA09]
- (28) If dominated groups enjoy relations with those who dominate them, additional to those which form the basis of their domination (e.g., employment relations), they are less likely to mobilise. [SOC NA11]
- (29) In model 3 respondents with no children are 60.4 percent more likely to be religiously unaffiliated. [SOC NA20]
- (30) Acting in their capacities as employers and managers, these same adults are most likely to reward the relevant kinds of cultural capital. [SOC NA12]

Also, as both Charles (2000) and Groom (2005) have noted, while the ‘that-clause’ in the *it v-link ADJ that-clause* pattern, which I have discussed in section 8.3.1 above, is crucial for the validation of the epistemic meaning the pattern conveys, the ‘to-clause’ in the *be (less/more/most) likely to-clause*, as in the examples (27)–(30) above, emphasizes *processes* in the Hallidayan sense (see for instance, Halliday, 1994). In SFL, processes are recognised as “one of the three nuclear experiential structural elements” actualised through verbs of happening, doing, sensing, saying, being or having (Matthiessen *et al.*, 2010: 164). And as Flowerdew (2013) further notes, the verbal group that encodes a process may be finite or non-finite. In the phraseological pattern under consideration, the verbal elements in the ‘to-clause’, as examples (27)–(30) above show, are all non-finite. Thus in the international disciplinary RAs explored in this study, the importance of the ‘to-clause’ in this pattern becomes apparent especially in its role of introducing new information, which writers, by virtue of the epistemic meaning in the entire pattern, present and explain tentatively so as to avoid the risk of being rather categorical.

In terms of the frequency of the *be (less/more/most) likely to-clause* pattern in the international RAs, we see that it most commonly occurs in the Sociology RAs as there are as many as 131 concordance lines that reflect this pattern. Out of this number, *likely* in this pattern is preceded by *most* in 15 concordance lines, by *more* in 57 lines, by *less* in 11 lines, and 48 lines involve instances where *likely* is without any of these adverb modifiers, as in (27) above. It seems, then, that of these three items of epistemic modification, the writers of Sociology RAs show a clear preference for (and a bias towards) the use of *more* between ‘be’ and ‘likely’ in the pattern, as illustrated by the 25 sampled concordance lines in Figure 8.5 below.

N	Concordance	File
1	liberal political stances are all <b>more likely</b> to claim no 1 religion. All of	SOC NA20.txt
2	than social capital, which are also <b>more likely</b> to be possessed by collectives	SOC NA11.txt
3	existing social order is just, and <b>more likely</b> to demand redistributive policies	SOC NA01.txt
4	an organisation, for example, are <b>more likely</b> to know other smokers because	SOC NA11.txt
5	and/or abuse; again women are <b>more likely</b> to suffer (Jamieson, 1998: 150-2	SOC NA14.txt
6	Table 3 shows, organisations are <b>more likely</b> to have an impact when public	SOC NA19.txt
7	politics because they are <b>more likely</b> to have undergone a politicizing	SOC NA11.txt
8	religiously unaffiliated parents are <b>more likely</b> to be religiously unaffiliated. In	SOC NA20.txt
9	, discriminatory practices are <b>more likely</b> to occur at the hiring stage	SOC NA03.txt
10	to egalitarian values are <b>more likely</b> to discriminate when hiring	SOC NA03.txt
11	. Organizational activities are <b>more likely</b> to matter, but even here the	SOC NA19.txt
12	. Perhaps undergraduates are <b>more likely</b> to be 'political' than 6th formers,	SOC NA11.txt
13	to find a new job, and they are <b>more likely</b> to have been selected for	SOC NA03.txt
14	friends and would-be activists are <b>more likely</b> to become involved if their	SOC NA11.txt
15	experience long jobless spells are <b>more likely</b> both to become discouraged and	SOC NA03.txt
16	values. Once hired, workers are <b>more likely</b> to be paid commensurately with	SOC NA03.txt
17	levels of unemployment, are <b>more likely</b> to constitute peripheral	SOC NA13.txt
18	, and these new divisions are <b>more likely</b> to deepen and harden than to	SOC NA12.txt
19	of a particular type of music are <b>more likely</b> to know one another because	SOC NA11.txt
20	, that discriminatory practices are <b>more likely</b> to affect employment outcomes	SOC NA03.txt
21	that overt discrimination is <b>more likely</b> to be met with social disapproval	SOC NA03.txt
22	. && && As a graduate is <b>more likely</b> to be working in a sector where	SOC NA04.txt
23	efforts, the mismatch is <b>more likely</b> to generate 'cognitive	SOC NA11.txt
24	in generalized exchange were <b>more likely</b> to perceive themselves as a	SOC NA02.txt
25	. I found that the former were <b>more likely</b> to have been active than the	SOC NA11.txt

**Figure 8.5:** Sample concordance lines for the *be more likely to*-clause pattern in the NES Sociology RAs

But the *be (less/more/most) likely to*-clause pattern is also (quite visibly) a feature in the RAs written by the international Economists and Law scholars. I found 59 and 77 concordance lines reflecting the use of this pattern in Economics and Law respectively. For the writers on Economics, the breakdown of the four variants of this pattern is as follows: 2 concordance lines for *be most likely*; 18 for *be more likely*; 7 lines for *be less likely*; and 32 lines for *be likely* (without a modifier). The distributional patterns for the writers on Law are 1 concordance line for *be most likely*; 10 lines for *be more likely*; 6 lines for *be less likely*; and 60 lines are cases of *be likely*. Thus from the concordance analysis of the *be (less/more/most) likely to*-clause pattern, we see that in these international social science RAs, writers seem to have a marked preference for the *be more likely* and *be likely* (no modification) variants. However, the corpus evidence also shows that while the *be more likely* variant is (slightly) more common than the *be likely* variant in the Sociology RAs, there is a clear-cut preference for the *be likely* variant over the *be more likely* type in both the Law and the Economics RAs.

I now turn to the Ghanaian-authored RAs. The *be (less/more/most) likely to-clause* pattern is one that the Ghanaian writers utilise in their RAs although there are fewer cases of each of the four variants when compared with the international authors. But here too, as in the native RAs, we observe that the phraseological pattern is more associated with writers of Sociology than of both Economics and Law. Out of 51 concordance lines exhibiting this pattern in the Sociology RAs, there are 31 concordance lines for the *be more likely* variant; 5 lines for *be less likely*; and 15 lines for *be likely*. Interestingly, I found no examples of the *be most likely* variant in the Ghanaian Sociology RAs. Thus the distributional pattern for these variants show that, like in the international Sociology RAs, the *be more likely* and the *be likely* variants are the most preferred by the Ghanaian Sociologists. The pattern and its four variants are, however, far less productive and utilised in the Economics and Law RAs. In total 21 concordance lines exhibit this pattern in the Ghanaian Economics RAs and there is only 1 example each of the *be most likely*, *be more likely* and *be less likely* variants, while the rest of the 18 lines are examples of the *be likely* variant. In the Law RAs, there are only 15 concordance lines showing this pattern and 15 examples are of the *be likely* variant. In other words, the Ghanaian Law scholars never used the adverb modifier variants in their RAs.

The findings, as regards the use of the *be (less/more/most) likely to-clause* pattern by the Ghanaian researchers, give the indication that they are aware of its epistemic rhetorical importance in academic writing. While the preference for the *be likely* (without a modifier) variant in Economics and Law is similar for the two groups of writers, it is surprising to find that the Ghanaian writers of Economics used only 1 example each of the *less/more/most likely* variants while their colleagues in Law

recorded no examples at all for these variants in their RAs. Although the qualitative use of the *be (less/more/most) likely to-clause* pattern is the emphasis here, which is quite well accounted for in the Ghanaian RAs, the Ghanaian writers, especially the Economists and the Law scholars, might find it useful to deploy more of this epistemic phraseological pattern so as to meet disciplinary practices at the international level.

#### **8.4 Epistemic Adjectives (EADJs): Strength of Epistemic Modality**

The final main section of this chapter looks at epistemic adjectives (EADJs) in terms of author's preferences as regards the strength of epistemic modality. The analysis here is based on the three most commonly used EADJs in the social science RAs explored in this study: *clear*, *likely*, and *possible*. Roughly, each one of these three devices represents the strength levels (schema) of strong, medium and weak adopted for this study. *Clear* is regarded as a strong epistemic device; *likely* (with its intensification modifiers) may well generally be placed under the medium level on the strong, medium and weak continuum; and *possible* is considered to be a weak epistemic device. I focus on these three because for EADJs, while writers have a number of choices for the strong (e.g., *clear*, *obvious*, *true*, *well-known*) and medium (e.g., *likely*, *apparent*, *probable*) level adjectives, *possible* is the only main productive weak level EADJ in the list of epistemic items examined in this study. We have seen in Chapters 5, 6 and 7 of this study that writers use other non-adjectival linguistic forms that encode weak epistemic force. Thus, I think, a focus on *clear*, *likely* and *possible* offers a fair assessment of writer preferences of EADJs that express strong, medium and weak levels of epistemic strength. Examples (31)–(33) are intended to illustrate how these EADJs in context encode the levels of epistemic strength.

(31) It pointed to a clear set of policy prescriptions that correspond to a variable that governments could control: domestic credit. [SOC NA01] – STRONG

(32) Firms are therefore likely to self-select into export-promotion policies. [ECO NA19] – MEDIUM

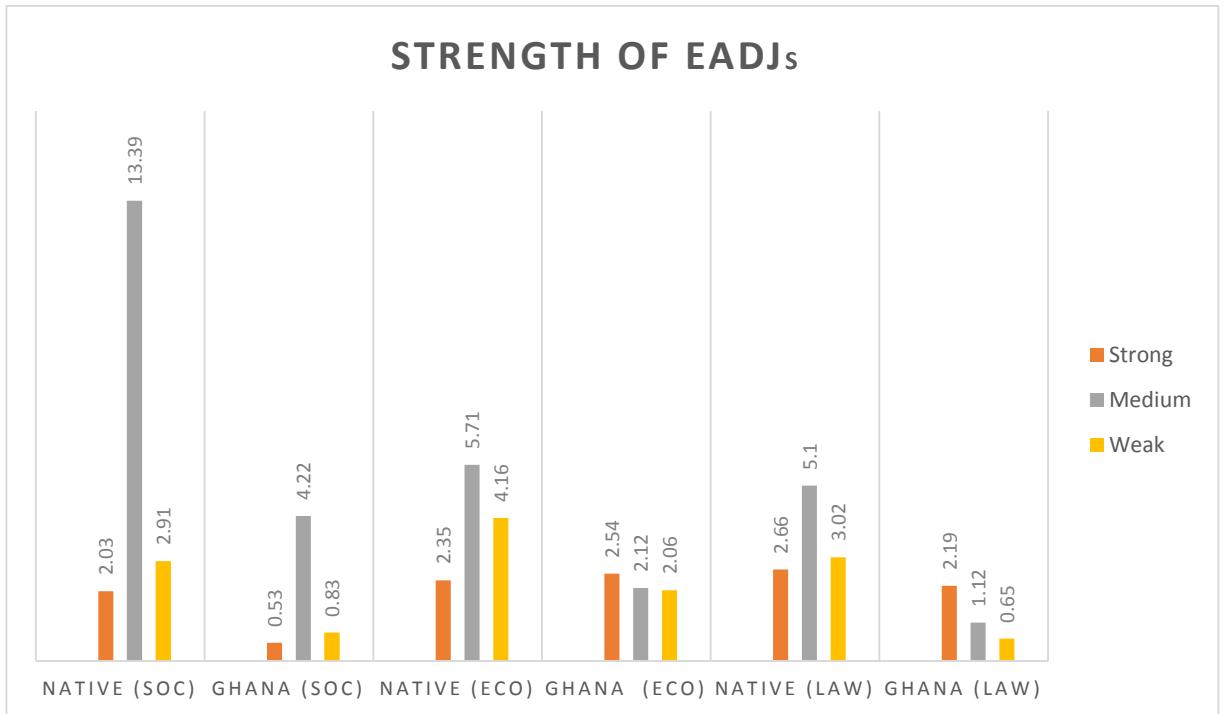
(33) The judge's responsibility to find and apply the law may affect the application of JGM, for it is possible that the judge's law-applying responsibilities might interfere with and distort ... his responsibilities as a moral reasoner. [LAW NA20] WEAK

While I acknowledge that some earlier studies (e.g., Biber, 2006; Aşçam, 2014) have found it more convenient to classify epistemic adjective strength in particular in terms of 1) certainty adjectives (e.g., *certain*, *apparent*, *clear*) and 2) likelihood adjectives (e.g., *probable*, *likely*, *possible*), I will use the three-way groupings of strong, medium and weak degrees of likelihood, which, to my mind, offers a more accurate and effective classification of epistemic adjectives. For one thing, the term 'certainty' partly connotes absence of epistemic modality, as I have mentioned more generally in Chapter 4 of this study. For another, the term 'likelihood' might itself be sufficient to classify epistemic adjectives, including the so-called 'certainty' ones, using a strong, medium and weak levels continuum such that forms like *certain*, *probable* and *possible* can be seen to (probably more usefully) represent these three levels of 'likelihood' respectively.

#### 8.4.1 Disciplinary Variation

If we consider the occurrence of EADJs *clear* (strong level), *likely* (medium level) and *possible* (weak level) in the international community RAs, we see noticeable (frequency) variations across the three disciplines of Sociology, Economics and Law. Also, the extent to which the distributional variation of these adjectives for the three levels of epistemic strength compare with that of the Ghanaian-authored disciplinary RAs is revealed by the corpus analysis. Figure 8.6 shows the distribution of these strength level EADJs in

the native Anglo-American corpus (NAAC) and the non-native Ghanaian corpus (NNGC) representing the two groups of RA writers across the disciplines.



**Figure 8.6:** EADJs according to degrees of epistemic strength by the two groups of writers

From these results on the strength of the most common EADJs, it can be seen that the international community RAs do not particularly point to any qualitative differences across the three fields. In all three fields medium level EADJ *likely* is most dominant, followed by the weak level form *possible*, and then the strong form *clear* happens to be the least common. Thus the variations that emerge for these strength levels of EADJs are mainly of a quantitative kind. The medium (or moderate) level of epistemic strength is significantly more frequent in Sociology (13.39) than in both Economics (5.71) and Law (5.10) which utilise this level of strength in almost equal measure. A different picture emerges with regards to the weak level, where its occurrence (through the use of *possible*) is most common in Economics (4.16), followed by Law (3.02) and the least common in Sociology (2.91). Log-likelihood scores for these frequencies indicate that

the differences observed for weak epistemic strength of EADJs are (statistically) not significant between the three fields. Additionally as Figure 8.5 shows, we observe only a slight frequency difference of the strong epistemic level between the fields of the international RAs, recording (2.66) in Law, (2.35) in Economics and (2.03) in Sociology. Again, all these differences prove to be statistically marginal.

As can be seen from Figure 8.5, the disciplinary distributional pattern of EADJ strength, as reflected in the use of *clear* (strong), *likely* (medium) and *possible* (weak), reveals quite a different scenario in the disciplinary RAs authored by the Ghanaian academics. A similar distributional pattern, as that of the native Sociology RAs, can be seen in the Ghanaian Sociology RAs, as medium EADJ *likely* is the most common (4.22), followed by weak EADJ *possible* (0.83), then least being strong EADJ *clear* (0.53). However, a different pattern is seen in the disciplines of Economics and Law, where strong EADJ *clear* is most frequent (Economics, 2.54; Law, 2.19), followed by medium EADJ *likely* in both disciplines (Economics, 2.12; Law, 1.12), and the least frequent in both disciplines being weak EADJ *possible* (Economics, 2.06; Law, 0.65). Thus in the case of the Ghanaian authors, while the frequencies of these EADJ strength variants are generally lower, their patterns of distribution do not quite match those in the articles produced by the native speakers.

#### 8.4.2 Ghanaian vs. Anglo-American Writers

In this study most of the analyses carried out on the strength of epistemicity reveals the Ghanaian authors, relative to their Anglo-American colleagues, to deploy fewer epistemic devices that exhibit each of the three strength levels. However, in cases where the Ghanaian authors are seen using a greater measure of epistemic resources,

they tend to use more strong level devices than medium and weak level ones. The analysis here of EADJs according to epistemic strength offer added evidence in this regard.

It is noticeable that whereas the Anglo-American writers on all three subjects show a tendency to use more medium and weak level EADJs than strong level ones, the Ghanaian writers on Economics and Law in particular show a greater preference for the strong level EADJ *clear*. However, it can also be observed that the Ghanaian Sociologists compare more favourably with their Anglo-American colleagues as both groups of Sociology writers show a similar distributional pattern in the use of more medium and weak EADJs *likely* and *possible* than the much stronger EADJ *clear*. As mentioned earlier in this chapter, adjectives that express epistemic modality are the least common of the five linguistic categories explored in the present study. However, mitigating EADJs such as *likely* and *possible* have been shown as crucial rhetorical devices in the international community RAs. It would appear that, for these devices, the Ghanaian writers (especially on Economics and Law) might find it useful to use these resources in more depth so as to reflect the rhetorical styles encountered in respectable international journals.

## 8.5 Conclusion

In this chapter, I explored how epistemic modality is encoded through adjectives as well as the most notable phraseological (or collocational) patterns these adjectives of epistemic value enter into. I looked at how these EADJs characterise international community RAs produced by native speakers of English, and then tried to show how the

EADJ features in the RAs by the Ghanaian writers under study compare with those in the international community RAs.

First, the corpus analysis reveals that the depth of use of EADJs is significantly higher in the international RAs than in the RAs by the Ghanaian writers, despite adjectives of epistemic modality being generally far less productive in the RAs when compared with modal verbs, lexical verbs and adverbs (discussed in Chapters 5, 6 and 7 respectively). A second and more encouraging finding is that both the Ghanaian writers and their international colleagues use a similar range of EADJs as revealed in the list of top 10 EADJs found across the disciplinary RAs produced by both groups of writers. For instance, we have seen that 8 out of the 10 most important EADJs are common in the RAs produced by both groups of Sociology writers. However despite this more general similarity, the corpus analysis, as we have seen in this chapter, further reveals instances of distributional differences of certain EADJs across the disciplinary RAs produced by both groups. The findings regarding depth and range of use of EADJ devices suggest that while the Ghanaian writers demonstrate considerable awareness of the most important EADJs in their professional academic writing, they tend to use them far less than would be ideal and required in mainstream international communities.

As regards the analysis involving the phraseology of EADJs, I looked at two important structural patterns commonly associated with notable EADJs observed in this study, namely, the *it v-link ADJ that-clause* pattern and the *be (less/more/most) likely to-clause* pattern. Both emerged as very productive patterns which social science RA writers often use to express varying degrees of epistemic modality. Having closely

examined these patterns in the RAs of the two groups of writers, I noted that while the Ghanaian writers generally demonstrate awareness of these patterns, and use them in their RAs, some qualitative and frequency differences can be discerned, especially with regards to the *it v-link ADJ that-clause* pattern. Most notably, I found peculiar intensification styles of *clear* in this pattern (e.g., *very clear, starkly clear, abundantly clear*), which by every indication, the international community authors deliberately avoid in their RAs in order not to appear overly forceful when presenting research claims.

The final section of this chapter explored epistemic strength patterning using the EADJs *clear* (strong), *likely* (medium) and *possible* (weak). As we have seen in section 8.4 above, whereas the Anglo-American writers across all the three disciplines consistently attach more importance to the medium and weak level EADJs *likely* and *possible* (which reduce the force of a claim) than the strong level EADJ *clear* (which heightens the force of a claim), the Ghanaian writers of Economics and Law in particular indicate a greater preference for the latter than for the former. Similar findings have already been noted in this study with modal verbs, lexical verbs and adverbials. The corpus evidence has amply revealed that there is always a tendency for the Ghanaian writers to deploy more strong level epistemic items as against the medium and weak level ones, which enable writers to present research in a more circumspect way. The findings here are quite similar to those in Ağçam's (2014: 1230) study on epistemic adjectives, where he finds that while Turkish and Spanish (non-native) academic authors of English used mainly 'certainty adjectives', (native) academic authors of English employed mainly 'likelihood adjectives', noting that the two non-native groups

“are inclined to use cautious expressions less frequently than the native group in their academic writing”.

## CHAPTER 9 – EPISTEMIC MARKERS : NOUNS

### 9.1 Introduction

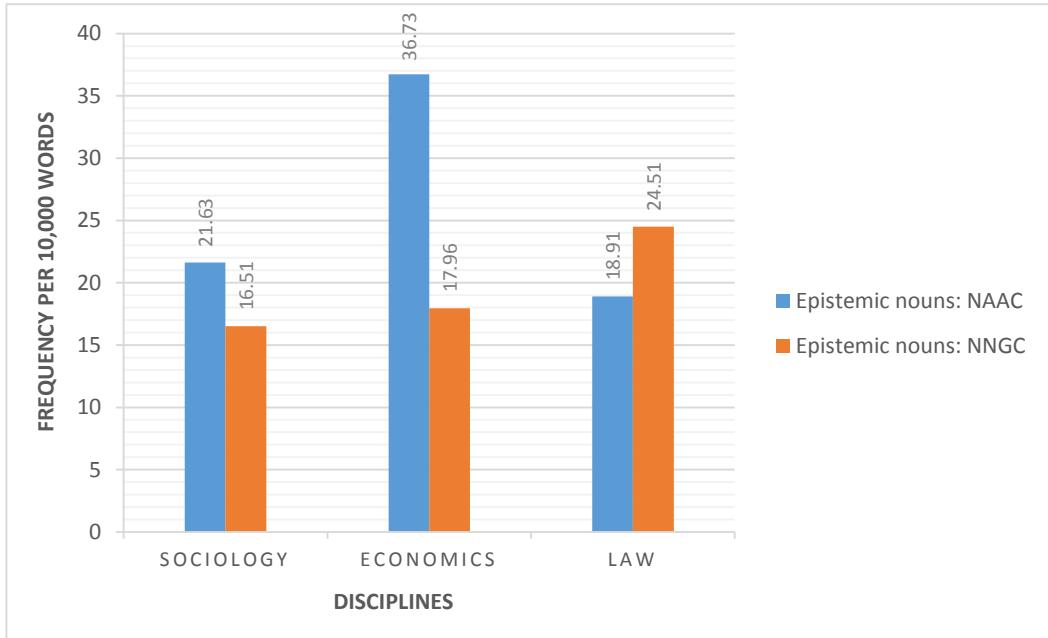
In this chapter I focus on nouns and report the findings of the corpus analysis carried out on epistemic nouns (ENs) in the two sub- corpora representing the Anglo-American writers and the Ghanaian writers. As in the previous analysis chapters, I first look at the Anglo-American RAs, examining the frequency and use of epistemic nouns (ENs) and the kinds of disciplinary variation they exhibit in terms of i) the depth and range of EN use; ii) the common phraseological (or structural) patterns ENs enter into in the disciplinary RAs of focus, and iii) the levels of epistemic strength expressed via ENs. I will then explore how these EN features are utilised in the RAs written by the Ghanaian authors, who are the main focus of this study. I aim to find out the extent to which the EN rhetorical practices of the Ghanaian writers compare with those of the international writers.

### 9.2 Frequency of Epistemic Nouns (ENs) in the RAs

The analysis of ENs in the corpora of RAs under investigation reveals them as one of the epistemic categories with relatively low frequencies of use, only occurring slightly more frequently than epistemic adjectives (EADJs), which are the least frequent in these RAs. Indeed the picture that has emerged throughout this study is that, for both the Anglo-American and Ghanaian writers, epistemic lexical verbs (ELVs), epistemic modal verbs (EMVs) and epistemic adverbs (EADVs) constitute the most dominant epistemic devices used in their RAs, and these are used much more than ENs and EADJs (see Tables 5.3 and 5.4 in chapter 5 for overall frequencies of the lexical categories). The dominance of

these three linguistic categories (over the latter two) confirms the findings of earlier studies (e.g., Hyland, 1996; Rizomilioti, 2006; Vold, 2006), all of which find that modal verbs, lexical verbs and adverbs are the most utilised lexical resources for expressing epistemic modality in academic writing. For example, after exploring her corpus of Linguistics and Medicine RAs, Vold (2006: 231) lists the 11 most frequent epistemic markers in these RAs before undertaking a much closer examination of their use in context. All of Vold's 11 epistemic markers were either modal verbs (*may, might, could*), or lexical verbs (*assume, suggest, appear, seem, indicate*), or adverbs (*perhaps, possible, probably*). None were adjectives or nouns. It is clear, then, that while ENs (and EADJs) occur in academic writing, they are usually not used as much as ELVs, EMVs and EADVs. This relative rarity of adjectives and nouns for epistemic purposes is also alluded to in Biber (2006a), when he discusses epistemic stance in several academic discourse genres.

In the present study, as can be seen from Table 4.3 in Chapter 4, a total of 25 noun items were analysed for their epistemic importance. The overall occurrence of ENs in the RAs written by the two groups of academics is presented in Figure 9.1 below. I will first draw attention to disciplinary variations that can be discerned in the use of ENs in the RAs written by the two groups. I will then move on to explore (more generally) the qualitative and frequency differences, as well as similarities, between these two groups of scholars with regard to the specific use of ENs in the RAs. In each case, the underlying goal is to look at the extent to which the deployment of ENs by the Ghanaian writers compares with its uses in the RAs of the international community writers.



**Figure 9.1:** Frequency of ENs in the two corpora per 10, 000 words

### 9.2.1 Variation across Disciplinary Fields

As Figure 9.1 makes clear, there are on-the-surface frequency differences in the use of ENs across the three fields of the international RAs. Economists seem to prefer ENs the most as they use the largest number of these resources per 10, 000 running words (36.73) compared with the Sociologists (21. 63) and the Law scholars (18. 91), who both use ENs in nearly equal measure. We see then that the distributional difference of ENs in the international articles is wide between Economics RAs on the one hand and Sociology and Law RAs on the other. These results are further assessed statistically with the log-likelihood (LL) statistic which confirms these normed frequency differences. While the log-likelihood scores derived for the differences in the use of ENs between the Economics and Sociology RAs (LL 58.59) and between the Economics and Law and RAs (LL 105.79) are statistically significant at the  $p<0.01$  level, the score obtained from the comparison between the Sociology and Law RAs (LL 3.27) proves to be insignificant

and therefore marginal. What these statistical scores imply, relative to EN use across the three disciplines, is that at one independent end of the comparisons (i.e. Sociology vs. Law), disciplinary variation is not influenced by the use of nouns of epistemic modality by the international authors. However, this influence is most marked at two ends between Economics vs. Sociology and between Economics vs. Law.

Biber *et al.* (1999) have generally discussed the importance of nominal items in academic prose. They note, for instance, that academic discussions often make use of nominalisations (stripping off tense specifications and other deictic elements) to express abstract concepts, actions and processes “in general terms rather [than] in relation to a specific place and time” (Biber *et al.*, 1999: 325). This importance can also be seen in the specific case of epistemic nominalisation which allows writers to present claims and decisions in ways that might be perceived to reflect objective reality rather than the writer’s personal authority. This point seems to explain the dominance of ENs in the international Economics RAs over the RAs of Sociology and Law, and thus shows, once more, how disciplinary knowledge might call for certain linguistic choices. I have already explained how Economists in particular, as a disciplinary culture, position themselves much like academics in the hard knowledge fields such as Mathematics or Physics do, and as a consequence tend to prioritise objective reality over personal authority, which might partly be actualised via the high-frequency occurrences of epistemic nominalised items like *assumption*, *theory*, *claim*, *belief*, *estimation*, *possibility*, *likelihood* etc.

I now turn to the disciplinary patterns on the use of ENs in the Ghanaian-authored RAs, where a close inspection of the results in Figure 9.1 reveals noticeable

distributional differences when we compare these with the international RAs. Here, the Ghanaian Law RAs record the highest uses of ENs per 10, 000 words (24.51) followed by the Economics RAs (17.96), while the RAs on Sociology use the lowest amount of ENs (16.51). Statistical values for these observed differences in the use of ENs between the disciplines of the Ghanaian RAs further indicate that while Sociology vs. Economics (LL 0.85) is not significant at the  $p<0.01$  level, the differences for Sociology vs. Law (LL 23.17) and Economics vs. Law (LL 15.82) are statistically significant.

These results suggest that in the Ghanaian RAs while disciplinary variation is not influenced by the overall use of ENs between the Sociology and Economics RAs, the influence is quite clearly established between Law and these two. We see that whereas in the native RAs Economists favour the use of ENs more than their colleagues in Sociology and Law, in the Ghanaian-authored RAs Law scholars use ENs more than their Ghanaian Economics and Sociology counterparts. To this end, the important link we establish between the discipline of Economics and the use of epistemic nominalisation in the international community RAs is not seen in the Ghanaian Economics RAs, as it is the Law scholars who rather deploy ENs more frequently. It would appear that the Ghanaian Economists deploy fewer ENs in their RAs than would be required in international communities. Other notable differences can be seen as the groups for Sociology are not fairly matched, as the international Sociology authors used significantly more ENs than their Ghanaian colleagues (LL 9.65). However, on the two groups of writers of Law the differences are not matched but, in this case, it is the Ghanaian writers who deploy significantly more ENs than their international colleagues (LL 13.97).

## 9.2.2 *Similarities and Differences between Ghanaian and International Writers*

### 9.2.2.1 *Depth of Epistemic Noun (EN) Use*

Generally, the overall occurrence of EN use in the RAs by the international writers (24.80) per 10, 000 words does not appear to be so wide when compared with the occurrence of the feature in the Ghanaian-authored RAs (20.00). As already discussed at the start of this chapter, ENs are not particularly one of the most productive epistemic markers in this social science RAs and this seems the case for both groups of academic writers. But if we further examine these overall frequency figures for EN use between the two groups, we see that the non-Ghanaian writers use significantly more ENs than their Ghanaian counterparts. At the level of disciplines however, while the Non-Ghanaian Sociologists and Economics exploited ENs significantly more than their Ghanaian colleagues in both fields, it is the other way round with regard to Law: the Ghanaian Law scholars used ENs significantly more than their international colleagues.

Table 9.1 represents the statistical scores comparing the distribution of ENs in the disciplinary RAs produced by the two groups of academic writers.

**Table 9.1:** LL values for ENs between the two groups of writers

Discipline	Anglo-American writers	Ghanaian writers	LL-value	Significance level: p<0.01
Sociology	320	219	9.65	Sig.
Economics	547	262	96.81	Sig.
Law	419	414	13.97	Sig.
Overall	1286	895	24.73	Sig.

The implication of these distributional results is that while on the whole the Ghanaian writers use significantly less ENs than the international writers, this is specifically due to the underuse of the feature by the Ghanaian writers of Economics in particular, and

also of Sociology. The articles by the Ghanaian Law scholars contain significantly more ENs (LL 13.97) than those written by the international Law scholars, making them appear to be using more ENs than is typical of Law articles in top-rated international journals.

#### 9.2.2.2 *The Commonly Used Epistemic Nouns (ENs)*

To focus more closely on the most common epistemic nouns (ENs) in the disciplinary RAs written by the two groups of scholars I will now examine the top 10 most frequently occurring ENs in the RAs. While the complete list of ENs explored in this study numbered 25 (see Table 4.4), the top 10 ENs found in each discipline of RAs for the two groups accounted for 83% or more of the entire uses of ENs in the two sub-corpora. This points to the fact that more than half of the noun forms included for epistemic modality analysis are less common in the RAs explored, a number of which either do not occur in some disciplines at all or occur with very low frequencies. For example in the Anglo-American corpus, forms like *certainty, danger, chance, speculation, doubt*, among others record low or zero scores in terms of their epistemic meaning. While such forms are generally known for their epistemic value, they are less preferred in the social science fields explored here, when compared to other more commonly used forms like *evidence, view, fact, assumption, claim and possibility*.

The list of top 10 ENs in the disciplinary RAs representing the two groups of writers offers various points of comparison, so that we are able to compare the disciplinary variations in the international articles as regards the use of ENs with those in the Ghanaian articles, and report the extent to which the Ghanaian writers' practices compare with those of international disciplinary academic practices. Tables 9.2 and 9.3

show the 10 most commonly used ENs in the articles written by the two groups of scholars across the three fields and their frequencies per 10, 000 running words. The raw frequencies are shown in parenthesis.

**Table 9.2:** Top 10 ENs in the NAAC for the three disciplines

Anglo-American Authors		
Sociology	Economics	Law
evidence 5.21(77)	evidence 11.28(168)	view 4.02(89)
fact 2.91(43)	probability 5.30(79)	fact 2.93(65)
idea 2.37(35)	assumption 4.30(64)	evidence 1.80(40)
view 2.10(31)	possibility 2.42(36)	idea 1.71(38)
theory 1.22(18)	view 2.28(34)	possibility 1.53(34)
tendency 1.22(18)	explanation 1.95(29)	claim 1.08(24)
possibility 0.95(14)	theory 1.68(25)	theory 1.04(23)
claim 0.88(13)	fact 1.28(19)	assumption 0.95(21)
explanation 0.18(13)	estimate 1.14(14)	fear 0.50(11)
likelihood 0.74(11)	idea 1.14(14)	belief 0.45(10)

To begin with the Anglo-American RAs in terms of disciplinary differences of EN use, Table 9.2 offers some clear distributional patterns. First, an obvious preference can be seen in the use of the nominal forms *evidence* and *view*. The EN form *evidence* is the most preferred EN in the native Economics and Sociology RAs. But it is used significantly more by the writers of Economics than by the writers on Sociology who also exploit it significantly more than their colleagues in Law. The most preferred EN form for the

writers of Law is *view*, which is used relatively less frequently by the writers of the other two disciplines.

**Table 9.3:** Top 10 ENs in the NNGC for the three disciplines

Anglo-American Authors		
Sociology	Economics	Law
fact 6.56(87)	fact 5.14(75)	fact 7.87(133)
evidence 1.66(22)	evidence 4.18(61)	<i>view</i> 4.91(83)
view 1.66(22)	view 1.65(24)	evidence 2.07(35)
belief 0.83(11)	estimation 1.10(16)	opinion 1.78(30)
explanation 0.83(11)	indication 0.82(12)	idea 1.01(17)
theory 0.53(7)	idea 0.75(11)	assumption 0.83(14)
fear 0.53(7)	explanation 0.69(10)	doubt 0.77(13)
possibility 0.45(6)	possibility 0.62(9)	suggestion 0.71(12)
tendency 0.38(5)	assumption 0.55(8)	indication 0.65(11)
assumption 0.38(5)	theory 0.48(7)	belief 0.65(11)

Here are sentential examples illustrating the use of these two EN forms in the three fields, (1) and (2) on *evidence* in Economics and Sociology and (3) on *view* in Law.

- (1) There is evidence that job seekers rarely refuse job offers from employers. [ECO NA03]
- (2) We also find evidence that attending church as a child and having children as an adult are influential regarding the choice to claim no religion. [SOC NA20]
- (3) In my view, this is not an appropriate analogy. [LAW NA20]

These results on the disciplinary differences in the use of EN forms *evidence* and *view* by the international writers serve as added examples to show how the pervasive use of

certain epistemic modality devices may be a reflection of disciplinary knowledge practices. I have already, in previous sections of this thesis (see for example section 6.2.2.2), tried to explain that Economics as a field in particular, and Sociology to a certain extent, (both more than Law), have an affinity with the hard sciences by way of focusing more on the empirical and objective presentation of knowledge than on authorial or personal involvement. It would seem that the predominance of *evidence* first in Economics and second in Sociology over Law, and the high frequency of *view* in Law than in the other two disciplines further attest to this explanation. Quite clearly, *evidence* is a much more objective and fact-based epistemic resource than *view*, which reflects a more subjective and personal epistemic stance, as in (3) above.

Furthermore, the EN devices *probability*, *assumption* and *estimate* present a clear case of disciplinary variation in the international RAs. They, in particular, seem to distinguish the Economics RAs from the other two disciplines. As Table 9.2 makes clear, while these epistemic devices are conspicuously missing in the list of top 10 ENs in the Sociology RAs, only *assumption* appears in the list of top 10 ENs in the Law RAs. Even so, it is used significantly less in the Law RAs (0.95) when compared to its occurrence in the Economics RAs (4.30). Thus these three EN devices are predominantly characteristic of the Economics RAs, notwithstanding the varying frequencies with which they occur. Examples (4) to (6) illustrate their use in the RAs of Economics by the international writers.

- (4) Irrespective of the number of export firms in the same region or industry, we find that agglomerated industries raise the probability of export entry. [ECO NA19]
- (5) In this section, we make the additional assumption that at least one side (presumably consumers) strictly dislikes income risk. [ECO NA15]

- (6) Dividing this coefficient by the mean of the dependent variable provides an estimate of the labour supply elasticity associated with the variable. [ECO NA01]

That these ENs are most preferred in Economics could also be attributed to the tendency by writers of Economics to apply theorems and models characteristic of the field of Mathematics in the analysis of Economics data (Dahl, 2009), a tendency which itself might further necessitate the use of epistemic pointers such as the ENs in examples (4) to (6) to make Economics knowledge claims.

There are other noticeable distributional differences in the use of ENs in the international articles. We see, for instance, that while EN forms *fact* and *idea* appear in the list of top 10 ENs for all three disciplines, they are more common in Sociology and Law than in Economics. *Tendency* is another EN form that appears to be more typical of the writers of Sociology than the writers of the other two disciplines. While *tendency* occurs in sixth position with a frequency of (1.22) per 10, 000 words in the list of top 10 ENs in the Sociology RAs, it seems to be less preferred in the Law and Economics RAs, occurring with relatively low frequencies – Law (0.36) and Economics (0.67) – and not listed among the top 10 ENs for these disciplines. A point of similarity across the disciplines of the international RAs, however, as regards the use of ENs, relates to the form *theory*, which is much more fairly equally distributed across the three disciplines, although Economics RAs exploit it (slightly) more than RAs in Sociology and Law.

I turn now to Table 9.3 which presents the distribution in the list of top 10 ENs in the Ghanaian-authored RAs across the three disciplines. Here, we see some divergent as well as similar patterns of EN use in the Ghanaian RAs when compared with the disciplinary variations observed in the international RAs. The first obvious observation

is the preference for the EN form *fact* by the Ghanaian writers, which is a major departure from the non-Ghanaian writers who tend to use *fact* as an epistemic device less. But *fact* is not simply the most preferred EN device in all three disciplines of the Ghanaian RAs, it also seems to be overused in all the three disciplines when we compare its frequencies with those in the international disciplinary RAs. Log-likelihood statistical results confirm this overuse as the LL scores obtained indicate a significantly higher use of EN form *fact* by the Ghanaian writers over their international colleagues in Sociology (LL 20. 36), in Economics (LL 36. 85) and in Law (LL 45. 93). Typical examples of the use of *fact* as an epistemic device in the Ghanaian disciplinary RAs are (7) – (9) below.

- (7) In all social contexts, ill health is a fact of life; in its severe form, it is expensive and disruptive for the sick person, his relations and the society. [SOC GH6]
- (8) The growth of capital itself has had its source from largely public sources, a fact that has significant implications for its productivity. [ECO GH18]
- (9) One must not lose sight of the fact that there is some consensus in contemporary international law that the principles of *pacta sunt servanda* and good faith are now accepted as customary international law. [LAW GH14]

Besides *fact* as an epistemic device, we can also see from Table 9.3 how certain disciplinary preferences of ENs in the Ghanaian RAs do not match with preferences in the international RAs. In Law, for instance, while the Ghanaian writers show a strong preference for EN form *opinion* which occurs in fourth position in the list of top 10 ENs (1.78), their international colleagues hardly use it to make research claims, with the word occurring outside of the list of top 10 ENs with a relatively low frequency of (0.27). Also, although the EN forms *probability* and *assumption* are frequent in the international Economics RAs, they do not seem to be frequently used rhetorical resources for the Ghanaian writers of Economics. As Table 9.3 makes clear, both EN

forms are less exploited by the Ghanaian Economists – *probability* is not in the list of top 10 ENs and *assumption* features in ninth position with a (relatively) low frequency of occurrence (0.55). Furthermore, interestingly, the EN form *estimate* also plays a related role as *probability* and *assumption* in the international Economics RAs. The Ghanaian writers of Economics tend to prefer its related form *estimation* in its epistemic sense, as they use it more frequently than they do with the nominal form *estimate*, the reverse of which is the case with the international writers of Economics. Here are examples of the related forms *estimate* and *estimation* in epistemic use, the former more dominant in the native Economics RAs, as in (10) and the latter more common in Ghanaian Economics RAs, as in (11).

- (10) So, even if price changes unrelated to model cycle are very persistent, this would create only a small upward bias to the persistence estimate of 0.79. [ECO NA05]
- (11) Our estimation of buoyancy revealed that in the United States and the United Kingdom, revenue reducing discretionary changes in income taxation contributed to low buoyancy and elasticity ... [ECO GH22]

Another EN form whose use exhibits a frequency difference between the international authors and their Ghanaian colleagues in all three disciplines is *possibility*. There are clearly relatively fewer uses of *possibility* in its epistemic sense by the Ghanaian writers. While the non-Ghanaian writers of Economics and Law exploit this EN form significantly more than their Ghanaian colleagues, both groups of writers of Sociology do not exploit it much, although the non-Ghanaian writing the word has a slightly higher frequency of use. This EN form further highlights the tendency of the Ghanaian writers to use relatively fewer epistemic devices which carry a weak force or strength, as we have noticed with the modal verb *may*, or the lexical verb *suggest*.

Despite the noticeable quantitative differences in the use of specific ENs between the two groups of writers outlined above, the Ghanaian writers seem to generally prioritise EN forms that are also observed to be crucial in the international community RAs. We see, for instance, that irrespective of the frequency variations in the use of ENs like *evidence*, *view*, *fact*, and *idea*, they constitute important epistemic resources for both groups of writers. Besides, if we look, more generally, at the complete list of top 10 ENs in Tables 9.2 and 9.3, we see that there is considerable similarity as regards the range and diversity of EN devices used in the disciplinary RAs of the two groups of writers. For example in the Sociology RAs, 7 out of the 10 most frequently used ENs (*evidence*, *fact*, *view*, *theory*, *tendency*, *possibility* and *explanation*) are common for both groups. This perspective of the analysis points to a considerable qualitative match between the Ghanaian authors and their international community counterparts as regards the range and diversity of EN resources exploited for academic argumentation.

### 9.3 Typical Phraseological Patterns of Core ENs in the RAs

Corpus studies, most notably by Hunston (e.g., Hunston and Francis, 1999; Hunston, 2002, 2006, 2008, 2013), draw attention to nouns as one of the most productive lexical categories (along with verbs and adjectives) that yield patterned associations with other words in texts. In particular, Hunston (2008, 2013) has used the notion of patterns to explore status-indicating nouns within her broader discussion of the concept of evaluation. Hunston (2013: 25) defines status as the averred alignment of a text or a proposition “to a construed world” and goes on to say that “evaluation of status is an obligatory element throughout all texts” (Ibid: 27). Hunston’s pattern analysis of *status*

is attested by lexical resources that also include epistemic nouns such as *idea*, *assumption*, *suggestion*, *claim* and *theory*. To cite one example, according to Hunston (2013: 93), in academic texts where the phrase *(on) the assumption that* is frequently repeated “the assumption is most frequently construed as the basis for scientific endeavour, with other examples indicating only that the assumption is made or that the assumption is in question”.

Such phraseological analyses of epistemic nouns (and, of course, other linguistic resources) rely mainly on what a close (qualitative) examination of concordance lines uncovers. In the present study, high-frequency ENs show a tendency to occur in certain collocational patterns and to reveal potential disciplinary variation in the social science RAs studied. I specifically look at the pattern potential of two of the most frequent ENs utilised by authors of the disciplinary RAs, i.e. *evidence* and *fact*. As has been consistent throughout this thesis, I will first explore these EN forms in terms of their most recurrent sequential patterns in the international community RAs, and then move on to compare the findings to the patterns observed in the RAs produced by the Ghanaian writers.

### 9.3.1 *There + Be + (Modifier) + EN Evidence + Complement*

A dominant pattern observed for the EN form *evidence* in the international RAs is its occurrence in the sequence *There + Be + (Modifier) + Evidence + Complement*. Because of the optional modifier which sometimes occurs in between *be* and the noun *evidence*, we observe varying degrees of the epistemic strength triggered by *evidence* in this pattern, as illustrated by example (12) which seems stronger due to the modifier *clear* compared with *some* in example (13).

(12) There is clear evidence of racial discrimination. [ECO NA03]

(13) There is some evidence that doctors overestimate patient's expectations for prescriptions and fail to explore patients' treatment preferences (Britten et al. 2000). [SOC NA09]

But as already discussed in section 9.2, *evidence* in its general epistemic sense allows writers to present their research findings as empirically verifiable, an epistemological perspective that is typically adhered to in the hard sciences. The occurrence of *evidence* in this pattern in the social science RAs examined could be said to further highlight this core epistemic meaning, despite some of the concordance examples either eliminating, slightly reducing or considerably enhancing the epistemic sense of *evidence* in the pattern due to the modifier role, as illustrated in (12) and (13).

In the international RAs, the pattern *There + Be + (modifier) +Evidence + Complement* is most commonly used in the Economics articles where we see its occurrence in 29 concordance lines; there are also 18 concordance lines for the pattern in the Sociology RAs and 6 concordance lines in the Law RAs. The distribution of this pattern across the disciplines further assists my claim that most notably Economists (and to some extent Sociologists), more than Law scholars, engage in a disciplinary knowledge communication that is underpinned by an objective and impersonal ideology, thereby projecting a disciplinary culture akin to practices in most hard science fields. Figure 9.2 shows 22 out of the 29 concordance lines the pattern yielded in the international Economics RAs where it is a common expression. As the sample concordance lines make clear, the Economics writers (especially) use modifiers placed between *be* and *evidence*, such as *suggestive*, *substantial*, *clear*, *some*, *a lot of*, *little*, *growing*, and *compelling* in order to be more precise about the nature of the evidence

that supports the claim being made. Thus in this pattern modifiers like *compelling*, *substantial* and *a lot of* suggest much stronger evidence than modifiers like *suggestive*, *some* and *little*.

N	Concordance	File
1	empirically. There is also <b>survey</b> evidence that a second socio-cultural	ECO NA07.txt
2	8 and 9. && There is <b>suggestive</b> evidence that productivity effects	ECO NA19.txt
3	in the Introduction, there is <b>substantial</b> evidence that demand shocks affect	ECO NA04.txt
4	middle-aged men and there was <b>some</b> evidence in the early stages of the	ECO NA14.txt
5	job-competition models. There is <b>some</b> evidence that employers 'cream' older	ECO NA03.txt
6	, not labour productivity. There is <b>some</b> evidence of persistence in employment	ECO NA19.txt
7	changes on prices. There is a lot of evidence showing that there has been	ECO NA20.txt
8	with the unemployed. There is <b>no</b> evidence whatsoever that the matching	ECO NA03.txt
9	inflows to those institutions, there is <b>no</b> evidence that aggregate returns affect	ECO NA04.txt
10	these categories.12 There is also <b>no</b> evidence that model changes that	ECO NA05.txt
11	with higher income levels, there is <b>little</b> evidence that HIV/AIDS has led to a	ECO NA14.txt
12	and crops. Furthermore, there is <b>little</b> evidence of an increase in cattle	ECO NA06.txt
13	the last month (mean = 0.37). There is <b>is</b> evidence that survey respondents,	ECO NA16.txt
14	prices or wages. Because there is <b>is</b> evidence that lower inflation is	ECO NA20.txt
15	may become more risk taking. There is <b>is</b> evidence of such an effect in the	ECO NA14.txt
16	3 percentage points. Finally, there is <b>is</b> evidence of unequal access to different	ECO NA03.txt
17	a very slack labour market.2 There is <b>is</b> evidence that job seekers rarely refuse	ECO NA03.txt
18	cases. There is recent <b>historical</b> evidence that extreme weather—mainly	ECO NA07.txt
19	. VIII. CONCLUSIONS There is <b>growing</b> evidence from current developing	ECO NA06.txt
20	, 1999). There is, however, no <b>formal</b> evidence about whether effort has	ECO NA02.txt
21	Lindeboom, 1996). (6) There is <b>clear</b> evidence of racial discrimination. Job	ECO NA03.txt
22	and small stocks. There is <b>compelling</b> evidence—discussed in the	ECO NA04.txt

**Figure 9.2:** Sample concordance lines for *evidence* in the pattern *there + be + (modifier) + evidence + complement* in NES Economics RAs

In addition to these mitigating and strengthening modifiers of *evidence*, the international writers, again especially the Economists, generally use a much wider range of qualifying adjectives to co-occur with the epistemic marker *evidence*. This often specifies the type of evidence being offered by the writer, which appears to be a related epistemic strategy aimed at achieving persuasion. Even the *there-be* pattern in Figure 9.2 offers the examples *survey* and *historical* in lines 1 and 18 respectively. Other such qualifying adjectives for *evidence* in the international Economics corpus are *anecdotal*, *empirical*, *experimental*, *formal*, *informal*, *fresh*, *recent*, *previous*, *ad hoc*, *indirect*, *observational*, *novel*, *econometric*, *macroeconomic*, *regression*. Sociology and Law RAs used similar and other qualifying adjectives but the range of qualifiers is not as wide as we observe in the Economics RAs. The Sociology examples are *circumstantial*,

*anecdotal, empirical, historical, survey, scientific*, while those found in Law are *empirical, new, existing*. Most of these qualifying adjectives co-occur with the EN form *evidence* more frequently in Economics than in both Sociology and Law. For example, while *empirical* co-occurs with *evidence* only 2 and 3 times in Sociology and Law respectively, it is more common in Economics, as there are 12 concordance examples.

The 12 concordance lines of *empirical evidence* in the Economics RAs are shown in Figure 9.3.

N	Concordance	File
1	from aid to economic growth. <i>Empirical Evidence</i> on the Links from Aid to	ECO NA11.txt
2	two sections, I present new <i>empirical evidence</i> on the effects of educational	ECO NA16.txt
3	the increase in demand is. 4. <i>Empirical evidence</i> of changes in persistence	ECO NA20.txt
4	repeated interpretation of this <i>empirical evidence</i> , Converse (1972) refers to	ECO NA16.txt
5	to construct less ambiguous <i>empirical evidence</i> on this policy- relevant issue	ECO NA16.txt
6	) presents a variety of ad hoc <i>empirical evidence</i> on changes in child-labor	ECO NA16.txt
7	). However, the search for <i>empirical evidence</i> of long-run PPP also met	ECO NA12.txt
8	et al. (1996) present <i>empirical evidence</i> that firms with fixed prices	ECO NA15.txt
9	three types of ad hoc <i>empirical evidence</i> on the validity of these	ECO NA16.txt
10	) and Blinder et al. (1998) for <i>empirical evidence</i> on the decision process.	ECO NA20.txt
11	than short-run elasticities. The <i>empirical evidence</i> on S&P 500 additions is	ECO NA04.txt
12	.6 Nonetheless, the available <i>empirical evidence</i> seems to provide an	ECO NA16.txt

Figure 9.3: Concordance lines for *empirical evidence* in the NES Economics RAs

A final point on Figure 9.2 worth noting is the role of the negative particle *no* as exemplified in lines 8, 9, 10 and 20. Clearly, writers exploit this negative particle in the *there-be* pattern to rhetorically stress the absence or lack of evidence, which then sharply contrasts instances where no modifier occurs between *be* and *evidence*, as illustrated by concordance lines 13–17 in Figure 9.2 above. But we could argue that the negative epistemic stance *there is no evidence* .... is as assertive and categorical as the *there is evidence* ... pattern, both of which may be consciously used by writers to highlight the importance of the need for research claims to be evidence-based. Although the *There + Be + (Modifier) + Evidence + Complement* pattern is most common in the Economics RAs, there are also interesting examples of the cases involving the

negative device *no* in the Sociology RAs, as in (14) and (15). However, only 1 example of the *there is no evidence* ... pattern is noted in the Law RAs.

(14) There is no evidence that the lower reemployment rates of these minority workers are due to wage expectations that are relatively high or slow to adjust. [SOC NA03]

(15) If the politicising effect of the campus was achieved by dissemination of ideas and values we would expect this to register at the level of identities but there is no evidence of this. [SOC NA11]

Let me now turn to the Ghanaian writers to look at the *there + be + (modifier) + evidence + complement* pattern in their RAs. First, as in the non-Ghanaian RAs, the pattern occurs in the RAs written by the Ghanaian authors across all three fields. However, concordance lines for this pattern are relatively few in the Ghanaian-authored RAs, a situation which is expected as ENs are generally more frequent in the Anglo-American than in the Ghanaian RAs. There are overall 8 concordance lines showing this pattern in the Ghanaian Economics RAs, 2 in the Sociology RAs and 7 in the Law RAs. Thus the seeming predominance of this pattern in the non-Ghanaian Economics RAs is not replicated in the Ghanaian RAs as, here, the pattern is almost equally distributed between Economics and Law, while Sociology records far less examples. But most of the qualitative features associated with this pattern are also noticed in the Ghanaian RAs in somewhat different ways.

For example as regard modifiers used between *be* and *evidence* in the *there-be* pattern used to mitigate or enhance evidential claims, the only forms that are common for both groups of writers of Economics are *some* and *strong*. No other mitigating or enhancing modifiers occur in this pattern in the Ghanaian Economics RAs, but several other enhancing modifiers of *evidence* (*conclusive, overwhelming, significant, sufficient*,

and *unassailable*) do occur in other contexts. These are different from the enhancing modifiers observed in the international Economics RAs. Arguably, modifiers like *unassailable*, *conclusive*, and *overwhelming* are much stronger than the modifiers preferred by the international Economists (*compelling*, *substantial* and *a lot of*). This further highlights the tendency of the Ghanaian writers to be at times excessively forceful in the way they make and modify epistemic claims.

In terms of the general qualifying adjectives that specify the type of evidence being referred to, the Ghanaian Economics RAs contain a rather limited set compared with those in the non-Ghanaian Economics RAs. The only examples noted here are *empirical*, *existing*, *new*, and *preliminary*. Those that occurred in the Ghanaian Sociology RAs are *empirical*, *available*, and *new*, while the forms that qualified *evidence* in the Ghanaian Law RAs were *documentary*, *empirical*, *historical* and *independent*. But a key point of similarity is observed between the two groups of writers of Economics in the repeated use of *empirical* to co-occur with *evidence*, as illustrated in Figure 9.3 of the non-Ghanaian Economics RAs. This is similarly foregrounded in the Ghanaian Economics RAs, as the concordance lines in Figure 9.4 below show.

N	Concordance	File
1	own savings, equity or credit. <b>Empirical</b> evidence establishes that less than 15	ECOGH7.txt
2	, it provides the long awaited <b>empirical</b> evidence on the causal relationship	ECOGH6.txt
3	and concluded that the <b>empirical</b> evidence is inconclusive. Generally,	ECOGH8.txt
4	8 below gives a summary of <b>empirical</b> evidence on financial sector	ECOGH3.txt
5	growth. There is significant <b>empirical</b> evidence in the literature to the effect	ECOGH6.txt
6	have been persuasive, the <b>empirical</b> evidence has not been definitive.	ECOGH19.txt
7	But there is also some more <b>empirical</b> evidence, based on a survey carried	ECOGH18.txt
8	of the study is to provide the <b>empirical</b> evidence that may be useful in	ECOGH16.txt
9	generally acknowledged from <b>empirical</b> evidence that countries that have	ECOGH10.txt
10	agricultural land use. The <b>empirical</b> evidence showed that industrialisation	ECOGH10.txt
11	is restrained However little <b>empirical</b> evidence is available in the literature to	ECOGH15.txt

Figure 9.4: Concordance lines for *empirical evidence* in the Ghana Economics RAs

Finally here, the negative particle *no* also occurs in the modifier slot of the *there + be + (modifier) + evidence + complement* pattern in the Ghanaian RAs. But while there are

examples in the Economics and Law RAs as in (16) and (17), no examples are found in the Sociology RAs.

- (16) As can be seen from Figure 2, there is no evidence of parameter instability since the one-step residual plot (centred) stays within the critical bands. [ECO GH8]
- (17) Indeed, there is no evidence that all the Ghanaian courts have had occasion to recognize that there exists a distinction between the two notions. [LAW GH6]

A related feature of negation in this pattern noted in the Ghanaian Law RAs is the use of *no/not* simply to indicate a certain level of weakness in the evidence being referred to (e.g., *not much evidence*, *no strong evidence*). Here is a corpus example (18).

- (18) As I pointed out, there is not much empirical evidence of the impact of stronger IP protection on domestic R&D and innovation in developing countries. [LAW GH13]

No such examples as (18) occur in the international community RAs, where other lexical items (e.g., *little*, *flimsiest*, *weak*) are occasionally used to reduce the force of EN form *evidence*. Since there are only 2 instances of this use in the whole of the Ghana corpus (both occurring in the Law RAs), it might be difficult to perceive it as a typical rhetorical feature in the Ghanaian RAs. The corpus evidence however seems to suggest that the international writers, in order to reduce the force of *evidence* in the *there-be* pattern would prefer *there is little evidence* ..., for instance, compared to the negation type *there is not much evidence* ... It certainly might be interesting to further explore these options in a much bigger corpus of academic writing.

### 9.3.2 *The + Fact + That clause*

Hunston (2013) has offered an analysis of *fact* as a status-indicating noun, suggesting its potential to encode a variety of meanings due to the different sequential patterns it

can enter into. In her (2013) work, Hunston mentions the importance of the use of *fact* in academic discourse and notes that it occurs most frequently in disciplines whose propositions contain the ‘least facts’ (e.g., Humanities) whereas it is least common in disciplines with the ‘most facts’ (e.g., Natural Sciences) (Hunston, 2013: 109). In other words, disciplines like Physics and Engineering whose propositions prioritise the reporting of factual and real world activities and happenings tend to use it less than disciplines like Literary Criticism and Philosophy which are more reflective and evaluative. Specifically, the sequence *the + fact + that clause* has been shown to be crucial in academic discourse communities. In this pattern, as Hunston (2006: 243) explains, the *that* clause following *fact* “expands on the nature of the ‘fact’ concerned” and this behaviour of *fact* can be captured with the simple notation ‘N that’ – i.e. noun followed by *that* clause.

In the present study, based on the examination of concordance lines, the sequence *the + fact + that clause* emerges as an important recurring pattern within the social science fields I explore. In the international RAs, the sequence occurs 37 times in Sociology representing (2.50) per 10, 000 running words, 16 times in Economics (1.07) and 44 times in Law (1.99). Based on these frequencies, the sequence seems to be more common in both Sociology and Law than in Economics. If we take into account Hunston’s (2013) claim that disciplines that contain or report a lot of ‘facts’ tend to use the word *fact* least, then it should not be surprising that the international Economists deploy this *the-fact-that* pattern least. Although a social science subject, Economics adopts epistemological and discursive procedures that give it a hard science outlook, as I have previously stated. However, it is quite surprising that the pattern appears to be more frequent in Sociology than in Law, given that the discipline of Sociology seems to

be more empirically oriented and fact-based than Law is, as an academic discipline. Admittedly while these disciplinary (quantitative) differences might not be conclusive (and are reported with caution), as much bigger RA corpora representing these fields could be more revealing, the concordance examples show that generally the sequence is quite common in these social science disciplines. Here are corpus examples (19) – (21) in the three disciplines.

- (19) The fact that a solid three-quarters of my sample identified as European American and white means that it is racially biased. [SOC NA17]
- (20) This reflects the fact that the main systems of administrative law established themselves during the 19<sup>th</sup> century, usually in the context of constitutions that placed much emphasis on functional or triadic separation of powers. [LAW NA11]
- (21) The fact that the fireman protects the homes of another ethnic group can hardly diminish the utility of having the fireman protect one's business. [ECO NA17]

In very rare instances in the Sociology and Law RAs (no corpus examples in Economics RAs), writers introduce modifiers like *very*, *very real*, *simple* and *undeniable* between *the* and *fact* in the pattern. Most typically, these modifiers serve to further emphasise the 'fact' concerned in the proposition, as examples (22) and (23) illustrate.

- (22) This is linked to the very real fact that there are actually more and more twins, which is confirmed by an increase in the birth of twins and higher multiples, proportionately and in absolute numbers. [SOC NA07]
- (23) The undeniable fact that there are important moral elements involved in legal reasoning does not entitle us to judge legal reasoning by the standards of ordinary moral reasoning. [Law NA20]

In (22) the adverb epistemic marker *actually* further makes the reader to perceive of the 'fact' concerned in this proposition as one that is difficult to refute, offering another

good example of epistemic harmony that involves two related and strong epistemic markers (*fact* and *actually*).

I turn now to the *the + fact + that clause* pattern in the Ghana RA corpus. Interestingly, the pattern turns out to be far more frequent in the Ghanaian-authored RAs across all the three disciplines than the frequencies observed in the international corpus. It occurs in 78 concordance lines (5.88) in the Ghanaian Sociology RAs, 64 concordance lines (4.39) in Economics and 98 concordance lines (5.80) in Law. The log-likelihood statistic used to compare these frequency figures with those in the international RAs (at the  $p<0.01$  level) indicate that, in all three disciplines, the Ghanaian writers used the pattern significantly more frequently than their non-Ghanaian counterparts. Thus as far as the *the + fact + that clause* pattern is concerned, there seems to be a clear case of overuse by the Ghanaian social science writers.

In this study, in specific instances where we have previously encountered overuse of an epistemic item by the Ghanaian writers, the item has been one with a strong epistemic force. There are the examples of the lexical verb *show* in Chapter 6 and the adverb *indeed* in Chapter 7, for instance. The case of *fact* is another strong epistemic device. But its over-reliance in the pattern *the + fact + that clause* by the Ghanaian writers might have another explanation. It could be that the sequence has become a fashionable academic cliché as several examples of the sequence in the Ghanaian RAs do not, in fact, refer to a clear-cut 'fact' as expected in the *that-clause* part of the sequence, as in (24) and (25).

(24) This could be explained by the fact that size does not necessarily ensure outreach if this is not put to efficient use. [ECO GH7]

- (25) Despite the fact that this argument sounds convincing I am of the view that limiting cohabitation to two people actually (physically) living together could give rise to terrible unfairness. [LAW GH1]

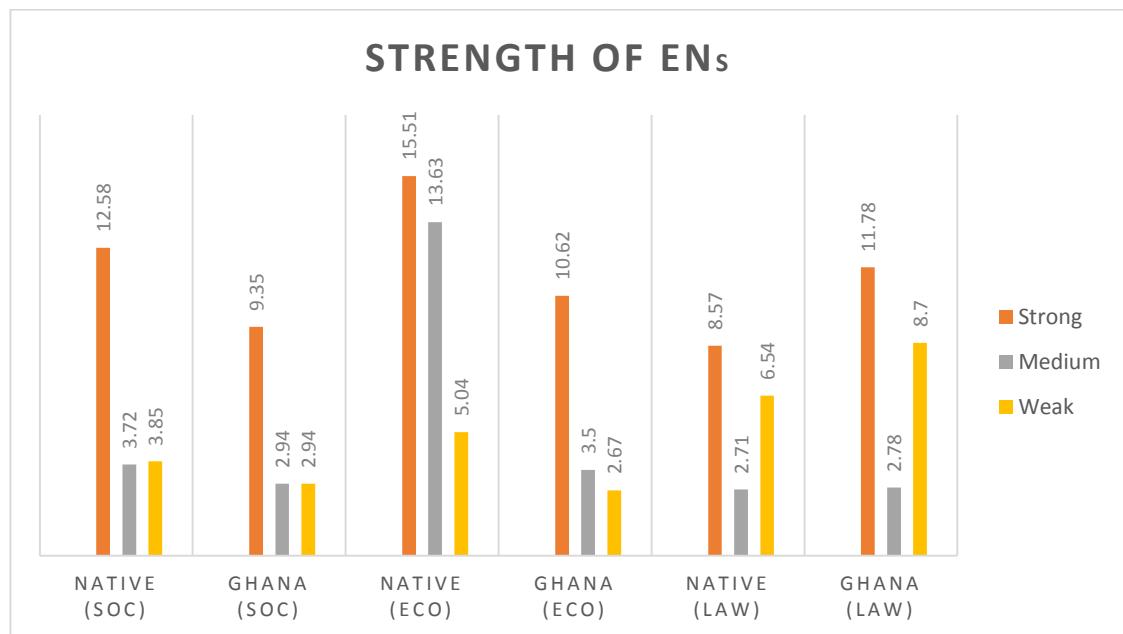
What the writers refer to here as 'fact' in these propositions may well be a representation of their own subjective evaluation and thus fall short of a clear-cut 'fact' being expressed. This is evidenced by the presence of a number of hedging expressions. In (24), we see this in the writer's use of 'could', 'not necessarily', and the conditional expression 'if this is not put to efficient use' while the use of 'sounds' in (25) achieves a similar function. The main point regarding the pattern *the + fact + that clause* is that in the non-Ghanaian RAs representing international discourse communities it is rhetorically useful in the reporting of research claims. The Ghanaian writers demonstrate in their articles an awareness of its usefulness – the corpus evidence, however, suggests that they overly exploit the sequence.

#### 9.4 Epistemic Nouns (ENs): Strength of Epistemic Modality

The quantitative analysis of Epistemic nouns (ENs) in terms of epistemic strength took into account the top 5 most common ENs in each strength level (strong, medium, weak) for each of the disciplinary RAs of the two groups of authors. In total, as there were only 6 ENs (*certainty, claim, evidence, fact, idea, theory*) classified as representing the strong epistemic level and more forms for the medium (11) and weak (8) levels, I decided that the strength of epistemicity analysis of ENs should be based on the 5 most frequent ENs in each level. So for example in the international Sociology RAs, the analysis focused on the strong-level forms *evidence, fact, idea, theory, claim*; the medium-level forms *tendency, explanation, likelihood, chance, indication*; and the weak-level forms *view, possibility, suggestion, opinion and hope*.

#### 9.4.1 Disciplinary Variation

In the international articles, the epistemic strength patterns for ENs revealed some disciplinary variations, although the distributional patterns also allow us to see what the disciplines have in common. Figure 9.5 is a graphical representation of the strength-ordering of the top EN forms as used in the disciplinary research articles (RAs) of the two groups of writers.



**Figure 9.5:** ENs according to degrees of epistemic strength by the two groups of writers

In the Anglo-American RAs, as Figure 9.5 makes clear, strong ENs are the most favoured in all of the three disciplines when compared with the medium and weak ENs. In Sociology strong ENs are used significantly more than both the medium and the weak EN items which record almost the same frequencies. In Economics, while strong ENs are significantly higher than weak ENs, the difference between the strong and medium level ENs is not so wide, as can be seen from Figure 9.5. Law reveals quite a different distributional pattern, with strong ENs occurring only slightly higher than weak ENs but

significantly more than medium-level ENs. So unlike with the strength patterns observed for other lexical categories, especially lexical verbs (in Chapter 6) and adverbs (in Chapter 7), which show a clear preference for weak and medium level epistemic markers (EMs) over the strong ones, ENs present us with a directly opposite case.

That the international writers use the weak and medium ENs with lower frequency than they do with the strong ENs is not so surprising in that a good number of these ENs (nominal items) are derived from verbs, adverbs and adjectives, which they already frequently use as epistemic resources. Generally, Biber *et al.* (1999: 319) refer to nouns that are formed mainly from verbs and adjectives as “derived nouns” and add that derivational suffixes such as *-ity* and *-tion* and *-ness* produce derived nouns. This process applies to a number of the ENs explored here, especially the weak and medium level ones. For example, it would seem that because the (weak-level) verb *suggest* is preponderant in its epistemic sense, its derived noun *suggestion* is less preferred. The same can be said of the (medium-level) verb *indicate* which writers use very frequently, yet they hardly use its derived noun *indication* in its epistemic sense. Another example is the adjective *possible* and its adverb form *possibly*. Because writers deploy these in their epistemic sense very frequently, they hardly use the derived noun *possibility*. Clearly however, most of the high-frequency ENs such as *fact* and *evidence* do not have (high-frequency) verbal equivalents. This seems to explain the trend shown with regards to the epistemic strength of ENs, which suggests that strong ENs are more frequent than weak and medium level ENs. But as we have seen with modals, verbs, adverbs, and even adjectives, as well as the overall distributional pattern of epistemic strength in Table 5.5 in Chapter 5, the international community writers have a much

stronger preference for weak and medium level epistemic markers (EMs) than strong ones.

With regard to the epistemic strength of ENs in the Ghanaian-authored RAs it is noticeable that the distribution of the three strength levels across disciplinary fields is largely similar to the pattern in the international RAs, as can be seen from Figure 9.5. The Ghanaian writers too in all three disciplines use strong ENs significantly more than weak and medium ENs. However, while the frequency of strong ENs in the non-Ghanaian Sociology and Economics RAs is slightly higher compared to their occurrence in the Ghanaian RAs in these disciplines, the use of strong ENs in the Ghanaian Law RAs is slightly higher than their use in the international Law RAs. While weak and medium level ENs are similarly patterned in the Sociology and Law RAs of the two groups of writers, there is a marked difference in the use of the medium level ENs between the two groups of writers of Economics. The international Economists deploy medium level ENs more than their Ghanaian counterparts, as Figure 9.5 shows. Weak ENs also occur more frequently in the international Economics RAs than in the Ghanaian ones. One final point: specific disciplinary uses of weak EMs throughout this thesis have always indicated a higher occurrence in the international RAs than in the Ghanaian ones. However with regard to ENs, for the first time in this study, the Ghanaian writers of Law deploy slightly more weaker ENs than their international colleagues, although the difference here is (statistically) not significant (LL 5.92) at the  $p<0.01$  level.

#### *9.4.2 Ghanaian vs. Anglo-American Writers*

It is clear from the corpus analysis that, as far as the epistemic strength of ENs is concerned, both groups of academic writers prioritise strong ENs over medium and

weak ones, and this might be attributed to how the process of derived nominalization affects certain EN items. The distribution of weak and medium level ENs is also fairly (particularly in Sociology and Law) comparable between the Ghanaian writers and their non-Ghanaian colleagues. It is only in the field of Economics that we see that in all three epistemic strength levels the Ghanaian writers (compared with the non-Ghanaian Economists) use fewer ENs. In contrast, the Ghanaian writers of Law (compared with the non-Ghanaian Law scholars) also deploy more ENs that encode strong and weak epistemic meanings, while both groups of Law writers use (almost) equal amounts of medium level ENs. Generally, then, it would seem that in terms of strength levels of epistemic modality it is with the specific case of epistemic nouns (ENs) that the Ghanaian writers compare strongly with the international community writers, using either slightly less (Sociology) or slightly more (Law) of these strength level epistemic items. However, the gap in the use of the three strength-level ENs is much wider in Economics: the Ghanaian Economics authors may have to use more of all three strength-level ENs in high-ranking international journals of Economics in order to meet expected disciplinary practice.

## 9.5 Conclusion

This chapter has been concerned with the use of epistemic nouns (ENs) in the RAs produced by the two groups of writers. The investigation revealed that ENs, along with epistemic adjectives (EADJs), are generally not as common as epistemic modal verbs (EMVs), epistemic lexical verbs (ELVs) and epistemic adverbs (EADVs) in the three disciplines studied. However in each of the three disciplines a few EN forms appear to be important for writers, as they are frequently used. These include *evidence*, *fact*, *idea*,

*view* in Sociology; *evidence, probability, assumption, possibility* in Economics; and *view, fact, evidence, idea* in Law.

As regards the comparison made on the use of ENs between the Ghanaian and international community writers, the two groups use significantly different amounts of ENs in their RAs across the disciplines, although the differences are not as wide as we find with other epistemic resources (e.g., EMVs). While the international writers of Sociology and Economics used more ENs than the Ghanaian writers of these disciplines, the trend changes with Law, where the Ghanaian writers use more ENs than their international colleagues. This is the only instance, in the analysis presented in this thesis, where a sub group of Ghanaian writers (the Law writers) use a linguistic category of epistemic meanings – ENs – more than their non-Ghanaian counterparts. But the overall occurrence of ENs still shows that the international community writers utilise this epistemic resource more than the Ghanaian writers.

Noticeable similarities and differences have also been observed between the two groups of disciplinary RA writers in the phraseological pattern analysis carried out for notable ENs, and in the analysis of the epistemic strength of ENs. Some of the comparisons made on these aspects of the analysis are qualitative in nature, while others offer mainly a quantitative dimension. On the phraseological analysis of ENs, for instance, we see a major qualitative difference between the two groups of writers of Economics in the range of option modifiers used in the pattern *there + be + (modifier) + evidence + complement*. One example relates to ‘enhancing modifiers’ of *evidence* in the pattern: while the modifiers *compelling, substantial* and *a lot of* occurred exclusively in the international Economics articles, the Ghanaian writers of Economics preferred a different (much stronger) set of enhancing modifiers – *unassailable, conclusive* and

*overwhelming*. An obvious quantitative difference occurred in the use of the pattern *the + fact + that clause*, which occurred significantly more in the Ghanaian RAs of all three disciplines than in the international disciplinary RAs, suggesting an overuse of this pattern by the Ghanaian writers. Looking at ENs overall, however, while the analysis indicates that the Ghanaian writers, like their non-Ghanaian colleagues, use a wide range of ENs in their RAs, they use them relatively less, and so ENs further contribute to the overall underuse of epistemic devices in the RAs produced by the Ghanaian writers.

To explain the significant underuse of epistemic markers (EMs) in the Ghanaian RAs, a further investigation of academic discourse course materials in Ghanaian universities was carried out. This gave interesting clues about how information on linguistic and rhetorical features of academic writing (epistemic modality in particular) is presented to Ghanaian writers of academic English, and, therefore, acquired by university students, some of whom move on to become teachers and researchers in these universities. Most notably, in the five (5) sets of course materials examined, not only is there an insufficient coverage of epistemic (lexical) resources; the course materials also do not stress the rhetorical importance of epistemic modality in academic writing. There is enough in these course materials to show that their writers have been generally more concerned with addressing learners' problems of infelicitous English than with laying stress on how to use interaction management features in spoken and written academic genres.

## CHAPTER 10 – CONCLUSION

### 10.1 Introduction

In this final chapter of the thesis, I first discuss the most notable epistemic feature in the RAs by the Ghanaian authors (which relates to the underuse of epistemic resources in general), and then move on to recap the main goals of the research outlined in Chapter 1. I further summarise the main findings that emerged from the study relevant to the research questions of this thesis and also discuss the implications of the study and suggest areas for further work. I end the chapter with some concluding remarks.

### 10.2 Accounting for the Significant Underuse of Epistemic Resources by the Ghanaian Writers

#### *10.2.1 Looking at Academic Writing Teaching Materials in Ghana*

Throughout this thesis, the corpus evidence indicates strongly that the Ghanaian writers of Sociology, Economics and Law, when compared with the international writers, use considerably less epistemic markers (EMs) to either mitigate, approximate or enhance rhetorical argumentation in their research articles (RAs). The overall results of the use of EMs by the two groups of academic writers, shown in Figure 5.1 and Tables 5.3 and 5.4, point to the apparent underutilisation of these rhetorical features by the Ghanaian writers. In this section, I try to discuss address the question of why the Ghanaian writers deployed significantly fewer epistemic resources in their RAs when they make research claims.

Previous studies (e.g., Vassiliva, 2001; Panacová, 2008, Pastor, 2012) have looked to cultural matters, in particular mother tongue influences, to explain the underuse of epistemic modality in the English academic writing of NNES. If we, for

instance, consider Spanish L1-speaking academics, such as those studied by Pastor (2012), they typically have advanced writing skills in Spanish and would normally feel more competent writing in Spanish than in English. As mentioned earlier in this thesis (see section 3.3.1), for such academics, English is a second choice language for writing articles and researchers often find that, although authors are writing in English, traces of L1 influence are inescapable.

However, in the Ghanaian context L1 influence may play only a minor role, if it contributes anything at all in the English writing practices of academics. Again as discussed earlier in this thesis (see section 1.5), not many Ghanaians systematically develop academic writing competencies in their L1 to an advanced level, although most Ghanaians' speech competences in the Ghanaian languages are high. Thus to explain the considerable underuse of epistemic modality in the RAs of the Ghanaian academics studied, it seems to me more useful to look towards the extent to which formal strategies of instruction (pedagogy) have been helpful to Ghanaian academic writers, as they went through the process of learning to acquire the epistemic rhetorical features explored in this study.

In this regard, I specifically studied the learning materials (textbooks) on (written) academic communication in the universities. For most other Ghanaians who enrol to study for an undergraduate degree in Ghanaian universities, the last formal opportunity to learn about English academic writing occurs at first year of undergraduate studies, where compulsory courses are run to help learners acquire the rhetorical styles of academic communication (see section 1.5.1). Since these courses run by the universities are what become the final teaching and learning guides on academic writing for Ghanaians who eventually become academic researchers, I

wanted to look at how the information on epistemic modality in academic writing is presented in these materials, and whether that could explain the underuse of epistemic markers in the RAs of the Ghanaians studied. I focused on academic writing materials in the three oldest and biggest universities – the University of Ghana (UG), the Kwame Nkrumah University of Science and Technology (KNUST) and the University of Cape Coast (UCC) – where the teaching of academic communication skills is prioritised.

#### *10.2.2 The Course Materials – Main Observations*

In total, I examined five (5) sets of core teaching materials for the academic writing and communication skills courses in the three universities. While in each of these universities, there is not only one standard teaching material, the five selected for scrutiny here are the highly recommended and popular text materials for undergraduate, and even masters, students. These materials are listed as follows:

1. Academic writing course material prepared by staff of the Language Centre at the UG (unpublished)
2. ‘Communicative Skills’ (printed book - undated), prepared by Gogovi, G. A. K., Gborsong, P. A., Yankah, V. K. and Essel, K. at the UCC
3. ‘A Handbook for Writing Skills’ (1998) , written by Opoku-Agyeman, N. J. at the UCC
4. ‘A Handbook on Study Skills’ (2005), written by Taylor, M. E. and Asilevi, F. K. at the KNUST;
5. and ‘Communication Skills for University Students’ (2005) written by Adolinama, P. P. at the KNUST

Generally, these course materials attempt to address a wide range of topics to address the learning needs of students. These topics include the following: how to make notes, how to develop reading skills, how to apply certain conventions of usage (punctuation marks, prepositions, pronouns, spelling), how to develop writing skills (I), which

considers parts of the English sentence, subject/verb agreement, the use of modifiers (ambiguity, dangling, misplaced), and how to develop writing skills (II), which focuses on the structure of the (academic) essay. It would appear that the topics treated in these course materials aim at helping students to improve upon their spoken and written communication generally. Apart from discussing the traditional structure of an essay (introduction, body, conclusion), the course materials do not offer any specific sections that draw learners' attention to interpersonal rhetorical resources of academic writing (e.g., epistemic devices)

On epistemic modality specifically, the general information contained in these materials is rather scanty. For instance, the modal verbs, which are frequent devices for expressing epistemic modality, are not mentioned at all in three of the five sets of course materials I examined. The other materials – the book by Adolinama at the KNUST and the material prepared by Staff at the UG – look at modal verbs but do so only briefly, discussing mainly their grammatical qualities without offering any insights into how they can be used epistemically to either reduce, moderate or enhance argumentation claims in academic writing. A notable exception is the UG academic writing course material which discusses argumentation in academic writing and mentions aspects of epistemic modality. For instance, it looks at the characteristics of a good argument and tries to distinguish apart statements of fact from statements of opinion. The course material explains that both statements of fact and opinion complement each other in a good academic argument. It then goes on to give examples of how opinion statements are typically expressed (e.g., *I believe, it appears, it seems, in my opinion*). But this is where the information on epistemic modality begins and ends – while the opinion expressions listed above highlight how to reduce the force of tentative claims, the

course material does not, for instance, offer examples of how to strengthen claims where necessary. The interpersonal importance of epistemic modality is not foregrounded in the discussion of argumentation.

It would appear, then, that the five sets of course materials examined, while they address a range of general spoken and written academic communication topics, do not stress the importance of major interaction management features in academic writing, such as epistemic modality rhetorical resources. There is also no attempt to include in any of these course materials, as is usually the case with English for Academic Purposes (EAP) materials elsewhere (e.g., Wallwork, 2011; Swales and Feak, 2012), research-based information on how these rhetorical features of academic writing might differ across disciplinary fields. Afful (2007) has already raised concerns about the content of EAP courses in Ghanaian universities, calling for major changes in content such as focusing more on discipline-specific language features in these EAP courses.

It seems to me, therefore, that a major explanation for the underuse of epistemic devices by the Ghanaian academics studied lies in the way that language and rhetorical features of academic communication (especially in writing) have been presented in pedagogical and instruction materials – these, from at least the sampled materials examined in this study, not only offer insufficient coverage and treatment of these features, they also do not stress their importance in academic (writing) interaction, which is crucially a negotiated endeavour between the writer and the readers. The limitation in content observed here, specifically with regard to epistemic devices, seems to be only a small part of the bigger challenges that confront EAP and English academic literacy development in the third world, especially Asia and Africa

where English is mainly a colonial legacy (Ashby, 1966; Afful, 2007; Evans and Morrison, 2011).

### 10. 3 Recapping the Goals of the Study

I began this study with the aim of exploring how the use of epistemic markers (EMs) in research articles (RAs) written in English by Ghanaian scholars based in Ghana compare with the use of EMs in similar RAs in mainstream international communities written by native English scholars. I also had in mind to explore variations across disciplinary fields and so I focused on the subjects of Sociology, Economics and Law. I wanted to find out whether in these disciplines Ghanaian writers used EMs in significantly different ways compared with non-Ghanaian writers, as this could have negative implications for them when they submit articles for publication in reputable international journals of their fields. As Hyland (2007: 4) suggests, NNES scholars working outside the metropolitan centres of research, and wishing to participate in the production and dissemination of knowledge in these centres, have to “situate their work in a rhetorical tradition”.

Previous studies and accounts of the use of language and rhetorical features in RAs written by NNES researchers have expressed serious concern about how non-native speaker texts fail to conform to international disciplinary conventions, often noting instances of underuse, overuse or misuse of features (see for example, Mauranen, 1993; Curry and Lillis, 2004; Martinéz, 2005; Englander, 2006; Scully and Jenkins, 2006; Adnan, 2009). The following view, expressed by Scully and Jenkins (2006: 753), represents a good example of the kinds of concern often raised: “An emerging problem facing all journals is the increasing number of submissions from non-English-speaking parts of the world, where the standard of written English may fall below the expectations of a scientific publication”. Even (non-native) English-speaking contexts

characterised by Kachru (1992) as *outer circle* countries (e.g., Malaysia, Philippines, Nigeria etc.), where English is predominantly an additional second language, are not exempt from such English linguistic and rhetorical concerns regarding academic writing (see for example, Adnan, 2009 and Mirahayuni 2010 on Indonesia; Nkemleke, 2010 on Cameroon).

It has been suggested that need for non-native English speaking academics, especially those located in less privileged developing regions such as sub-Saharan Africa, to adhere to the language and rhetorical styles of reputable mainstream English-medium international journals could partly account for their under-representation in these journals (see for example, Swales, 1987; Flowerdew and Li, 2007; Salager-Meyer, 2008). Thus the motivation to explore the epistemic rhetorical practices of Ghanaian academic writers in Ghana and to compare their practices with those by international writers in prestige English-medium journals was motivated by the desire to offer Ghanaian writers (as well as other academic writers in peripheral regions) a detailed analysis of the characteristics of epistemic modality in research articles (RAs) written by international writers. This, I hoped, where appropriate, could make them more aware of the preferred rhetorical conventions of mainstream academic communities so as to potentially enhance their representation in these communities.

With the above research goal in mind, I found corpus linguistics to be the most effective approach and methodology for this study. To conduct the study I built two sets of RA corpora in the three disciplines, one for the Ghanaian writers and the other for the international (Anglo-American) writers. The corpus analysis of epistemic markers (EMs) in the RAs studied relied mainly on Scott's (2013) *WordSmith Tools*. The analysis had both quantitative and qualitative dimensions. The former, which used both

*descriptive* and *inferential* statistical methods (i.e. normed frequency and log-likelihood probabilistic tests, see McEnery and Hardie, 2012), allowed for the frequency counts of EMs in the RAs and their effective comparison across the three disciplines as well as between the Ghanaian and the international writers. Apart from the frequency analysis allowing for interesting qualitative interpretations to be made on the uses of EMs in the RAs studied, a close scrutiny of concordance outputs further enriched the qualitative aspects of this study, especially with regard to the identification and interpretation of phraseological (or co-occurrence) patterns of key epistemic resources.

#### **10. 4 Summary of the Main Findings of the Study**

At the start of this thesis, in Chapter 1 I posed five (5) specific research questions which were intended not only to help me to understand how Ghanaian academics in the fields of Sociology, Economics and Law utilised epistemic rhetorical devices in RAs they have published in journals based in Ghana (and the West African sub region); they were intended also to offer insights into the extent to which their rhetorical practices, relative to epistemic modality, departed from mainstream international conventions. The answers reached, through the examination of the corpus data (and other texts), serve as basis for the contributions made by this thesis. Here, I try to summarise the key findings of this research and show the fresh insights these findings offer to the field of the rhetoric of academic and scholarly writing, especially as it applies to non-native professional academic writers.

The first three research questions of this study (see section 1.4) tried to track the relative frequency of epistemic devices in the Ghanaian-authored RAs across the three fields in terms of their overall incidences, linguistic forms and epistemic strength levels, and then compare these features with those in the international RAs. First, I

found that, in terms of overall incidence of EMs, the Ghanaian writers of Economics used significantly more EMs than their Ghanaian colleagues in Sociology and Law who used EMs in nearly equal measure. This also showed that the overall frequencies of EM use by these two disciplinary groups proved statistically insignificant. However, if we compare the disciplinary distribution of EMs in the Ghanaian RAs with the international RAs, it becomes apparent that the three disciplines of the international RAs used EMs in nearly equal measure: the differences between the disciplines in the overall incidence of EMs are not statistically significant. What is more, in each of the three disciplines studied EMs occurred significantly more in the international RAs than in the Ghanaian ones.

On the linguistic forms that encode epistemic modality, the analysis of the Ghanaian RAs revealed some disciplinary variation in the use of the linguistic forms used to mark epistemic modality (modal verbs, lexical verbs, adverbs, adjectives, nouns) (see section 5.3). However, the overall occurrence of these linguistic types in the RAs showed that lexical verbs are the most common, followed by modal verbs, adverbs, nouns and adjectives in that order. Interestingly, this distributional pattern of linguistic types in the Ghanaian RAs tended to be similar to the pattern observed in the RAs by the international writers, who also used lexical verbs most commonly to express epistemic modality, followed by modal verbs, adverbs, nouns and adjectives being the least common. While the overall distributional pattern of EMs through these linguistic forms is similar between the two groups of academic writers, the corpus evidence further shows that each of the five linguistic forms expressing epistemic meanings occurs significantly more in the international community RAs than in the Ghanaian RAs.

With regards to epistemic strength levels, the overall picture that emerged in the Ghanaian RAs is that there is a tendency for the Ghanaian writers to use the medium and strong level EMs more than the weak level ones. In contrast, the international writers tend to prioritise the medium and weak level EMs over the strong ones. So for instance, weak level EMs altogether occurred more than twice as much in the international RAs as in the Ghanaian RAs (see Table 5.5).

Beyond these general findings, we can see that the detailed corpus analysis carried out for each of the five linguistic categories (represented in Chapters 5–9 of this thesis) revealed noticeable points of quantitative and qualitative difference (as well as similarity) when the Ghanaian RAs are examined relative to the international community ones. Most importantly, the various major differences observed in this study between the two groups may represent burdens and challenges for the Ghanaian writers, especially as they may be expected to comply with international disciplinary conventions when they write RAs for the international community. Even as Ghanaians writing and publishing articles in English locally in Ghana, it is not a culturally distinct rhetorical practice in the use of English that matters: what may be more crucial is a rhetorical practice that ties in well with international conventions. As Mauranen (2010) has stressed, convergence rather than divergence of rhetorical styles is what must be emphasised in a globalized academic world. Thus the most notable points of departure in the use of epistemic modality by Ghanaian writers relative to the international writers are the areas Ghanaian writers might find helpful if they must adjust their epistemic rhetorical styles in order to meet international conventions. I outline these as follows:

- Ghanaian writers in all three disciplines may have to engage with a greater use of epistemic modal verbs (EMVs) in order to meet international conventions.

- While the sense of *may* (epistemic possibility) is well represented in Ghanaian RAs, Ghanaian writers might need to be more aware of the rhetorical effect of *may* in the co-occurrence pattern: *may + (very) well + main verb/V*, which encodes the epistemic sense of probability.
- Ghanaian Law writers might find it useful to engage with a greater use of the co-occurrence pattern: *would + seem + complement (COMP)* when they seek to publish RAs internationally.
- Ghanaian writers in all three disciplines studied may find it useful to engage with a greater use of weak level EMVs, especially through the modal forms *may*, *could* and *might*.
- Ghanaian Economics and Law writers in particular might find it useful to engage with a greater use of medium level EMVs.
- Ghanaian Sociology and Law writers might find it useful to use a greater amount of epistemic lexical verbs (ELVs).
- To meet international conventions, Ghanaian Economics writers might find it useful to reduce the use of ELV forms *show* and *indicate*, while they might have to engage with a greater use of the form *assume*.
- Ghanaian writers of Sociology and Law in particular might have to engage with a greater use of weak ELVs in order to meet international conventions.
- Ghanaian writers of Law and Sociology should find it useful to deploy a greater use of epistemic adverbs (EADVs) in order to meet international rhetorical conventions.

- A more balanced use of the approximating epistemic devices *about*, *approximately* and *around* by Ghanaian writers of Economics might prove helpful: a higher use of the last two and a reduction in the use of *about* could match the international disciplinary style.
- Ghanaian writers of Law in particular might be guiding their writing towards the international disciplinary practice by engaging with a greater use of EADV forms *of course* and *generally*.
- Ghanaian writers of Law and Sociology might find it helpful to engage with a greater use of EADV *perhaps*.
- Ghanaian writers (of Law especially) should find it useful to engage in greater use of both weak and strong level EADVs.
- Ghanaian writers in all three disciplines might find it useful to engage with a greater use of epistemic adjectives (EADJs) in order to adhere to international rhetorical conventions.
- Ghanaian writers in all three disciplines might have to focus more on the use of *possible* and *likely* in the co-occurrence pattern: *it v-link ADJ that*.
- To adhere to the rhetorical styles of international disciplinary communities, Ghanaian writers of Economics and Law should find it helpful to engage with a greater use of the mitigating EADJ forms *possible* and *likely*, and also in more depth when they occur in the co-occurrence pattern: *be (less/more/most) likely to-clause*.
- Ghanaian writers might find it helpful to learn that certain kinds of intensification of the EADJ form *clear* (*very clear*, *starkly clear*, *abundantly clear*) are not conventional in international disciplinary communities.

- Ghanaian writers of Economics and Sociology might find it useful to engage with a greater use of epistemic nouns (ENs) while their colleagues in Law may have to deploy less of these resources in order to conform to international conventions.
- In all three disciplines, Ghanaian writers might find it helpful to reduce the use of the EN form *fact* as well as its occurrence in the pattern *the + fact + that-clause*, in order to conform to international disciplinary conventions.
- Ghanaian writers of Economics might find it helpful to engage with a greater use of EN forms *probability* and *assumption*.
- Ghanaian writers in all three disciplines should find it helpful to use the EN form *possibility* in greater depth.
- Ghanaian writers in all three disciplines might find it helpful to engage with a greater use of *evidence* in the phraseological pattern: *there + be + (modifier) + evidence + complement*.
- Ghanaian writers of Economics might find it useful to engage with a greater use of the three levels of epistemic strength for ENs in order to adhere to international disciplinary conventions.

These major differences, and the similarities, in the epistemic modality choices between the two groups of academic authors also allow one to give a fair account of the linguistic repertoire, versatility and overall rhetorical awareness of the Ghanaian academics studied. The corpus evidence allows one to offer a mixed response here: on the one hand, Ghanaian academic writers demonstrate considerable linguistic versatility, especially with respect to their use of epistemic lexical resources used for argumentation in RAs. Clearly, Ghanaian writers, similarly to their international

colleagues, use a wide-ranging epistemic lexical vocabulary to back their claims. On the other hand however, they seem to show a rather limited rhetorical awareness of the vast epistemic vocabulary at their disposal, which is quite evident (throughout this study) not only in the depth of use of these resources to support research claims, but also in the way certain epistemic forms and co-occurrence patterns are used to achieve certain epistemic rhetorical effects.

Finally, I addressed research question 5 (see section 1.4) on the basis of the most dominant feature observed in the Ghanaian writers in this study: the significant underuse of epistemic modality expressed through all five of the linguistic categories examined. The answer lies, most likely, in the way that academic writers in Ghana are exposed to language resources that encode epistemic modality, and specifically the teaching of the rhetorical significance of these resources in scholarly writing. Text materials for academic communication (academic writing in particular) in the Ghanaian context not only largely focus on correctness in the use of linguistic forms, where functions of these linguistic forms are mentioned, their rhetorical importance in academic writing is hardly stressed. There is also no attempt made by the material designers and writers to account for disciplinary variations in the use of academic rhetorical features, as is nowadays typical of many EAP materials, especially those developed in English-speaking countries such as the USA, UK and Australia (see for example, Swales and Feak, 2012). Thus, I believe, the way and manner in which Ghanaian writers have acquired epistemic modality as a rhetorical tool, through its teaching and presentation in course materials in the Ghanaian academic context accounts for the relatively infrequent use of this resource in their scholarly writing.

## 10.5 Implications of the Research

The findings of this study highlight certain implications for theory, methodology and pedagogy. I will address each of these in turn. With regard to theoretical implications, at least two points are worth making. The first relates to the theoretical claim in the literature that non-native English-speaking (professional) authors face considerable challenges in the use of English for international scholarly communication (see for example a discussion of aspects of these challenges by, Mauranen, 1993; Flowerdew, 1999a, 2008; Ammon, 2001; Hyland, 2003; Curry and Lillis, 2004 and Leki, Cumming and Silva, 2008). The challenges often encountered by NNES have necessitated a focus on English for Professional Academic Purposes (EPAP) (Hyland, 2007). Previous studies which focused on the linguistic and rhetorical features in written academic texts produced by NNES have generally classified textual deviations and inadequacies in terms of underuse, overuse and misuse – markers of rhetorical imprecision and unsuitability (see for example, Mauranen, 1993; Martinéz, 2005; Englander, 2006; Panacová, 2008; Adnan, 2009). The present corpus-based study on Ghanaian academic writers is consistent with these earlier studies. It offers added evidence in support of the theory that the rhetorical practices of NNES, relative to Anglo-American norms, are characterised by these imprecise features. We have seen in this study that while evidence of the underuse of epistemic rhetorical features by Ghanaian writers is compelling, there are also (relatively less) cases of overuse and misuse.

The second theoretical implication emerging from the findings of this study concerns the distinction often made by World Englishes scholars (e.g., Kachru, 1997; Bolton, 2008) between countries that use English as foreign language (Kachru's *expanding circle* of Englishes, e.g., China, Spain, Germany, Japan) and those that use it

as an additional (institutionalised) second language (Kachru's outer circle of Englishes, e.g., Ghana, India, Nigeria, Singapore), a distinction which suggests that 'general' English proficiency levels are higher in the latter contexts than in the former. While this may be true in a sociolinguistic sense, especially as the contact with English has been much longer in outer circle societies than in expanding circle ones, the effect of this distinction may not be felt much in the context of academic writing, EPAP in particular. It would seem that, as far as academic writing at the international stage is concerned, both groups of NNES are likely to encounter similar rhetorical burdens and difficulties. Previous studies have tended to highlight these burdens more strongly in the writing practices of NNES academics associated with expanding circle countries (see, section 3.3 of this thesis, and also the examples cited in Flowerdew, 1999b). But Flowerdew's (1999b) study on Hong Kong academics and those by others (e.g., Mirahayuni, 2002; Leki *et al.*, 2008; Nkemleke, 2010) suggest that similar difficulties may be encountered by scholars in outer circle contexts when they write scholarly articles in English for international journals. Clearly, the present study on Ghanaian academics, notable members of outer circle users of English, offers added evidence to these findings: the findings of the current study support the claim by Flowerdew (1999b) that the scholarly writing difficulties of NNES academics are most likely worldwide.

The findings of this study also have implications for pedagogy. Swale's (1987) suggestion that the language and rhetoric of the research paper should be taught to all who wish to get published in English-medium international journals still remains an insightful one. This might be a more pressing need for non-native speakers of English in less privileged academic contexts such as Ghana. In the Ghanaian context, the authorities of higher institutions of learning (universities) would find it useful to enlist

the services of experienced EAP and EPAP specialists (based in Ghana or internationally) to regularly deliver up-to-date academic writing training (short) courses and workshops to academic staff, most especially to newly recruited members of staff. Such courses and workshops, I presume, would aim to provide for the benefit of participants the stereotypical lexico-grammatical and rhetorical conventions of scholarly writing in various disciplines. This will not only enhance participants' awareness of the language characteristics of scholarly writing in their fields; it is also likely to empower (new and less experienced) members of staff to produce well-constructed scholarly texts in English in order to adhere to international disciplinary community norms and practices. In addition, well planned, research-informed academic writing courses for graduate research students in Ghana should be a long term priority, so that those who eventually join the academic staff in universities and other higher institutions might be better equipped to effectively communicate their research in English. In this regard, Martinéz (2011), discussing academic communication in English within the Latin American context, has noted that such academic writing interventions at postgraduate level could impact positively on the quality of research and publication.

Finally, some of the findings arrived at in this study have implication for the methodology employed to investigate the epistemic rhetorical practices of Ghanaian writers in particular. I relied on corpus linguistics as a methodology to collect, process and analyse the RAs studied. The usefulness of the corpus linguistics approach in applied language studies is not in doubt (see also the discussion of its importance in academic discourse in section 2.8.2). In the present study it has proved to be an effective tool, not only in terms of the aid it offered for the identification, classification and quantification of genuine lexical epistemic modality devices in the RAs representing

the two groups of academic writers, but also because of the insightful co-occurrence patterns that epistemic items entered into which were noticed when concordance lines were sorted variously and examined closely. Indeed the benefits of concordance lines for lexico-grammatical pattern analysis have already been demonstrated by Hunston (2002) and Baker (2014), among other scholars.

However, the corpus methodology might not be able to address every language research question. In the present study, this became apparent as I tried to explain why corpus data revealed a significant underuse of epistemic resources by the Ghanaian writers. Clearly, this could not be ascertained by relying on the corpus methods applied in this study – it became necessary for me to look beyond the corpora I explored (i.e. to further examine manually how the information on epistemic modality is presented in academic writing course materials in Ghanaian universities) in order to understand how this rhetorical feature is presented and taught in the Ghanaian context. This further work beyond the corpus data proved insightful indeed, but it also highlighted the distinction between research questions that a corpus (via the manipulation of corpus tools) can answer and those that it cannot. In turn it reminded me of the need for corpus methods to be supported by other research methodologies on occasion. This methodological implication accords with the view expressed by Baker (2014: 197) that “A corpus in itself does not always yield explanations for language patterns and only by considering other forms of context can we fully account for our findings”. Thus while the corpus approach to studies of language remains a dominant and a powerful approach, it may fruitfully be supported, where necessary, by other non-corpus research techniques.

## 10.6 Suggestions for Further Work

By looking at epistemic modality devices in Sociology, Economics and Law RAs, the present study sought to understand the scholarly rhetorical practices of Ghanaian academics based in Ghanaian universities and publishing in local English-medium journals. It explored the ways in which their epistemic rhetorical practices were different from, or similar to, mainstream international community writers in the same academic fields. Clearly, there are important aspects of this study I could not address owing to unavoidable limitations, including time, scope of the research and constraints imposed by the corpus data analysed. Hence further work in the future could prove helpful in extending the insights gained through the present work.

First, as I focused on analysing a wide-ranging list of lexical epistemic resources (see Table 4.3), it was difficult if not simply impossible to explore in detail the pragmatic nuances that characterise each of the epistemic items examined. Research has shown that epistemic modality devices have rich pragmatic aspects that are interesting to explore, but these require more close and detailed investigation, as exemplified in the pragmatic analysis of a few epistemic adverbs by Simon-Vandenbergen and Aijmer (2007), a study which I discussed earlier in this thesis (e.g., see section 7.2). Thus the possibilities for further exploring a specific and limited set of epistemic devices from a pragmatic perspective in detail are open, and this could throw up new insights on Ghanaian writers rhetorical practices.

Another area where further work might be needed to more comprehensively understand English for Professional Academic Purposes (EPAP) in the Ghanaian context is the exploration of other linguistic and rhetorical features of academic writing apart from epistemic modality. Such topics as authorial presence, citation practices, lexical

bundles, collocational patterns of discipline-specific vocabulary, and discourse structure, among other things, should prove exciting and extend our knowledge of scholarly writing practices of Ghanaian academics. There might also be the need to extend such studies to move beyond social science fields to include disciplines in the humanities and the natural sciences. As I mentioned in section 1.4.1, the present study is most likely the first of its kind in Ghana, as there is no known study on the language and rhetoric of scholarly writing in this context. It could therefore be the basis and starting point of further studies that seek to describe the language of scholarly writing produced by Ghanaian academics based in Ghana.

Finally, the present study explored epistemic modality in articles written by Ghanaian academics based in Ghana. The articles I have studied are those published mainly in English-medium journals based in Ghana which are managed largely by Ghanaian editors and reviewers. A further study might look at similar features in the writings of Ghanaian academics, focusing this time on their articles that have appeared in highly-rated mainstream international journals. As Salager-Meyer (2008: 123) has observed, “Fully-fledged periphery scholars ... prefer to send their best works to mainstream journals written in English”. There are (most likely a few) Ghanaian scholars based either in Ghana or abroad who are publishing in mainstream journals in their fields. It would be interesting to study Ghanaian-authored articles in top-rated mainstream journals in order to determine the extent to which this set of articles have conformed to international rhetorical norms and conventions. Would their rhetorical practices in terms of epistemic modality, for example, compare more strongly with those by experienced Anglo-American writers? Or would there be noticeable differences when we compare the Ghanaian authored articles published locally and

those published mainstream? Answers to such questions would help bring further clarity on the importance periphery scholars must attach to “situating their work in a rhetorical tradition” in order to negotiate entry into mainstream discourse communities. Though identifying such authors reliably could prove to be difficult.

### **10.7 Concluding Remarks**

In section 1.4 of this thesis, I indicated that studies of academic writing in English in Ghana have focused mainly on student writing – i.e. English for Academic Purposes (EAP) – at the expense of writings produced by Ghanaian academics, i.e. English for Professional Academic Purposes (EPAP). The present study thus represents an important shift in focus in terms of academic discourse studies in the Ghanaian context. I hope this thesis has succeeded in showing that, even as professional writers using English as an additional language in an L2 context, Ghanaian academics still have to be conscious of how they can ensure that their scholarly writing practices not only meet local rhetorical expectations but also, more importantly, adhere to international academic conventions so as to help facilitate their publishing profile in mainstream international journals.

I suggest two ways that Ghanaian academics themselves can help keep this kind of consciousness alive: first, they must demonstrate a keen interest in the outcome and insights of current research on the language use and rhetoric of international (disciplinary) scholarly writing practices, such as the results of the present study. Secondly, they must be interested in engaging in ‘situated learning’ (Lave and Wenger, 1991) to become more aware of international community norms in their disciplines. In academic publishing, situated learning makes writers who are seeking to enter certain disciplinary communities to see themselves as apprentices to be able to practically learn

the knowledge construction practices of these communities to facilitate entry (Hyland, 2011). One way to achieve this is for the authorities of Ghanaian universities to ensure that their local libraries subscribe to top-rated international journals. The members of the academic staff can then easily access and learn the stereotypical rhetorical styles of such journals. At the very least, the presence of relevant open access scholarship should be widely advertised to staff.

Finally, I hope that the findings of the research reported in this thesis have shed further light on the ongoing scholarship on the rhetoric of professional academic communication around the world, especially as it applies to the English rhetorical challenges and problems encountered by NNES in less privileged, periphery contexts. Our growing understanding and appreciation of the challenges of academic English that confront NNES should be a source of inspiration for them to be able to overcome these challenges in order to enhance their academic publishing success within mainstream academic contexts.

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## APPENDIX A: CORPUS DATA SOURCES

### INTERNATIONAL WRITERS

#### ECONOMICS

ECO NA01

Author: Tim Maloney

Nationality: American

Paper title: *The impact of welfare reform on labour supply behavior in New Zealand*

Journal: Labour Economics (7): 427 – 448

Year: 2000

ECO NA02

Author: Francis Green, Steven McIntosh

Nationality: British

Paper title: *The intensification of work in Europe*

Journal: Labour Economics (8): 291 - 308

Year: 2001

ECO NA03

Author: Martyn Andrews, Steve Bradley, Richard Upward

Nationality: British

Paper title: *Estimating the probability of a match using microeconomic data for the youth labour market*

Journal: Labour Economics (8): 335 - 357

Year: 2001

ECO NA04

Author: Paul A. Gompers, Andrew Metrick

Nationality: American

Paper title: *Institutional investors and equity prices*

Journal: The Quarterly Journal of Economics 229–259

Year: February, 2001

ECO NA05

Author: Mark Bils

Nationality: American

Paper title: *Do higher prices for new goods reflect quality growth or inflation*

Journal: The Quarterly Journal of Economics 637–675

Year: May, 2009

ECO NA06

Author: Richard Hornbeck

Nationality: American

Paper title: *Barbed wire property rights and agricultural development*

Journal: The Quarterly Journal of Economics 767–771

Year: May, 2010

ECO NA07

Author: Edward Miguel

Nationality: American

Paper title: *Poverty and witch killing*

Journal: The Review of Economic Studies (72): 1153 - 1172

Year: 2005

ECO NA08

Author: Timothy Besley, Stephen Coate

Nationality: British

Paper title: *Lobbying and welfare in a representative democracy*

Journal: The Review of Economic Studies (63): 67 - 82

Year: 2001

ECO NA09

Author: Alan W. Beggs

Nationality: British

Paper title: *Queues and hierarchies*

Journal: The Review of Economic Studies (68): 297 - 322

Year: 2001

ECO NA10

Author: Howard Smith

Nationality: British

Paper title: *Supermarket choice and supermarket competition in market equilibrium*

Journal: The Review of Economic Studies (71): 235 - 263

Year: 2004

ECO NA11

Author: William Easterly

Nationality: American

Paper title: *Can foreign aid buy growth?*

Journal: Journal of Economic Perspectives (71)3: 23 - 48

Year: 2003

ECO NA12

Author: Alan M. Taylor, Mark P. Taylor

Nationality: British

Paper title: *The purchasing power parity debate*

Journal: Journal of Economic Perspective (18)4: 135 - 158

Year: 2004

ECO NA13

Author: James H. Stock

Nationality: American

Paper title: *The other transformation in econometric practice: robust tools for inference*

Journal: Journal of Economic Perspectives (24) 2: 83-94

Year: 2010

ECO NA14

Author: David Canning

Nationality: British

Paper title: *The economics of HIV/AIDS in low-income countries: the case for prevention*

Journal: *Journal of Economic Perspectives* (20) 3: 212 - 142

Year: 2006

ECO NA15

Author: Simon Cowan

Nationality: British

Paper title: *Optimal risk allocation for regulated monopolies and consumers*

Journal: *Journal of Public Economics* (88): 285 - 303

Year: 2003

ECO NA16

Author: Thomas s. Dee

Nationality: American

Paper title: *Are there civic returns to education*

Journal: *Journal of Public Economics* (88): 1697 - 1720

Year: 2004

ECO NA17

Author: Cameron A. Shelton

Nationality: American

Paper title: *The size and composition of government expenditure*

Journal: *Journal of Public Economics* (91): 2230 - 2260

Year: 2007

ECO NA18

Author: Robin Mason, Timothy Swanson

Nationality: British/American

Paper title: *The costs of uncoordinated regulation*

Journal: *European Economic Review* (46): 143 - 167

Year: 2002

ECO NA19

Author: David Greenaway, Richard Kneller

Nationality: British

Paper title: *Exporting, productivity and agglomeration*

Journal: *European Economic Review* (52): 919 - 939

Year: 2008

ECO NA20

Author: John B. Taylor

Nationality: American

Paper title: *Low inflation, pass-through, and the pricing power of firms*

Journal: *European Economic Review* (44): 1389 - 1408

Year: 2000

## SOCIOLOGY

SOC NA01

Author: Sarah Babb

Nationality: American

Paper title: *Embeddness, Inflation and International Regimes: The IMF in the Early Postwar Period*

Journal: American Journal of Sociology (113)1: 128 - 164

Year: 2007

SOC NA02

Author: Linda D. Molm, Jessica L. Collett, David R. Schaefer

Nationality: American

Paper title: *Building solidarity through generalized exchange: a theory of reciprocity*

Journal: American Journal of Sociology (113)1: 205 - 242

Year: 2007

SOC NA03

Author: Thomas S. Moore

Nationality: American

Paper title: *The locus of racial disadvantage in the labor market*

Journal: American Journal of Sociology (116)3: 909 - 942

Year: 2010

SOC NA04

Author: Malcolm Brynin

Nationality: British

Paper title: *Graduate density, gender and employment*

Journal: The British Journal of Sociology (53)3: 363 - 381

Year: 2002

SOC NA05

Author: Erica Haimes, Robin Williams

Nationality: British

Paper title: *Sociology, ethics, and the priority of the particular: learning from a case study of genetic deliberations*

Journal: The British Journal of Sociology (58)3: 457 - 475

Year: 2007

SOC NA06

Author: John Holmwood

Nationality: British

Paper title: *Sociology is misfortune: disciplines, inter-disciplinarity and the impact of audit culture*

Journal: The British Journal of Sociology (61)4: 639 - 658

Year: 2010

SOC NA07

Author: Elizabeth A. Stewart

Nationality: British

Paper title: *Towards the social analysis of twinship*

Journal: The British Journal of Sociology (51)4: 719 - 737

Year: 2000

SOC NA08

Author: Peter Lobmayer, Richard Wilkinson

Nationality: British

Paper title: *Income, inequality and mortality in 14 developed countries*

Journal: Sociology of Health and Illness (22)4: 401 - 414

Year: 2000

SOC NA09

Author: Nicky Britten

Nationality: British

Paper title: *Prescribing and the defence of clinical autonomy*

Journal: Sociology of Health and Illness (23)4: 478 - 496

Year: 2001

SOC NA10

Author: Peter Wilkin

Nationality: British

Paper title: *Are you sitting comfortably? The political economy of the body*

Journal: Sociology of Health and Illness (31)1: 35 - 50

Year: 2009

SOC NA11

Author: Nick Crossley

Nationality: British

Paper title: *Social networks and student activism: on the politicizing effect of campus connections*

Journal: The Sociological Review (56)1: 18 - 38

Year: 2008

SOC NA12

Author: Ken Roberts

Nationality: American

Paper title: *Change and continuity in youth transitions in Eastern Europe: lessons for Western Sociology*

Journal: The Sociological Review 484 - 505

Year: 2003

SOC NA13

Author: Gabe Mythen

Nationality: British

Paper title: *Employment, individualization and insecurity: rethinking the risk society perspective*

Journal: The Sociological Review 129 - 149

Year: 2005

SOC NA14

Author: Mary Holmes

Nationality: British

Paper title: *An equal distance? Individualisation, gender and intimacy in distance relationships*

Journal: The Sociological Review 180 - 200

Year: 2004

SOC NA15

Author: Neal King

Nationality: American

Paper title: *Knowing women: straight men and sexual certainty*

Journal: Gender and Society (17)6: 861 - 877

Year: 2003

SOC NA16

Author: Michael A. Messner

Nationality: American

Paper title: *Barbie girls versus sea monsters: children constructing gender*

Journal: Gender and Society (14)6: 765 - 784

Year: 2000

SOC NA17

Author: Heather E. Dillaway

Nationality: American

Paper title: *Menopause is the 'Good Old' women's thoughts about reproductive aging*

Journal: Gender and Society (19)3: 398 - 417

Year: 2005

SOC NA18

Author: Lauren M. McLaren

Nationality: British

Paper title: *Anti – immigrant prejudice in Europe: contact, threat perception, and preferences for the exclusion of migrants*

Journal: Social Forces (81)3: 909 - 936

Year: 2003

SOC NA19

Author: Paul Burstein, April Linton

Nationality: Americans

Paper title: *The impact of political parties, interest groups, and social movement organizations on public policy: some recent evidence and theoretical concerns*

Journal: Social Forces (81)2: 380 - 408

Year: 2002

SOC NA20

Author: Joseph O. Baker, Buster G. Smith

Nationality: Americans

Paper title: *The nones: social characteristics of the religiously unaffiliated*

Journal: Social Forces (87)3: 1251 - 1263

Year: 2009

## LAW

### LAW NA01

Author: Jack M. Beard

Nationality: American

Paper title: *The shortcomings of indeterminacy in arms control regimes: the case of the biological weapons convention*

Journal: The American Journal of International Law 101(2): 271 - 321

Year: 2007

### LAW NA02

Author: Michael Waibel

Nationality: British

Paper title: *Opening Pandora's box: sovereign bonds in international arbitration*

Journal: The American Journal of International Law 101(4): 711 - 759

Year: 2007

### LAW NA03

Author: Kenneth Watkin

Nationality: American

Paper title: *Controlling the use of force: a role for human rights norms in contemporary armed conflict*

Journal: The American Journal of International Law, 98(1): 1 - 34

Year: 2004

### LAW NA04

Author: Dinah Shelton

Nationality: American

Paper title: *Normative hierarchy in international law*

Journal: The American Journal of International Law 100(2): 291 - 323

Year: 2006

### LAW NA05

Author: Peter Robson

Nationality: British

Paper title: *The House of Lords and homeless people's rights*

Journal: Journal of Social Welfare and Family Law 22(4): 415 - 434

Year: 2000

### LAW NA06

Author: David Hughes, Martin Davis

Nationality: British

Paper title: *Student housing: cautionary tale of one city*

Journal: Journal of Social Welfare and Family Law 24(2): 135 - 155

Year: 2002

LAW NA07

Author: Helen Stalford

Nationality: British

Paper title: *Crossing boundaries: reconciling law, culture and values in international family mediation*

Journal: *Journal of Social Welfare and Family Law* 32(2): 155 - 168

Year: 2010

LAW NA08

Author: Belinda Brooks-Gordon, Andrew Bainham

Nationality: British

Paper title: *Prisoners' families and the regulation of contact*

Journal: *Journal of Social Welfare and Family Law* 26(3): 263 - 280

Year: 2004

LAW NA09

Author: Kenneth Anderson

Nationality: American

Paper title: *The rise of international criminal law: intended and unintended consequences*

Journal: *The European Journal of International Law* 20(2): 331 - 358

Year: 2009

LAW NA10

Author: Gerald L. Neuman

Nationality: American

Paper title: *Import, export and regional consent in the inter-American court of human rights*

Journal: *The European Journal of International Law* 19(1): 101 - 123

Year: 2008

LAW NA11

Author: Carol Harlow

Nationality: British

Paper title: *Global administrative law: the quest for principles and values*

Journal: *The European Journal of International Law* 17(1): 187 - 214

Year: 2006

LAW NA12

Author: Steven Gardbaum

Nationality: American

Paper title: *Human rights as international constitutional rights*

Journal: *The European Journal of International Law* 19(4): 749 - 768

Year: 2008

LAW NA13

Author: Eric J. Mitnick

Nationality: American

Paper title: *Constitutive Rights*

Journal: *Oxford Journal of Legal Studies* 20(2): 185 - 204

Year: 2000

LAW NA14

Author: Thomas Poole

Nationality: British

Paper title: *Legitimacy, rights and judicial review*

Journal: Oxford Journal of Legal Studies 25(4): 697 - 725

Year: 2005

LAW NA15

Author: Sarah Hannett

Nationality: British

Paper title: *Equality at the intersections: the legislative and judicial failure to tackle multiple discrimination*

Journal: Oxford Journal of Legal Studies 23(1): 65 - 86

Year: 2003

LAW NA16

Author: William Lucy

Nationality: British

Paper title: *Abstraction and the rule of law*

Journal: Oxford Journal of Legal Studies 29(3): 481 - 509

Year: 2009

LAW NA17

Author: Michel Rosenfeld

Nationality: American

Paper title: *Rethinking constitutional ordering in an era of legal and ideological pluralism*

Journal: International Journal of Constitutional Law 6(3): 415 - 455

Year: 2008

LAW NA18

Author: David Jenkins

Nationality: British

Paper title: *Common law declarations of unconstitutionality*

Journal: International Journal of Constitutional Law 7(2): 183 - 214

Year: 2009

LAW NA19

Author: Rosalinda Dixon

Nationality: American

Paper title: *Creating dialogue about socioeconomic rights: strong-form versus weak-form judicial review revisited*

Journal: International Journal of Constitutional Law 5(3): 391 - 418

Year: 2007

LAW NA20

Author: Jeremy Waldron

Nationality: American

Paper title: *Judges as moral reasoners*

Journal: International Journal of Constitutional Law 7(1): 2 - 24

Year: 2009

## GHANAIAN WRITERS

### ECONOMICS

#### ECO GH01

Author: Felix Ankomah Asante

Nationality: Ghanaian

Paper title: *Household Access to Water and Poverty Reduction in Rural Ghana*

Journal: Ghana Social Science Journal, 3 & 4, 1 & 2: 68-77

Year: (June/December 2006/2007)

#### ECO GHO2

Author: Nicholas Addai Boamah

Nationality: Ghanaian

Paper title: *Challenges in housing finance market development in African countries: Ghana's experience*

Journal: Ghana Social Science Journal, 7(2): 56-71

Year: 2010

#### ECO GHO3

Author: Siaw Frimpong, Anokye Mohammed Adam

Nationality: Ghanaian

Paper title: *Does financial sector development cause investment and growth? empirical analysis of the case of Ghana*

Journal: Journal of Business and Enterprise Development, 2: 67-84

Year: 2010

#### ECO GHO4

Author: Kwabena Nkansah Darfor & Daniel Agyapong

Nationality: Ghanaian

Paper title: *The effect of macroeconomic factors on Ghana Commercial Bank stocks*

Journal: Journal of Business and Enterprise Development, 2: 67-84

Year: 2010

#### ECO GHO5

Author: George Marbuah

Nationality: Ghanaian

Paper title: *On the inflation-growth nexus: testing for optimal inflation for Ghana*

Journal: Journal of Monetary and Economic Integration, 11(2): 54-82

Year: 2010

#### ECO GHO6

Author: Rexford Abaidoo

Nationality: Ghanaian

Paper title: *Economic growth and energy consumption in an emerging economy: augmented granger causality approach*

Journal: Research in Business and Economics Journal 4: 1-15.

Year: 2011

ECO GH07

Author: Anthony Kyereboah-Coleman and Kofi A. Osei

Nationality: Ghanaian

Paper title: *Outreach and profitability of microfinance institutions: the role of governance*

Journal: *Journal of Economic Studies*, 35(3): 236-248

Year: 2008

ECO GH08

Author: Isaac Bentum-Ennin

Nationality: Ghanaian

Paper title: *External debt and economic growth in Ghana*

Journal: *Oguaa Journal of Social Sciences* 4(4): 1–25

Year: 2009

ECO GH09

Author: Emmanuel Ekow Asmah & Ferdinand Ahiakpor

Nationality: Ghanaian

Paper title: *Public Spending, Growth and Poverty Reduction: A dynamic CGE Analysis for Ghana*

Journal: *Oguaa Journal of Social Sciences*, 4(4): 55–78

Year: Nov., 2009

ECO GH10

Author: Kwabena A. Anaman and Charity Osei-Amponsah

Nationality: Ghanaian

Paper title: *Determinants of the output of the manufacturing industry in Ghana from 1974 to 2006*

Journal: *Ghana Policy Journal* 3: 69-89

Year: 2009

ECO GH11

Author: John Asafu-Adjaye

Nationality: Ghanaian

Paper title: *Oil production and Ghana's Economy: what can we expect?*

Journal: *Ghana Policy Journal* 4: 35-49

Year: 2010

ECO GH12

Author: Peter Quartey, Evelyn Kwakye

Nationality: Ghanaians

Paper title: *The net benefit of migration: the case of migrant nurses from Ghana to the United Kingdom*

Journal: *Ghana Social Science Journal*, 5 &6, 1 & 2: 62-83

Year: 2008/2009

ECO GH13

Author: Anthony K. Ahiawodzi

Nationality: Ghanaian

Paper title: *The structural adjustment programme and private investment in Ghana: an empirical study*

Journal: *The Oguaa Journal of Social Sciences* 3: 76 –103

Year: June, 2002

ECO GH14

Author: Isaac Kwaku Acheampong

Nationality: Ghanaian

Paper title: *The link between economic liberalisation and industrial productivity growth: a review of the literature*

Journal: The Oguua Journal of Social Sciences, 3: 31-53

Year: June, 2002

ECO GH15

Author: Stephen E. Armah

Nationality: Ghanaian

Paper title: *Does political stability improve the aid-growth relationship? A panel evidence on selected Sub-Saharan African countries*

Journal: African Review of Economics and Finance, 2(1): 53-76

Year: 2010

ECO GH16

Author: Barfour Osei

Nationality: Ghanaian

Paper title: *The cost of aid tying to Ghana*

Journal: African Economic Research Consortium, Research Paper 144: 4-26

Year: 2004

ECO GH17

Author: Dela Tsikata, Ama Pokuaa Fenny and Ernest Aryeetey

Nationality: Ghanaians

Paper title: *Impact of China-Africa Investment Relations: An In-depth Analysis of the Case of Ghana*

Journal: African Economic Research Consortium, Research Paper No. 4

Year: 2010

ECO GH18

Author: Ernest Aryeetey, Augustin Fosu

Nationality: Ghanaians

Paper title: *Explaining African Economic growth performance: the case of Ghana*

Journal: African Economic Research Consortium, Research Paper No. 7

Year: 2002

ECO GH19

Author: Emmanuel Asmah

Nationality: Ghanaian

Paper title: *Trade policy, growth and poverty reduction: a dynamic general equilibrium analysis for Ghana*

Journal: Ghana Social Science Journal 7(2): 15-55

Year: 2010

#### ECO GH20

Author: Nicholas Addai Boamah

Nationality: Ghanaian

Paper title: *Challenges in housing finance market development in African countries: Ghana's experience*

Journal: Ghana Social Science Journal, 7(2): 56-71

Year: 2010

#### ECO GH21

Author: David Millar and R W.N Yeboah

Nationality: Ghanaians

Paper title: *Enhancing rural economies: women in groundnut marketing in the Bolgatanga area*

Journal: Ghana Journal of Development Studies 3(1): 119–136.

Year: 2006

#### ECO GH22

Author: Daniel Kwabena Twerefou, Abel Fumey, Eric Osei Assibey, Emmanuel Ekow Asmah

Nationality: Ghanaians

Paper title: *Buoyancy and elasticity of tax: evidence from Ghana*

Journal: West African Journal of Monetary and Economic Integration 10(2): 36–70.

Year: 2010

#### ECO GH23

Author: Kwadwo Asenso-Okyere

Nationality: Ghanaian

Paper title: *Reflections on economic development policy in West Africa*

Journal: Legon Journal of International Affairs, 2(2): 21-36

Year: 2005

## SOCIOLOGY

#### SOC GH01

Author: Agnes Apusigah

Nationality: Ghanaian

Paper title: *Engendering social change in Ghana: understanding the complexities of Ghanaian women's lives*

Journal: Legon Journal of Sociology, 1(1): 1 – 18

Year: 2004

#### SOC GH02

Author: Adjei J. Kingsley

Nationality: Ghanaian

Paper title: *Ghana rural-urban dichotomy in development: a theoretical approach*

Journal: Oguuaa Journal of Social Sciences, 5(1)

Year: March, 2010

SOC GH03

Author: Fanny Hammond

Nationality: Ghanaian

Paper title: *Job Characteristics and Job Satisfaction of Ghanaian Industrial Workers*

Journal: Oguaa Journal of Social Sciences, 5(1)

Year: March, 2010

SOC GH04

Author: M.P.K.Okyerefo

Nationality: Ghanaian

Paper title: *'Trust God!' religious expression at the University of Ghana*

Journal: Ghana Social Science Journal, 3&4, 1&2, 18-32

Year: June/December 2006/2007

SOC GH05

Author: Thomas Antwi Bosiakoh

Nationality: Ghanaian

Paper title: *Understanding migration motivation in West Africa: the case of Nigerians in Ghana*

Journal: Legon Journal of Sociology 3(2): 93-112

Year: Dec., 2006 – June, 2009

SOC GH06

Author: Kojo Senah

Nationality: Ghanaian

Paper title: *In the mighty name of Jesus: faith healing and health-seeking behaviour in Ghana*

Journal: Legon Journal of Sociology 1(1): 59-70

Year: 2004

SOC GH07

Author: Fidelia Ohemeng

Nationality: Ghanaian

Paper title: *The meaning of menopause among Ghanaian-Canadian women*

Journal: Ghana Social Science Journal, 5 & 6 (1): 236-258

Year: 2004

SOC GH08

Author: Alhassan Sulemana Anamzoya

Nationality: Ghanaian

Paper title: *Our courts, our cases and we are the judges: chiefs as judges in the house of chiefs in Ghana*

Journal: Legon Journal of Sociology 3 (2): 70–91.

Year: 2006

SOC GH09

Author: Peace Tetteh

Nationality: Ghanaian

Paper title: *We are managing: childcare arrangement of working mothers in Accra*

Journal: Legon Journal of Sociology 2(2): 81–98.

Year: 2005

SOC GH10

Author: Eric Ofori Kwakye

Nationality: Ghanaian

Paper title: *The influence of local gin bitters advertisements on the consumption behaviour of Ghanaians*

Journal: Legon Journal of Sociology 4(1): 1–18.

Year: 2010

SOC GH11

Author: Isaac M. Boafo

Nationality: Ghanaian

Paper title: *Threatened identities: the experience of HIV- positive mothers in sub-Saharan Africa*

Journal: Legon Journal of Sociology 4(1): 55–74.

Year: 2010

SOC GH12

Author: Sulemana Zakaria

Nationality: Ghanaian

Paper title: *The effectiveness of civil society advocacy in basic education in northern Ghana: the case of the northern network for education development*

Journal: Legon Journal of Sociology 4(2): 98–116.

Year: 2011

SOC GH13

Author: Eliasu Alhassan

Nationality: Ghanaian

Paper title: *Gender mainstreaming in basic education in the northern region of Ghana*

Journal: Legon Journal of Sociology 4(2): 178–193.

Year: 2011

SOC GH14

Author: Mansah Prah

Nationality: Ghanaian

Paper title: *Advise columns as teaching resource for gender and sexuality: experiences from the University of Cape Coast, Ghana*

Journal: Studies in Gender and Development in Africa, 1: 1-13

Year: 2008

SOC GH15

Author: Olivia A. T. Frimpong Kwapong

Nationality: Ghanaian

Paper title: *Promoting citizenship among women in Ghana: the role of non-governmental organizations*

Journal: Studies in Gender and Development in Africa, 1: 91-104

Year: 2007

SOC GH16

Author: Florence Naab

Nationality: Ghanaian

Paper title: *Psychosocial experiences of infertile men in Accra metropolis*

Journal: *Ghana Social Science Journal*, 7(2): 119-144

Year: 2010

SOC GH17

Author: Charlotte Wrigley-Asante

Nationality: Ghanaian

Paper title: *Rethinking gender: socio-economic change and men in some selected communities in the Greater Accra Region of Ghana*

Journal: *Ghana Social Science Journal*, 7(1): 52–71.

Year: 2010

SOC GH18

Author: Oheneba Akyeampong

Nationality: Ghanaian

Paper title: *Tourism development in Ghana, 1957-2007*

Journal: *Legon Journal of Sociology* 3(2): 1-23

Year: Dec., 2006-June, 2009

SOC GH19

Author: O. Agu, P. Apoya, B. Konlan and A. B. T. Zacharia

Nationality: Ghanaians

Paper title: *Getting to the heart of the matter: an assessment of sexual experiences, knowledge and attitudes of students on STI and HIV/AIDS in some communities of northern Ghana*

Journal: *Legon Journal of Sociology* 2(1): 1–23.

Year: June/Dec, 2005

SOC GH20

Author: Akosua K. Darkwah

Nationality: Ghanaian

Paper title: *Poverty trends in Ghana over the last fifteen years*

Journal: *Legon Journal of Sociology* 2(1): 81–100.

Year: 2005

SOC GH21

Author: Kodjo Sena, Augustine Gockel, E. A. Codjoe and E. Nketiah-Amponsah

Nationality: Ghanaians

Paper title: *Child-labour productivity and wages: a case study of coastal fishing and local restaurants in Ghana*

Journal: *Legon Journal of Sociology* 2(2): 89–115

Year: 2005

SOC GH22

Author: Steve Tonah

Nationality: Ghanaian

Paper title: *The state, non-governmental organizations and local communities in the Provision of basic education in West Mamprusi, northern Ghana*

Journal: Legon Journal Sociology 4(2): 147–178.

Year: 2011

SOC GH23

Author: Imoro Razak Jaha

Nationality: Ghanaian

Paper title: *The migration of teachers from the Upper West region to the Brong Ahafo region of Ghana*

Journal: Legon Journal Sociology 4(2): 27–57.

Year: 2011

## LAW

LAW GH01

Author: Ama Fowa Hammond

Nationality: Ghanaian

Paper title: *What has man put together: recognising property rights of spouses in de facto unions*

Journal: University of Ghana Law Journal Vol XXIV: 231-271

Year: 2008-2010

LAW GH02

Author: Godwin Djokoto

Nationality: Ghanaian

Paper title: *Healing the blind spots: an exposition and critique of the law on maritime liens under the Ghana shipping act, 2003*

Journal: University of Ghana Law Journal Vol XXIV: 231-271

Year: 2008-2010

LAW GH03

Author: Raymond Atuguba

Nationality: Ghanaian

Paper title: *The constitutional and legal framework for oversight of the security sector in Ghana: outstanding matters for the Ghana police service*

Journal: University of Ghana Law Journal Vol XXIV: 205-230

Year: 2008-2010

LAW GH04

Author: Kwame Gyan

Nationality: Ghanaian

Paper title: *The duty (responsibility) of the individual in the African charter on human and peoples' rights as it relates to international human rights*

Journal: University of Ghana Law Journal Vol XXI: 156-191

Year: 2000-2002

LAW GH05

Author: P.E. Bondzi-Simpson

Nationality: Ghanaian

Paper title: *Reclaiming the lead: positioning the companies act, 1963 (Act 179) for the 21st century*

Journal: Journal of Business and Enterprise Development, 1: 168-179

Year: 2009

LAW GH06

Author: H. J. A. N. Mensah-Bonsu

Nationality: Ghanaian

Paper title: *Of "nuts in the ground not being groundnuts" the current state of customary law in Ghana*

Journal: University of Ghana Law Journal Volume XXII: 1-24

Year: 2002-2004

LAW GH07

Author: Abdul Bassit Aziz Bamba

Nationality: Ghanaian

Paper title: *Willfully causing financial loss to the state: a critique of the republic v. Ibrahim Adam and Ors*

Journal: University of Ghana Law Journal Volume XXII: 237-249

Year: 2002-2004

LAW GH08

Author: Ernest Owusu Dapaa

Nationality: Ghanaian

Paper title: *An assessment of party autonomy in the evolution of secured credit in England and beyond-lesson for Ghanaian law*

Journal: KNUST Law Journal Vol. 4: 20-44

Year: 2007/2008

LAW GH09

Author: Emmanuel Yaw Benneh

Nationality: Ghanaian

Paper title: *Sovereign immunity and international crimes*

Journal: University of Ghana Law Journal Vol. XXII: 112-160

Year: 2002-2004

LAW GH10

Author: Kissi Agyebeng

Nationality: Ghanaian

Paper title: *To disclose or not to disclose the offence - that is the question: the case of Allan William Hodgson*

Journal: University of Ghana Law Journal, VOL XXIV: 87-110

Year: 2008-2010

LAW GH11

Author: Poku Adusei

Nationality: Ghanaian

Paper title: *21st century protection of moral rights under copyrights law: the way forward*

Journal: KNUST Law Journal, 4: 1-19

Year: 2007/2008

LAW GH12

Author: Ernest Kofi Abotsi, E. H. Ofori-Amankwah

Nationality: Ghanaian

Paper title: *The uneasy evolution of international criminal justice in Africa in an age of impunity: issues, lessons and prospects*

Journal: KNUST Law Journal Vol. 5: 22-48

Year: 2010/2011

LAW GH13

Author: Samuel O. Manteaw

Nationality: Ghanaian

Paper title: *Patent law in Ghana: critique and proposals for change*

Journal: KNUST Law Journal Vol. 5: 49-78

Year: 2010/2011

LAW GH14

Author: Oswald K. Seneadza

Nationality: Ghanaian

Paper title: *The granting of asylum: a discretionary right or mandatory right of state? The Ghanaian law and practise in retrospect*

Journal: KNUST Law Journal Vol. 4: 60-77

Year: 2007/2008

LAW GH15

Author: Dominic M. Ayine

Nationality: Ghanaian

Paper title: *International institutions as autonomous development agenda-setters: the case of trade and investment law reforms in developing countries*

Journal: University of Ghana Law Journal Vol. XXII: 161-201

Year: 2002-2004

LAW GH16

Author: L. K. Agbosu

Nationality: Ghanaian

Paper title: *Contract doctrine and the modification of estate contract terms under the conveyancing decree, 1973 (NRCD 175)*

Journal: The Review of Ghana Law Vol. XX: 58-79

Year: 2000

LAW GH17

Author: J. C. Tarchie

Nationality: Ghanaian

Paper title: *Section 17(1) of the rent act 1963 and statutory tenancy in Ghana*

Journal: KNUST Law Journal 1(2): 129-142

Year: 2005

LAW GH18

Author: Stephen K. Sondem

Nationality: Ghanaian

Paper title: *The enforcement of human rights in a context of custom and traditions: the dialectics of African values*

Journal: KNUST Law Journal 1(2): 70–94

Year: 2005

LAW GH19

Author: George Agyemang Sarpong, Otu Mankata Nyampong

Nationality: Ghanaians

Paper title: *Wildlife legislation and the bush meat crisis in Ghana*

Journal: University of Ghana Law Journal, Vol. XXI: 210-222

Year: 2000-2002

LAW GH20

Author: C. Adomako-Kwakye

Nationality: Ghanaian

Paper title: *Enforcing guarantees in Ghana: time for all to act*

Journal: KNUST Law Journal Vol. 3: 31–50

Year: 2006

LAW GH21

Author: G. A. Sarpong

Nationality: Ghanaian

Paper title: *Environmental justice in Ghana*

Journal: The review of Ghana Law, 21: 17–40.

Year: 1998–2000

LAW GH22

Author: Anthony Kwadwo Yeboah

Nationality: Ghanaian

Paper title: *When statutory "shall" may mean "may": a note on judicial discretion*

Journal: KNUST Law Journal 1(2): 143–155

Year: 2005

LAW GH23

Author: Poku Adusei

Nationality: Ghanaian

Paper title: *Trajectories of patent-related negotiation affecting pharmaceuticals and the politics of exclusion in sub-Saharan Africa*

Journal: University of Ghana Law Journal Vol. XXIV: 25-86

Year: 2008-2010

APPENDIX B: OVERALL FREQUENCIES OF EPISTEMIC MARKERS (EMs)

INTERNATIONAL WRITERS (NAAC)

Modal verbs	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>could</i>	Sociology	70	4.73
	Economics	92	6.18
	Law	117	5.28
<i>couldn't</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>may</i>	Sociology	301	20.35
	Economics	285	19.14
	Law	558	25.18
<i>might</i>	Sociology	156	10.55
	Economics	69	4.63
	Law	271	12.23
<i>should</i>	Sociology	27	1.83
	Economics	31	2.08
	Law	13	0.59
<i>shouldn't</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>would</i>	Sociology	74	5.00
	Economics	177	11.89
	Law	382	17.24
<i>wouldn't</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>will</i>	Sociology	155	10.48
	Economics	158	10.61
	Law	213	9.61
<i>must</i>	Sociology	2	0.14
	Economics	3	0.20
	Law	8	0.36
Total	Sociology	<b>785</b>	<b>53.07</b>
	Economics	<b>815</b>	<b>54.73</b>
	Law	<b>1562</b>	<b>70.48</b>
Overall total		<b>3162</b>	<b>60.99</b>

Lexical verb	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>appear</i>	Sociology	77	5.21
	Economics	50	3.36
	Law	98	4.42
<i>argue</i>	Sociology	124	8.38
	Economics	43	2.89
	Law	116	5.23
<i>assume</i>	Sociology	31	2.10
	Economics	110	7.39
	Law	49	2.21
<i>assure</i>	Sociology	2	0.14
	Economics	0	0.00
	Law	1	0.05
<i>attest</i>	Sociology	2	0.14
	Economics	0	0.00
	Law	3	0.14
<i>believe</i>	Sociology	24	1.62
	Economics	18	1.21
	Law	36	1.62
<i>claim</i>	Sociology	30	2.03
	Economics	9	0.60
	Law	30	1.35
<i>consider</i>	Sociology	40	2.70
	Economics	57	3.83
	Law	165	7.45
<i>convince</i>	Sociology	1	0.07
	Economics	1	0.07
	Law	1	0.05
<i>doubt</i>	Sociology	2	0.14
	Economics	2	0.13
	Law	7	0.32
<i>estimate</i>	Sociology	15	1.01
	Economics	125	8.40
	Law	1	0.05
<i>expect</i>	Sociology	91	6.15
	Economics	71	4.77
	Law	33	1.49
<i>feel</i>	Sociology	9	0.61
	Economics	11	0.74
	Law	21	0.95
<i>guess</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	1	0.05
<i>hope</i>	Sociology	10	0.68
	Economics	1	0.07
	Law	10	0.45
<i>indicate</i>	Sociology	66	4.46
	Economics	50	3.36
	Law	43	1.94
<i>know</i>	Sociology	15	1.01

	Economics	14	0.94
	Law	31	1.40
<i>look as if</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>look (like)</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>presume</i>	Sociology	8	0.54
	Economics	0	0.00
	Law	4	0.18
<i>propose</i>	Sociology	25	1.69
	Economics	7	0.47
	Law	21	0.95
<i>reckon</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>seem</i>	Sociology	93	6.29
	Economics	54	3.63
	Law	151	6.81
<i>show</i>	Sociology	163	11.02
	Economics	168	11.28
	Law	64	2.89
<i>speculate</i>	Sociology	4	0.27
	Economics	0	0.00
	Law	1	0.05
<i>suggest</i>	Sociology	172	11.63
	Economics	151	10.14
	Law	183	8.26
<i>suppose</i>	Sociology	0	0.00
	Economics	44	2.95
	Law	26	1.17
<i>tend</i>	Sociology	81	5.48
	Economics	51	3.42
	Law	53	2.40
<i>think</i>	Sociology	35	2.37
	Economics	33	2.22
	Law	90	4.06
<i>infer</i>	Sociology	7	0.47
	Economics	7	0.47
	Law	5	0.23
Total	Sociology	<b>1127</b>	<b>76.19</b>
	Economics	<b>1085</b>	<b>72.85</b>
	Law	<b>1244</b>	<b>56.14</b>
Overall total		<b>3456</b>	<b>66.66</b>

Adverb	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>about</i>	Sociology	8	0.54
	Economics	25	1.68
	Law	3	0.14
<i>actually</i>	Sociology	24	1.62
	Economics	27	1.81
	Law	46	2.08
<i>almost</i>	Sociology	19	1.28
	Economics	34	2.29
	Law	44	1.99
<i>apparently</i>	Sociology	11	0.74
	Economics	5	0.34
	Law	26	1.17
<i>approximately</i>	Sociology	9	0.61
	Economics	27	1.81
	Law	3	0.14
<i>around</i>	Sociology	8	0.54
	Economics	19	1.28
	Law	0	0.00
<i>beyond doubt</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	2	0.09
<i>certainly</i>	Sociology	15	1.01
	Economics	11	0.74
	Law	42	1.90
<i>clearly</i>	Sociology	33	2.23
	Economics	23	1.54
	Law	70	3.16
<i>definitely</i>	Sociology	2	0.14
	Economics	0	0.00
	Law	1	0.05
<i>doubtless</i>	Sociology	1	0.07
	Economics	0	0.00
	Law	2	0.09
<i>essentially</i>	Sociology	7	0.47
	Economics	16	1.07
	Law	20	0.90
<i>evidently</i>	Sociology	0	0.00
	Economics	1	0.07
	Law	2	0.09
<i>frequently</i>	Sociology	13	0.88
	Economics	15	1.01
	Law	29	1.31
<i>generally</i>	Sociology	27	1.83
	Economics	26	1.75
	Law	122	5.51
<i>in fact</i>	Sociology	36	2.43
	Economics	30	2.01
	Law	34	1.53
<i>in reality</i>	Sociology	3	0.20

	Economics	2	0.13
	Law	4	0.18
<i>indeed</i>	Sociology	44	2.97
	Economics	28	1.88
	Law	111	5.01
<i>inevitably</i>	Sociology	11	0.74
	Economics	1	0.07
	Law	32	1.44
<i>largely</i>	Sociology	14	0.95
	Economics	22	1.48
	Law	53	2.40
<i>maybe</i>	Sociology	3	0.20
	Economics	1	0.07
	Law	12	0.54
<i>necessarily</i>	Sociology	32	2.16
	Economics	13	0.87
	Law	54	2.44
<i>naturally</i>	Sociology	4	0.27
	Economics	3	0.20
	Law	6	0.27
<i>obviously</i>	Sociology	7	0.47
	Economics	4	0.27
	Law	23	1.04
<i>ostensibly</i>	Sociology	1	0.07
	Economics	0	0.00
	Law	5	0.23
<i>of course</i>	Sociology	23	1.55
	Economics	20	1.34
	Law	69	3.11
<i>perhaps</i>	Sociology	53	3.58
	Economics	24	1.61
	Law	109	4.92
<i>possibly</i>	Sociology	5	0.34
	Economics	15	1.01
	Law	18	0.81
<i>probably</i>	Sociology	13	0.88
	Economics	7	0.47
	Law	29	1.31
<i>surely</i>	Sociology	4	0.27
	Economics	2	0.13
	Law	36	1.62
<i>undeniably</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>unquestionably</i>	Sociology	1	0.07
	Economics	0	0.00
	Law	1	0.05
<i>(very) likely</i>	Sociology	6	0.41
	Economics	6	0.40
	Law	7	0.32
<i>no doubt</i>	Sociology	2	0.14
	Economics	1	0.07

	Law	16	0.72
<i>arguably</i>	Sociology	4	0.27
	Economics	4	0.27
	Law	28	1.26
<i>unarguably</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>usually</i>	Sociology	43	2.91
	Economics	23	1.54
	Law	31	1.40
<i>presumably</i>	Sociology	10	0.68
	Economics	8	0.54
	Law	12	0.54
Total	Sociology	<b>496</b>	<b>33.53</b>
	Economics	<b>443</b>	<b>29.75</b>
	Law	<b>1102</b>	<b>49.73</b>
Overall total		<b>2041</b>	<b>39.37</b>

Adjective	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>apparent</i>	Sociology	13	0.88
	Economics	6	0.40
	Law	35	1.58
<i>certain</i>	Sociology	2	0.14
	Economics	1	0.07
	Law	6	0.27
<i>a certain extent</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	7	0.32
<i>clear</i>	Sociology	30	2.03
	Economics	35	2.35
	Law	59	2.66
<i>evident</i>	Sociology	17	1.15
	Economics	0	0.00
	Law	11	0.50
<i>improbable</i>	Sociology	1	0.07
	Economics	0	0.00
	Law	0	0.00
<i>inevitable</i>	Sociology	4	0.27
	Economics	1	0.07
	Law	11	0.50
<i>likely</i>	Sociology	198	13.39
	Economics	85	5.71
	Law	113	5.10
<i>obvious</i>	Sociology	15	1.01
	Economics	9	0.60
	Law	39	1.76
<i>possible</i>	Sociology	43	2.91
	Economics	62	4.16
	Law	67	3.02
<i>probable</i>	Sociology	2	0.14
	Economics	0	0.00
	Law	1	0.05
<i>sure</i>	Sociology	5	0.34
	Economics	1	0.07
	Law	11	0.50
<i>true</i>	Sociology	10	0.68
	Economics	24	1.61
	Law	19	0.86
<i>unlikely</i>	Sociology	12	0.81
	Economics	12	0.81
	Law	29	1.31
<i>well known</i>	Sociology	6	0.41
	Economics	3	0.20
	Law	12	0.54
<i>suggestive</i>	Sociology	2	0.14
	Economics	10	0.67
	Law	1	0.05
<i>convincing</i>	Sociology	0	0.00

	Economics	5	0.34
	Law	6	0.27
<i>speculative</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	2	0.09
	Sociology	<b>360</b>	<b>24.34</b>
Total	Economics	<b>254</b>	<b>17.06</b>
	Law	<b>429</b>	<b>19.36</b>
Overall total		<b>1043</b>	<b>20.12</b>

Noun	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>assumption</i>	Sociology	5	0.34
	Economics	64	4.30
	Law	21	0.95
<i>belief</i>	Sociology	3	0.20
	Economics	5	0.34
	Law	10	0.45
<i>certainty</i>	Sociology	1	0.07
	Economics	0	0.00
	Law	0	0.00
<i>chance</i>	Sociology	7	0.47
	Economics	9	0.60
	Law	5	0.23
<i>claim</i>	Sociology	13	0.88
	Economics	2	0.13
	Law	24	1.08
<i>danger</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	10	0.45
<i>doubt</i>	Sociology	2	0.14
	Economics	1	0.07
	Law	6	0.27
<i>estimate</i>	Sociology	1	0.07
	Economics	17	1.14
	Law	0	0.00
<i>evidence</i>	Sociology	77	5.21
	Economics	168	11.28
	Law	40	1.80
<i>explanation</i>	Sociology	13	0.88
	Economics	29	1.95
	Law	6	0.27
<i>fact</i>	Sociology	43	2.91
	Economics	19	1.28
	Law	65	2.93
<i>fear</i>	Sociology	4	0.27
	Economics	1	0.07
	Law	11	0.50
<i>hope</i>	Sociology	3	0.20
	Economics	1	0.07
	Law	4	0.18
<i>idea</i>	Sociology	35	2.37
	Economics	17	1.14
	Law	38	1.71
<i>indication</i>	Sociology	6	0.41
	Economics	3	0.20
	Law	3	0.14
<i>likelihood</i>	Sociology	11	0.74
	Economics	8	0.54
	Law	10	0.45
<i>opinion</i>	Sociology	3	0.20

	Economics	1	0.07
	Law	6	0.27
	Sociology	14	0.95
<i>possibility</i>	Economics	36	2.42
	Law	34	1.53
<i>probability</i>	Sociology	6	0.41
	Economics	79	5.30
<i>speculation</i>	Law	1	0.05
	Sociology	0	0.00
	Economics	2	0.13
<i>suggestion</i>	Law	0	0.00
	Sociology	6	0.41
	Economics	2	0.13
<i>tendency</i>	Law	6	0.27
	Sociology	18	1.22
	Economics	10	0.67
<i>theory</i>	Law	7	0.32
	Sociology	18	1.22
	Economics	25	1.68
<i>view</i>	Law	23	1.04
	Sociology	31	2.10
	Economics	34	2.28
<i>estimation</i>	Law	89	4.02
	Sociology	0	0.00
	Economics	14	0.94
	Law	0	0.00
	Sociology	320	21.63
	Economics	547	36.73
Total	Law	419	18.91
	Overall total	1286	24.80

GHANAIAN WRITERS (NNGC)

Modal verbs	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>could</i>	Sociology	43	3.24
	Economics	65	4.46
	Law	40	2.37
<i>couldn't</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>may</i>	Sociology	76	5.73
	Economics	119	8.16
	Law	178	10.54
<i>might</i>	Sociology	18	1.36
	Economics	19	1.30
	Law	32	1.89
<i>should</i>	Sociology	1	0.08
	Economics	14	0.96
	Law	13	0.77
<i>shouldn't</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>would</i>	Sociology	76	5.73
	Economics	77	5.28
	Law	158	9.35
<i>wouldn't</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>will</i>	Sociology	72	5.43
	Economics	125	8.57
	Law	136	8.05
<i>must</i>	Sociology	0	0.00
	Economics	1	0.07
	Law	6	0.36
Total	Sociology	<b>286</b>	<b>21.56</b>
	Economics	<b>420</b>	<b>28.79</b>
	Law	<b>563</b>	<b>33.33</b>
Overall total		<b>1,269</b>	<b>28.23</b>

Lexical verb	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>appear</i>	Sociology	34	2.56
	Economics	40	2.74
	Law	57	3.37
<i>argue</i>	Sociology	69	5.20
	Economics	43	2.95
	Law	97	5.74
<i>assume</i>	Sociology	20	1.51
	Economics	38	2.60
	Law	14	0.83
<i>assure</i>	Sociology	1	0.08
	Economics	1	0.07
	Law	4	0.24
<i>attest</i>	Sociology	1	0.08
	Economics	0	0.00
	Law	0	0.00
<i>believe</i>	Sociology	32	2.41
	Economics	18	1.23
	Law	15	0.89
<i>claim</i>	Sociology	22	1.66
	Economics	3	0.21
	Law	15	0.89
<i>consider</i>	Sociology	76	5.73
	Economics	58	3.98
	Law	110	6.51
<i>convince</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	10	0.59
<i>doubt</i>	Sociology	0	0.00
	Economics	1	0.07
	Law	1	0.06
<i>estimate</i>	Sociology	19	1.43
	Economics	118	8.09
	Law	4	0.24
<i>expect</i>	Sociology	43	3.24
	Economics	60	4.11
	Law	17	1.01
<i>feel</i>	Sociology	27	2.04
	Economics	3	0.21
	Law	11	0.65
<i>guess</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>hope</i>	Sociology	3	0.23
	Economics	4	0.27
	Law	6	0.36
<i>indicate</i>	Sociology	74	5.58
	Economics	164	11.24
	Law	40	2.37
<i>know</i>	Sociology	46	3.47

	Economics	6	0.41
	Law	41	2.43
<i>look as if</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>look (like)</i>	Sociology	1	0.08
	Economics	1	0.07
	Law	0	0.00
<i>presume</i>	Sociology	2	0.15
	Economics	2	0.14
	Law	5	0.30
<i>propose</i>	Sociology	6	0.45
	Economics	12	0.82
	Law	15	0.89
<i>reckon</i>	Sociology	0	0.00
	Economics	1	0.07
	Law	2	0.12
<i>seem</i>	Sociology	23	1.73
	Economics	41	2.81
	Law	80	4.74
<i>show</i>	Sociology	101	7.61
	Economics	219	15.01
	Law	49	2.90
<i>speculate</i>	Sociology	0	0.00
	Economics	1	0.07
	Law	0	0.00
<i>suggest</i>	Sociology	46	3.47
	Economics	129	8.84
	Law	60	3.55
<i>suppose</i>	Sociology	10	0.75
	Economics	3	0.21
	Law	3	0.18
<i>tend</i>	Sociology	36	2.71
	Economics	47	3.22
	Law	18	1.07
<i>think</i>	Sociology	25	1.88
	Economics	8	0.55
	Law	14	0.83
<i>infer</i>	Sociology	1	0.08
	Economics	4	0.27
	Law	2	0.12
Total	Sociology	718	54.12
	Economics	1025	70.26
	Law	690	40.85
Overall total		2433	54.37

Adverb	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>about</i>	Sociology	30	2.26
	Economics	71	4.87
	Law	18	1.07
<i>actually</i>	Sociology	15	1.13
	Economics	12	0.82
	Law	26	1.54
<i>almost</i>	Sociology	21	1.58
	Economics	22	1.51
	Law	19	1.12
<i>apparently</i>	Sociology	4	0.30
	Economics	3	0.21
	Law	5	0.30
<i>approximately</i>	Sociology	4	0.30
	Economics	12	0.82
	Law	2	0.12
<i>around</i>	Sociology	4	0.30
	Economics	12	0.82
	Law	0	0.00
<i>beyond doubt</i>	Sociology	1	0.08
	Economics	0	0.00
	Law	1	0.06
<i>certainly</i>	Sociology	2	0.15
	Economics	3	0.21
	Law	16	0.95
<i>clearly</i>	Sociology	14	1.06
	Economics	16	1.10
	Law	30	1.78
<i>definitely</i>	Sociology	3	0.23
	Economics	3	0.21
	Law	1	0.06
<i>doubtless</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>essentially</i>	Sociology	7	0.53
	Economics	9	0.62
	Law	16	0.95
<i>evidently</i>	Sociology	2	0.15
	Economics	0	0.00
	Law	2	0.12
<i>frequently</i>	Sociology	16	1.21
	Economics	3	0.21
	Law	2	0.12
<i>generally</i>	Sociology	52	3.92
	Economics	46	3.15
	Law	51	3.02
<i>in fact</i>	Sociology	21	1.58
	Economics	6	0.41
	Law	22	1.30
<i>in reality</i>	Sociology	3	0.23

	Economics	1	0.07
	Law	0	0.00
<i>indeed</i>	Sociology	49	3.69
	Economics	38	2.60
	Law	87	5.15
<i>inevitably</i>	Sociology	0	0.00
	Economics	1	0.07
	Law	4	0.24
<i>largely</i>	Sociology	39	2.94
	Economics	46	3.15
	Law	19	1.12
<i>maybe</i>	Sociology	1	0.08
	Economics	0	0.00
	Law	1	0.06
<i>necessarily</i>	Sociology	15	1.13
	Economics	9	0.62
	Law	21	1.24
<i>naturally</i>	Sociology	0	0.00
	Economics	3	0.21
	Law	6	0.36
<i>obviously</i>	Sociology	5	0.38
	Economics	8	0.55
	Law	11	0.65
<i>ostensibly</i>	Sociology	1	0.08
	Economics	2	0.14
	Law	0	0.00
<i>of course</i>	Sociology	4	0.30
	Economics	4	0.27
	Law	13	0.77
<i>perhaps</i>	Sociology	14	1.06
	Economics	7	0.48
	Law	15	0.89
<i>possibly</i>	Sociology	1	0.08
	Economics	7	0.48
	Law	5	0.30
<i>probably</i>	Sociology	7	0.53
	Economics	11	0.75
	Law	10	0.59
<i>surely</i>	Sociology	1	0.08
	Economics	0	0.00
	Law	2	0.12
<i>undeniably</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
<i>unquestionably</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	1	0.06
<i>(very) likely</i>	Sociology	0	0.00
	Economics	4	0.27
	Law	3	0.18
<i>no doubt</i>	Sociology	1	0.08
	Economics	1	0.07

	Law	8	0.47
<i>arguably</i>	Sociology	1	0.08
	Economics	2	0.14
	Law	11	0.65
<i>unarguably</i>	Sociology	0	0.00
	Economics	1	0.07
	Law	1	0.06
<i>usually</i>	Sociology	29	2.19
	Economics	13	0.89
	Law	25	1.48
<i>presumably</i>	Sociology	0	0.00
	Economics	2	0.14
	Law	4	0.24
Total	Sociology	<b>367</b>	<b>27.66</b>
	Economics	<b>378</b>	<b>25.91</b>
	Law	<b>458</b>	<b>27.11</b>
Overall total		<b>1203</b>	<b>26.88</b>

Adjective	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>apparent</i>	Sociology	5	0.38
	Economics	8	0.55
	Law	12	0.71
<i>certain</i>	Sociology	1	0.08
	Economics	1	0.07
	Law	4	0.24
<i>a certain extent</i>	Sociology	1	0.08
	Economics	1	0.07
	Law	0	0.00
<i>clear</i>	Sociology	7	0.53
	Economics	37	2.54
	Law	37	2.19
<i>evident</i>	Sociology	19	1.43
	Economics	10	0.69
	Law	8	0.47
<i>improbable</i>	Sociology	0	0.00
	Economics	1	0.07
	Law	0	0.00
<i>inevitable</i>	Sociology	2	0.15
	Economics	1	0.07
	Law	4	0.24
<i>likely</i>	Sociology	56	4.22
	Economics	31	2.12
	Law	19	1.12
<i>obvious</i>	Sociology	8	0.60
	Economics	10	0.69
	Law	17	1.01
<i>possible</i>	Sociology	11	0.83
	Economics	30	2.06
	Law	11	0.65
<i>probable</i>	Sociology	1	0.08
	Economics	1	0.07
	Law	0	0.00
<i>sure</i>	Sociology	1	0.08
	Economics	1	0.07
	Law	2	0.12
<i>true</i>	Sociology	6	0.45
	Economics	9	0.62
	Law	15	0.89
<i>unlikely</i>	Sociology	0	0.00
	Economics	4	0.27
	Law	4	0.24
<i>well known</i>	Sociology	2	0.15
	Economics	7	0.48
	Law	6	0.36
<i>suggestive</i>	Sociology	1	0.08
	Economics	2	0.14
	Law	0	0.00
<i>convincing</i>	Sociology	0	0.00

	Economics	1	0.07
	Law	1	0.06
<i>speculative</i>	Sociology	0	0.00
	Economics	0	0.00
	Law	0	0.00
	Sociology	<b>121</b>	<b>9.12</b>
Total	Economics	<b>155</b>	<b>10.62</b>
	Law	<b>140</b>	<b>8.29</b>
Overall total		<b>416</b>	<b>9.30</b>

Noun	Discipline	Epistemic occurrences	
		No.	f/10,000
<i>assumption</i>	Sociology	5	0.38
	Economics	8	0.55
	Law	14	0.83
<i>belief</i>	Sociology	11	0.83
	Economics	2	0.14
	Law	11	0.65
<i>certainty</i>	Sociology	1	0.08
	Economics	0	0.00
	Law	4	0.24
<i>chance</i>	Sociology	1	0.08
	Economics	1	0.07
	Law	0	0.00
<i>claim</i>	Sociology	4	0.30
	Economics	1	0.07
	Law	6	0.36
<i>danger</i>	Sociology	1	0.08
	Economics	0	0.00
	Law	9	0.53
<i>doubt</i>	Sociology	3	0.23
	Economics	2	0.14
	Law	13	0.77
<i>estimate</i>	Sociology	2	0.15
	Economics	4	0.27
	Law	0	0.00
<i>evidence</i>	Sociology	22	1.66
	Economics	61	4.18
	Law	35	2.07
<i>explanation</i>	Sociology	11	0.83
	Economics	10	0.69
	Law	4	0.23
<i>fact</i>	Sociology	87	6.56
	Economics	75	5.14
	Law	133	7.87
<i>fear</i>	Sociology	7	0.53
	Economics	1	0.07
	Law	5	0.30
<i>hope</i>	Sociology	4	0.30
	Economics	1	0.07
	Law	2	0.12
<i>idea</i>	Sociology	4	0.30
	Economics	11	0.75
	Law	17	1.01
<i>indication</i>	Sociology	4	0.30
	Economics	12	0.82
	Law	11	0.65
<i>likelihood</i>	Sociology	4	0.30
	Economics	4	0.27
	Law	1	0.06
<i>opinion</i>	Sociology	2	0.15

	Economics	2	0.14
	Law	30	1.78
	Sociology	6	0.45
<i>possibility</i>	Economics	9	0.62
	Law	9	0.53
	Sociology	1	0.08
<i>probability</i>	Economics	4	0.27
	Law	0	0.00
	Sociology	0	0.00
<i>speculation</i>	Economics	0	0.00
	Law	0	0.00
	Sociology	4	0.30
<i>suggestion</i>	Economics	2	0.14
	Law	12	0.71
	Sociology	5	0.38
<i>tendency</i>	Economics	5	0.34
	Law	6	0.36
	Sociology	7	0.53
<i>theory</i>	Economics	7	0.48
	Law	8	0.47
	Sociology	22	1.66
<i>view</i>	Economics	24	1.65
	Law	83	4.91
	Sociology	1	0.08
<i>estimation</i>	Economics	16	1.10
	Law	1	0.06
	Sociology	<b>219</b>	<b>16.51</b>
Total	Economics	<b>262</b>	<b>17.96</b>
	Law	<b>414</b>	<b>24.51</b>
<hr/> Overall total		<b>895</b>	<b>20.00</b>