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Maestría en Inglés con Orientación en Lingüística Aplicada

Tesis de Maestría

**LA ESTRUCTURA RETÓRICA DEL RESUMEN
(*ABSTRACT*) EN LAS DISCIPLINAS ARTE Y DISEÑO: UN
ESTUDIO DESCRIPTIVO**

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Abstract

As an effective means of representing the research article, the abstract has increasingly become an essential part of this genre. For that reason, understanding the rhetorical conventions that govern abstract writing in their respective fields may help students and novice researchers acquire reading and writing skills in their fields of specialization. Recent research on the rhetorical features of abstracts has revealed broad patterns of regularity as well as disciplinary variation. Although several investigations have focused their analysis on a variety of disciplines, no study appears to have explored the rhetorical structure of abstracts in the fields of Art and Design. The present research, therefore, examines the rhetorical moves and main linguistic features of Art and Design abstracts, and proposes a schema for the abstract genre in each of these disciplinary domains. To conduct the study, a corpus of 30 abstracts from four high-impact journals was compiled, and subjected to a move analysis (Swales, 1981, 1990) using the analytical framework proposed by Pho (2008), and the methodology suggested by Dudley-Evans (1994) and Holmes (1997). The results reveal that although Art and Design abstracts bear some similarities, they also show some differences that result in distinct emerging patterns. Based on these findings, two models are proposed of the rhetorical elements that are constitutive of each discipline. The outcome of this research has pedagogical implications for students, novice researchers and teachers within ESP (English for Specific Purposes) contexts.

Key words: *research article abstract, move analysis, rhetorical structure, ESP, genre*

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Abbreviations and Acronyms

ANSI	American National Standards Institute
APA	American Psychological Association
CARS	Create a Research Space
EAL	English as an Additional Language
EAP	English for Academic Purposes
EFL	English as a Foreign Language
ENL	English as a Native Language
ESP	English for Specific Purposes
IF	Impact factor
IMRD	Introduction, Methods, Results, Discussion

ISI	Institute for Scientific Information
L1	Native Language
L2	Second Language
RA	Research Article
SFL	Systemic Functional Linguistics

Chapter I: Introduction

1.1. Introduction

In the context of academic exchange and knowledge production, the research article (henceforth RA) stands as the main genre of research communication, and within it, the abstract plays a major role. As research genres, there is general agreement that both RAs and abstracts are richly persuasive texts (Hyland & Tse, 2004; Swales, 2004). However, whereas through RAs writers seek to persuade their discourse community to accept their claims and validate them as legitimate knowledge, abstracts are the instruments authors use to lure readers into their full RAs (Hyland, 2000). Hence, abstracts have come to be strategic tools for researchers who intend to get access and stay active in the scientific community. The link between RAs and abstracts is also manifested through their rhetorical organization. The RA of experimental research is reportedly structured into four canonical sections –*Introduction, Methods, Results, and Discussion* –abridged as the IMRD framework (Swales, 1990). The abstract, on the other hand, has been described in the literature as a “representation” of its associated text (Bazerman, 1988, pp. 220-221)¹, and the various frameworks designed to describe its organizational structure basically reproduce the traditional IMRD format of the RA (Bhatia, 1993; Hyland, 2000; Pho, 2008; Santos, 1996; Swales & Feak, 2009; Weissberg & Buker, 1990).

Meanwhile, in the last decades, English has become the main language of exchange and dissemination of academic knowledge (Bhatia, 2008; Hyland, 2009; Swales, 1985, 1988, 2004, among other authors). The global status of English as “the international language of scientific exchange” (Swales, 1990, 2004) and the increasing competition triggered by the current “information explosion” (Swales & Feak, 2009, p. 1) in the research world encourages authors to publish in international journals in order to gain professional and institutional visibility (Johns, 2012), and fosters the use of English as a bridge language in non-Anglophone journals to ensure worldwide circulation (Lorés, 2004; Pho, 2008), bringing together speakers of English as their native language and those who

¹ This work is written in APA Style 7th edition, as cited in the Presentation References section (p. 96).

speak English as an additional language². In this scenario, native and non-native students and academics need to become aware of the rhetorical conventions used in the production of knowledge in order to access the discourse community of international academic research (Paltridge, 1993).

The challenge of teaching academic and research English to non-native speakers has been addressed by the field of Genre Analysis upon the publication of Swales's (1990) seminal work on the topic. His approach to the study of the generic organization of texts by looking at their rhetorical moves (or text segments performing a specific communicative function) is based on the CARS (Create a Research Space) model proposed by Swales (1981, 1990, 2004) for the analysis of RA *Introductions*. This model of move analysis, developed within the field of English for Specific Purposes (ESP), has been revised and extended by several authors to other sections of the RA (Anthony, 1999; Brett, 1994; Holmes, 1997; Lim, 2006; Peacock, 2002; Samraj, 2002; Thompson, 1993), including the abstract, which is by now a standard feature of journal articles (Swales & Feak, 2009). Some research on abstracts has focused on comparing the textual organization of the genre across languages (Cavalieri & Preite, 2017; Martín-Martín, 2003; Noorizadeh-Honami & Chalak, 2018) while other studies have looked into the rhetorical organization of abstracts in one or more fields (Anderson & MacLean, 1997; Cross & Oppenheim, 2006; Lorés, 2004; Salager-Meyer, 1990; Samraj, 2005; Tankó, 2017) as well as into specific rhetorical features that link language to the communicative function of moves (Ebrahimi, 2016; Ebrahimi & Chan, 2015; Hyland, 2003b; Hyland & Tse, 2005; Martín-Martín & Burgess, 2004; Salager-Meyer, 1992; Stotesbury, 2003; Tseng, 2011). A major contribution to the study of abstracts was Hyland (2000), who compared lexico-grammatical features and move organization across eight disciplines ranging from the hard sciences to the soft knowledge domains. His work related linguistic patterns to disciplinary epistemologies, suggesting that textual form provides a window to the underlying values of a discourse community.

Research on the rhetorical features of both, the RA (or one of its sections) and the abstract, has revealed broad patterns of regularity as well as disciplinary variation. For the

² English as an additional language (EAL) refers to “all contexts where English is a foreign or second language and where it is not the principal medium of instruction in the education system” (Burgess, 2017, p. 14)

most part, the focus of research on abstracts has been on well-established disciplines within the hard sciences, and in a few fields of inquiry within the humanities or the social sciences. However, to the best of my knowledge, the rhetorical structure of abstracts in the areas of Art and Design has not been explored. It was mainly over the course of the second half of the 20th century that the creative subjects left the art schools and joined the ranks of university education programs in the Western world (Borg, 2012). Since then, as emerging fields of inquiry, Art and Design have been borrowing modes of investigation from more mature disciplines in the humanities and social sciences while they seek to establish criteria to create their own research paradigms (Prentice, 2000; Trowler, 2013). Because they are practice-based, creative fields, it may take longer for them to achieve parity of status with more traditional disciplines. However, young academics are still under pressure to engage in research and contribute to the creation of knowledge within the international scientific community (de la Harpe & Peterson, 2008; Newbury, 1996). As evidenced by the data collected in a review of high-impact international journals, Argentinian Art and Design practitioners have not made significant contributions to this collective research endeavor so far. Therefore, the present study seeks to examine the rhetorical organization of Art and Design abstracts in order to make a pedagogical contribution to ESP by informing non-native speaker students and academics of the current conventions used by both discourse communities.

1.2. Motivation for Research

The main motivation for this research is pedagogical. As an ESP teacher at the Provincial University of Córdoba, it has come to my attention that students have no specific training in the underlying conventions of the scientific RA in Spanish, even though the genre provides useful research and reading material, particularly when they are working on the final project they are required to produce as they pursue their undergraduate degrees. In their ESP courses, we teach them the rhetorical structure and linguistic features of abstracts so that they can access papers in English that back up their projects. However, the data informing our teaching materials is not discipline-specific. As advance indicators of both the content and the structuring of the RA that they precede, abstracts serve a clear screening purpose since they help readers decide whether it is worth reading the whole article or not.

If students become aware of the value of the abstract within the context of the RA, they may save time in their search and optimize their reading process. In addition, by becoming acquainted with the rhetorical conventions of abstracts in their own field of study, they will gain a better understanding of the texts, and improve their reading performance as they process texts more efficiently (Carrell, 1984). Students may also benefit from acknowledging the link between the abstract and the RA when they need to search for specific pieces of information. The preview to the article that the abstract provides may serve as a useful roadmap for their reading. On the other hand, it may be the case that students are required to submit an English version of the abstract for their own projects, or that they expect to publish their research and are asked to furnish the journal with an abstract in English. Novice writers need to be aware of not only the rhetorical moves that are prototypically used in abstracts but also the language that realizes those moves. Such knowledge, though, should address the needs and conventions of their own fields of expertise.

The data gathered in this study becomes particularly relevant to the ESP community because the generic patterns of abstracts in these creative disciplines have not been explored before. Therefore, the findings of this study can provide a first outline of the genre in two related but undocumented and rather peripheral fields in the academic world. The templates proposed for Art and Design abstracts as a result of this study can help improve the reading and writing skills of university students in their fields of specialization as well as inform materials designers of the specific generic features of Art and Design abstracts.

1.3. Research Questions

The present study addresses the following research questions:

1. What is the rhetorical structure of the abstract in Art and Design research articles?
2. What distinctive rhetorical organization features characterize each discipline?

1.4. Objectives

1.4.1. General Objective

1. To describe the rhetorical structure of the RA abstract written in English in the fields of Art and Design.

1.4.2. Specific Objectives

1. To analyze the RA abstracts of Art and Design written in English and published in the years 2016, 2017, 2018, and 2019.
2. To identify the rhetorical moves of Art and Design abstracts based on their communicative function.
3. To identify the linguistic features which characterize each move.
4. To identify similarities and differences between the rhetorical structure of abstracts in Art and Design.
5. To propose a rhetorical schema for the RA abstracts written in English in the field of Art and a schema for Design RA abstracts.

1.5. Thesis Outline

The present study is organized as follows: Chapter II reviews the studies that have examined the overall organization and the different sections of the RA which may have a bearing on the rhetorical features of the RA abstract. It then presents the main models of generic organization proposed for abstracts. It also reviews the main research on the rhetorical structure of abstracts from different disciplines and looks into studies that have focused on various linguistic features of the genre. Chapter III presents the theoretical framework used in this study, i.e. Genre Analysis, and describes the analytical model applied. It also presents the abstract as a genre and outlines some of the epistemological aspects underlying the fields of Art and Design. Chapter IV provides an account of the materials and methodology selected for this study. Chapter V describes the results obtained from the data analysis. Finally, Chapter VI discusses the findings in the light of the research questions posed and the existing literature on the topic. The chapter concludes by indicating the limitations and implications of the present study.

Chapter II: Review of the Literature

2.1 Introduction

Genre-based studies of scientific discourse have provided insights regarding the discursive features of the RA. Research has focused mainly on the rhetorical structure of the RA and its different sections as well as on some linguistic patterns of the genre. Within this body of research, an increasing number of studies have explored the generic features of RA abstracts. Some work has focused on the organizational patterns of abstracts within and across disciplines while some other studies have examined the favored linguistic choices of the genre. A number of authors have also carried out comparative work between English and other languages as a way to identify variation in the textual organization of abstracts across cultures. This chapter will provide an account of the core research on the topic, beginning with a brief outline of the initial studies on the rhetorical organization of RAs and its sections, followed by a literature review of the major existing research on abstracts.

2.2 Studies Focusing on the Rhetorical Organization of the Research Article

The evolution of the RA has increasingly brought the abstract genre to the fore. Today, the abstract is a regular feature of the journal article (Swales & Feak, 2009) performing a crucial role within it. The way the RA is linked to the abstract in terms of both, form and content, accounts for a brief review of the existing research on the organizational pattern of the RA before considering the literature on abstracts.

An influential line of research within genre studies has sought to identify the conventional rhetorical structure of the RA by means of move analysis. The move-based approach was pioneered by Swales (1990), who proposed a three-part framework for the analysis of RA *Introductions* known as CARS (Creating a Research Space). Since then, the model has been extensively applied by scholars to identify rhetorical patterns in RAs of various disciplines. According to the CARS model, a RA *Introduction* typically consists of three moves: (1) *establishing a territory*, (2) *establishing a niche*, and (3) *occupying the niche*. Each of these moves is divided into a number of either obligatory or optional steps.

The model was developed after the analysis of a vast number of RA *Introductions* across various disciplines. (Swales's model will be discussed in detail in Chapter III).

Nwogu (1997), for example, used Swales's framework to analyze all sections of the RA. Although restricted in scope, Nwogu's study was the first to offer a detailed description of the moves and submoves that characterize the medical research paper. Posteguillo (1999) examined the schematic organization of RAs in the field of Computer Science in an attempt to evaluate whether the IMRD (*Introduction, Methods, Results, Discussion*) pattern applied to the discipline. He concluded that there was no structural pattern common to most RAs although all papers opened with an *Introduction*, most of them closed with a *Discussion*, and over half of them included the *Results*. Kanoksilapatham (2005) applied Swales's (1990) framework to the analysis of the move structure of 60 Biochemistry RAs from prestigious journals, and later proceeded to identify specific linguistic characteristics of each move type using corpus-based techniques. Her study resulted in the identification of 15 move types, and multiple submoves, some of which were found to be unique to the discipline. These findings were relevant because, similarly to Posteguillo (1999), they revealed disciplinary variation and emphasized the need for discipline-specific studies.

2.3 Studies Focusing on Specific Sections of the Research Article

Ever since its publication, Swales's three-move framework (1990) has sparked the interest in examining different sections of the RA through the lens of move analysis. The result of this research has informed different disciplinary fields and contributed to address the pedagogical needs of both, novice writers and non-Anglophone researchers publishing in English. Studies that have applied this model to the analysis of *Introductions* across disciplines have basically confirmed the three-move schema although they have found differences regarding the steps within moves.

Anthony (1999) examined the structure of the *Introduction* in 12 RAs in the field of Software Engineering and found a number of submoves that are not accounted for by the CARS model. In particular, his study showed the presence of *definitions of important terms*, and *exemplifications of difficult concepts* after Move 1, and *evaluation of the*

research presented within Move 3. On the other hand, some of the steps in the CARS framework were found to be redundant or only rarely used in the field of Software Engineering. However, as the author has pointed out, the model is very successful in describing the overall framework.

Similarly, Samraj (2002), who analyzed the structure of *Introductions* in 12 Wildlife Behavior RAs and compared them to 12 Conservation Biology RAs, found that in the field of Wildlife Behavior, the section included a *background* move describing the features of the species under study. Furthermore, her study revealed a higher frequency of *centrality claims* in Conservation Biology *Introductions* than in the field of Wildlife Behavior. Like Anthony (1999), Samraj proposed a revised version of the CARS framework displaying the identified discipline-specific submoves, and she further suggested the need for a more flexible model. Ultimately, what Samraj's study demonstrated was that variation occurs not only across disciplines but also between related disciplines. In his revised version of the CARS model (2004), Swales accounts for the elements identified by Anthony and Samraj by keeping the overall three-move structure but introducing modifications in some of the submoves in an attempt to reflect more accurately the disciplinary rhetorical complexities of *Introductions*, which may be "the result of evolution in the genre itself or of further studies, or perhaps of both" (p. 231).

On a similar note, Kanoksilapatham (2012) studied the structure of RA *Introductions* in three Engineering subdisciplines (Civil, Software, and Biomedical). Using a much larger corpus of 60 texts from each field, she employed the revised CARS model (Swales, 2004) to identify structural differences. Her study revealed that the subdisciplines share the same set of three moves although they are not entirely identical in structure with regard to the step level. These findings further demonstrate that "each subdiscipline is a discourse community with its own inherent cultural and pragmatic norms and values" (p. 307), which highlights the importance of gaining awareness of disciplinary variation to achieve academic literacy.

The approach to move analysis proposed by the CARS model has also been adopted by a number of researchers to look into other sections of the RA.

Lim (2006) examined the *Methods* section of Management RAs. He focused on the lexical and syntactic choices that realized each move and its constituent steps. He found

that authors use certain linguistic signals to show the internal boundaries within the three-move schema used conventionally in the discipline. Considering that previous research on the *Methods* structure was rather scarce and focused on a single discipline, Peacock (2011) explored the move organization of the section in 288 articles across eight fields ranging from hard to soft disciplines. Overall, his study concluded that there is much greater variation between disciplines than within them, and that the *Methods* section is long and complex, occupying an average of 25% of the RA length, which provides evidence of its importance for readers.

Research into the structure of the *Results* section was mainly conducted by Thompson (1993), Brett (1994), and Lim (2010). Thompson's study examined 36 Biochemistry articles, 16 of which were publications over time written by an eminent Nobel-prize biochemist. She identified six clear moves: (1) *justifications for methodological selections*, (2) *interpretations of experimental results*, (3) *evaluative comments on experimental data*, (4) *statements citing agreement with pre-established studies*, (5) *statements disclosing experimental discrepancies*, and (6) *statements admitting interpretive perplexities*. Her findings show that, contrary to what prescriptive style guides suggest, the *Results* section is not a purely expository account of facts since scientists also employ a variety of rhetorical moves to argue for the validity of their data. This demonstrates the strategic nature of scientific discourse, even within a section that the author regards as "the empirical heart of a scientific article" (p. 106). Brett's (1994) research, in turn, focused on the *Results* section of Sociology RAs. In a corpus of 20 articles, Brett identified categories similar to those proposed by Weissberg and Buker (1990) for *Results* sections, but he also found moves that bear some resemblance with the *Discussion* sections of hard science. In general terms, he grouped the sixteen communicative categories found into three types: (1) *Metatextual*, (2) *Presentation*, and (3) *Comment*. As evidence of disciplinary variation, Brett reported that *comments* represented about 30% of the categories in the corpus, reflecting the sociologists' need to persuade readers to accept their knowledge claims. These findings share similarities with Thompson's (1993), who characterized the *Results* section as a rhetorical presentation of data. The inclusion of *comment* moves in the *Results* section of some disciplines, as evidenced by previous research, motivated an investigation conducted by Lim (2010) to

identify whether these *comments* were associated to the discipline (in this case, Applied Linguistics and Education) or to the research method used in the study (qualitative, quantitative or mixed-method). The author concluded that the need to incorporate *comments* in the *Results* section seems to be more dependent on the research community addressed than on the research methods employed.

Regarding the last RA section, in a revised version of his previous work on Plant Biology, Dudley-Evans (1994) proposed a model for RAs *Discussions*. In this model, the author describes the section's organization as an overarching three-part framework consisting of *Introduction–Evaluation–Conclusion*, in which the *Introduction*, restates the aim and describes the work carried out, the *Evaluation* provides detailed comment on the main results and expresses the writer's key claims, and the *Conclusion* summarizes the main results and claims, and closes with recommendations about future work. This framework includes a series of move cycles that combine two or three of the following nine categories: (1) *information move*, (2) *statement of result*, (3) *finding*, (4) *(un)expected outcome*, (5) *reference to previous research*, (6) *explanation*, (7) *claim*, (8) *limitation*, and (9) *recommendation*. Following on this work, Holmes (1997) focused his research on the structure of RAs *Discussion* sections in the social sciences. He analyzed 30 articles from the disciplines of History, Political Science and Sociology using a modified version of the model proposed by Hopkins & Dudley-Evans (1988) for natural science. The author found that no move was completely obligatory in the corpora whereas Hopkins & Dudley-Evans had found the *statement of result* to be mandatory in Biology and Irrigation and Drainage papers. When compared to previous research on RA structural organization, Holmes observed that the social sciences displayed less complex and less predictable *Discussion* sections than the natural sciences while they tended, in contrast, to show complexity and elaboration in *Introductions*. Employing a larger sample, Peacock (2002) examined the move organization in 252 RA *Discussion* sections across seven disciplines from both, hard and soft domains using Dudley-Evans's (1994) model of analysis. His study revealed that no move was obligatory across all RAs and that the most widespread moves across disciplines were *claim*, *finding*, and *reference to previous research*.

The studies reviewed so far have provided evidence of the patterns of organization of RAs as a whole and along individual sections across various disciplines. Because the

abstract is a key constitutive part of the RA and, as Swales (1990) has pointed out, most abstracts appear to reflect the IMRD pattern of the RA itself, research on the subject merits a detailed review. The next sections will present the main studies carried out on the generic structure and linguistic features of abstracts.

2.4 Studies Proposing a Framework of Analysis for Abstracts

Early studies on abstracts suggest a four-move framework of analysis corresponding to the RA sections: *Introduction*, *Method*, *Results*, and *Discussion* (Swales, 1990). Similarly, Bhatia (1993) believes that abstracts should provide information on the four aspects of the research that they intend to describe: (a) what the author has done, (b) how the author has done it, (c) what the author has found, and (d) the conclusion the author has reached. Such communicative purposes have given shape to the model outlined in Table 1.

Table 1

Bhatia's (1993) Framework for Abstracts

Move	Function
Move 1	<i>Introducing purpose</i>
Move 2	<i>Describing methodology</i>
Move 3	<i>Summarizing results</i>
Move 4	<i>Presenting conclusions</i>

Note. Adapted from *Analysing genre. Language use in professional settings* (pp. 78-79), by V. Bhatia, 1993, Longman. Copyright 1993 by the author.

Other authors have proposed five-move models.

Weissberg and Buker (1990) divide the *Introduction* into two moves: the first provides the *background information* of the study, and stands as an optional move, and the second presents its *purpose and scope*. Their five-move model is described in Table 2.

Table 2*Weissberg and Buker's (1990) Framework for Abstracts*

 ORDER OF TYPICAL ELEMENTS INCLUDED IN AN ABSTRACT

B	=	<i>Background information</i>	[optional]
P	=	<i>Principal activity</i>	(or purpose) and <i>scope</i>
M	=	<i>Methodology</i>	
R	=	<i>Results</i>	
C	=	<i>Conclusion or recommendation</i>	

Note. Adapted from *Writing up research. Experimental research report writing for students of English* (p. 186), by R. Weissberg and S. Buker, 1990, Prentice Hall Regents. Copyright 1990 by the authors.

After exploring the textual organization of abstracts in Applied Linguistics, Santos (1996) proposed a five-move pattern with several submoves. His framework, described in Table 3, has intended to reflect the characteristics of the genre considering that each communicative category serves a specific purpose.

Hyland's (2000) model is made up of five moves as well because he distinguished the author's purpose from the introduction's purpose, which is to provide a context or justification for the research. In addition, he replaced the *Result* move with a *Product* move to better account for the outcome of papers in the soft disciplines, where writers often present an argument rather than report research findings. Hyland's pattern was used to examine a large corpus comprising 800 abstracts from eight disciplines, ranging from the hard to the soft science fields. His model, described in Table 4, seems to be flexible enough to describe a variety of texts.

Table 3*Santos's (1996) Framework for Abstracts*

Move 1	<i>Situating the research</i> Stating current knowledge <i>and/or</i> Citing previous research <i>and/or</i> Extended previous research <i>and/or</i> Stating a problem
Move 2	<i>Presenting the research</i> Indicating main features <i>and/or</i> Indicating main purpose <i>and/or</i> Hypothesis raising
Move 3	<i>Describing the methodology</i>
Move 4	<i>Summarizing the results</i>
Move 5	<i>Discussing the research</i> Drawing conclusions <i>and/or</i> Giving recommendations

Note. Adapted from “The textual organization of research paper abstracts in applied linguistics,” by M. B. dos Santos, 1996. *Text*, 16, p. 485. Copyright 1996 by Walter de Gruyter. <https://doi.org/10.1515/text.1.1996.16.4.481>

Following from Santos (1996), Pho (2008) proposed a five-move analytical framework to study abstracts of Applied Linguistics and Educational Technology. Her model, though, does not include the submoves originally put forward by Santos, but it does include a number of questions to guide the search. Table 5 presents her revised version of Santos’s original model.

Swales and Feak’s (2009) framework is similar to Hyland’s (2000), although it includes a number of typical labels that have been used by researchers in the classification of the abstract’s constituent units. Like Pho’s (2008) model, it provides guiding questions to identify moves, as illustrated in Table 6.

Table 4*Hyland's (2000) Framework for Abstracts*

Move	Function
<i>Introduction</i>	Establishes context of the paper and motivates the research or discussion.
<i>Purpose</i>	Indicates purpose, thesis or hypothesis, outlines the intention behind the paper.
<i>Method</i>	Provides information on design, procedures, assumptions, approach, data, etc.
<i>Product</i>	States main findings or results, the argument, or what was accomplished.
<i>Conclusion</i>	Interprets or extends results beyond scope of paper, draws inferences, points to applications or wider implications.

Note. Adapted from *Disciplinary discourses: Social interactions in academic writing*. (p. 67), by K. Hyland, 2000, Pearson Education Limited. Copyright 2000 by the author.

Table 5*Pho's (2008) Framework for Abstracts*

<i>Moves</i>	<i>Function / description</i>	<i>Question asked</i>
Move 1: Situating the research < <i>STR</i> >	Setting the scene for the current research (topic generalization)	What has been known about the field/topic of research?
Move 2: Presenting the research < <i>PTR</i> >	Stating the purpose of the study, research questions and/or hypotheses	What is the study about?
Move 3: Describing the methodology < <i>DTM</i> >	Describing the materials, subjects, variables, procedures, ...	How was the research done?
Move 4: Summarizing the findings < <i>STF</i> >	Reporting the main findings of the study	What did the researcher find?
Move 5: Discussing the research < <i>DTR</i> >	Interpreting the results/findings and/or giving recommendations, implications/applications of the study	What do the results mean? So what?

Note. Adapted from "Research article abstract in applied linguistics and educational technology: A study of linguistic realizations of rhetorical structure and authorial stance," by P.D. Pho, 2008, *Discourse Studies*, 10(2), p. 234. Copyright 2008 by Sage Journals.

<https://doi.org/10.1177/1461445607087010>

Table 6*Swales and Feak's (2009) Framework for Abstracts*

<i>Moves</i>	<i>Typical labels</i>	<i>Implied questions</i>
Move 1	Background /Introduction /Situation	What do we know about the topic?
Move 2	Present Research /Purpose	What is this study about?
Move 3	Methods /Materials /Subjects /Procedures	How was it done?
Move 4	Results /Findings	What was discovered?
Move 5	Discussion /Conclusion /Significance	What do the findings mean?

Note. Adapted from *Abstracts and the Writing of Abstracts*. (p. 3), by J.M. Swales and C.B. Feak, 2009, University of Michigan Press. Copyright 2009 by University of Michigan Press.

2.5 Studies Focusing on the Analysis of Abstracts from Specific Disciplines

In recent years, numerous studies have been conducted on the move patterns of abstracts. Some studies have focused their attention on the rhetorical structure of RA abstracts written in English in a single field while others have examined and compared abstracts of a specific discipline across languages.

A field which has been vastly explored is Medicine. Although on the whole, the structure of medical abstracts has been found to conform to the conventions described by existing models, some variation has been noted. For example, in her study of 77 abstracts, 47 of which were from research papers, Salager-Meyer (1990) found some discursual flaws affecting readability such as a number of RA abstracts lacking a key move (*Purpose*, *Results*, or *Discussion*³) or texts displaying an illogical pattern in which the *Discussion* precedes the *Results*. In another study, Anderson and MacLean (1997) analyzed 80 abstracts from four major fields of medicine: Clinical Medicine, Surgery, Epidemiology, and Basic Sciences (i.e. Biochemistry and Biophysics). They found distinctive characteristics in biochemical abstracts, namely a frequent cyclical pattern of *Methods* and *Results* with multiplicity of detail, and the lack of a *Background* move, which appeared to be present in the three other fields.

³ Since terminology varies from study to study (see Table 7), a single taxonomy is used in the review for ease of understanding. It comprises *Introduction* (*Background* + *Purpose*), *Methods*, *Results*, and *Discussion*.

Research was also carried out in the field of Protozoology (Cross & Oppenheim, 2006) using a corpus of 12 abstracts to examine their semantic organization and thematic structure. The analysis revealed a five-move pattern, in which only the *Methods* and *Results* moves were obligatory. The *Background* move was the least frequent in the corpus. Yet, an unpredicted finding was that only 66% of the corpus contained the *Purpose* move, which is expected to be an essential component of the experimental-empirical RA.

Within the applied sciences, studies were conducted in the fields of Radiology and Engineering. In a study by Méndez-Cendón and López-Arroyo (2003), 234 Radiology abstracts were compared to their corresponding research papers and found to represent the sections of the RA at the move level, but not at the step level. Research in Computer and Communications Systems Engineering was conducted by San and Tan (2012). Their findings show that the *Introduction* and the *Purpose* moves are obligatory in the field, but the writers seem to have different preferences about including the other three moves, although the most frequent occurrence was the *Results* move.

In the social sciences, two authors have focused on disciplinary areas that lack research, namely Business and Tourism. Piqué-Noguera (2012) studied the rhetorical organization of Business abstracts in a corpus of 160 RAs published in two major business journals. Following Weissberg and Buker's (1990) model of analysis, she examined the move structure of the sample, and also explored some linguistic patterns such as reporting verbs, collocations, nominalizations and specific terminology. Her results show irregularity and inconsistency in the organization and linguistic signaling of abstracts, with a considerable number of abstracts with no set pattern, which, as a result, fail to be informative to readers. Ahmed's (2015) study, in turn, looked into the rhetorical organization of 35 RA abstracts from Tourism Management from various international journals using Hyland's (2000) model of analysis. His findings suggest a conventional structure of four moves –*Purpose, Methods, Results, Discussion* –with a clearly low occurrence of the *Background* move. At the close of the abstract, the most frequent communicative purpose conveyed through what in Swalesian terms (1990) might be regarded as a step within the *Discussion* move was *to emphasize the value or novelty of the research*, and less often, *to express research limitations* or *practical applications of the study*. The author, however, regarded these communicative units as independent moves

outside the *Discussion* and quantified them accordingly. In any case, his findings for the *Discussion* submoves are similar to what Hyland's (2000) study revealed concerning the hard science *Introduction* moves, which were found to employ rhetorical appeals to "novelty" and "benefit" as a way to claim significance. Thus, what Hyland found to be characteristic of the hard knowledge disciplines, Ahmed found it in abstracts belonging to the social sciences, even though its frequency was low.

In the field of Psychology, Hartley (2003) has compared the structure of traditional abstracts to structured ones. Unlike the traditional abstract which is produced in one single paragraph, the structured abstract typically contains subheadings and subsections, and provides more detail. The author has long advocated the format of structured abstracts in the discipline on the grounds that they represent an improvement over traditional abstracts by contributing to clarity, readability and rapid search and information retrieval. To argue in favor of his point, he conducted a study by selecting 24 traditional abstracts from the *Journal of Educational Psychology* and then re-formatting them to produce structured five-move versions of them comprising *Background, Purpose, Methods, Results, and Discussion* units. He then used objective computer-based measures and subjective reader-based measures to rate the abstracts. Ratings showed that structured abstracts were 30% longer than traditional ones, but they were assessed as clearer, easier to read and easier to remember, thus entailing a positive contribution to scientific communication. More recently, Hartley (2016) has provided updated information on developments in graphical, video, readable and tweetable abstracts as the current trends in the spearheading field of Medicine. Medical journal authors have increasingly adopted the structured abstract since the early 90s, and are now finding novel ways of adapting to new paths of research dissemination by designing more informative abstracts.

In the humanities, research has centered mostly on abstracts of Linguistics, but there are also a few other studies that might add to the literature review. Santos (1996) analyzed the textual organization and other key features of 94 RA abstracts from three leading journals of Applied Linguistics. His move analysis resulted in a proposed framework of five moves with detailed internal organization in the introductory and the concluding moves. The first two introductory moves were found to include a number of submoves that can be compared to Swales's (1990) CARS pattern for *Introductions*. However, in Santos's

corpus, most abstracts opened with the second move although, rather than indicate the purpose of the research, the text tended to take a descriptive form by stating the main features of the study. As to the verb forms in this move, a tense pattern was identified, with either the present or past tense used when the genre was mentioned (for example, *article*, *paper*, etc.), but only the past tense employed when the type of inquiry was indicated (*study*, *survey*, *analysis*, etc.). The *Methods* move was also found to be obligatory, usually short, and often blended into the previous or following move. In the *Results* move, evaluative lexical items (for instance, the adjective *significant*, the noun *difference* or the adverb *significantly*) were favored over numerical results. Apart from the discipline-specific findings mentioned above, Santos's study provided evidence of a number of genre-specific conventions: (1) the textual space allocated to a move reflects the weight ascribed to such move (*move balance*), (2) in contrast, a move can be under-represented by way of move *embedding*, which occurs when two moves merge into one single syntactic unit, and (3) a frequent feature in abstracts is the reversed sequence of moves (*move reversal*), which reflects the author's attempt to produce a more cohesive text. According to the author, both *move embedding* and *move reversal* help prevent texts whose sentences read like checklists.

Lorés's (2004) work focused on the rhetorical and thematic organization of moves in abstracts of Applied Linguistics. Her findings revealed three different types of move structure: (1) the IMRD structure, which was identified in most samples of the corpus, and was typical of the *informative* type of abstract, (2) the CARS structure, which represented 30% of the corpus, and matched the *indicative* type of abstract, and (3) a combinatory structure identified in only three samples, which corresponded to the mixed type of *informative-indicative* abstract. The *informative* abstract follows the organization of the article it precedes whereas the *indicative* abstract only focuses on the *Purpose* of the RA without presenting *Results*. This traditional distinction between both types of abstract, in the author's view, reflects two different functions of abstracts. Her analysis of thematic development added further evidence to her point since she found a correspondence between the thematic progression pattern followed and the type of rhetorical organization of the abstract, which led her to conclude that the differing textual dynamics found in the corpus reflect the distinct positions that writers can adopt when they present their study.

Aiming to extend Santos's (1996) research, Tseng (2011) examined the move-structure and verb tense of 90 Applied Linguistics abstracts from three different journals. The results were generally in line with Santos and showed that Applied Linguistics abstracts tend to take a four-move structure, generally conforming to Weissberg and Buker's (1990) model, in which the *Background* move is likely to be optional. Regarding the verb tense choice of each move, the general pattern was the use of the present tense in the *Background*, *Purpose*, and *Discussion* moves whereas the past tense was preferred in the *Methods* and *Results* sections.

In view of the increasing number of non-native writers publishing in prestigious English-medium journals, Lorés-Sanz (2016) conducted a study aimed at exploring any emerging patterns of rhetorical organization that may be permeating conventional abstract writing in recent years. Her research, based on a corpus of 66 Sociology abstracts written by speakers of English as an additional language (EAL), resulted in the identification of hybrid patterns diverting from conventional abstract structure. According to the author, emerging patterns of hybridity account for the influence of rhetorical uses of the language of non-Anglophone academics publishing in English. Such uses differ from those of Anglophone authors, but they are still approved of by editors in international journals. Though restricted to one single discipline, her findings reveal how the use of English as an international language in the academia creates a suitable scenario for the emergence of new patterns of rhetorical modes which have the potential of reshaping academic genres.

In the legal field, Cavalieri and Preite (2017) conducted a comparative study of RA Criminology abstracts written in English and French. They identified two different patterns of organization: (1) *argumentative*, whose focus is on making a claim and defining an issue relevant to the discipline, and (2) *empirical*, which aims at reporting on a study. These findings compare to the *indicative* and *informative* patterns identified by Lorés (2004) in relation to the rhetorical functions fulfilled by abstracts. Most abstracts in the corpora matched the empirical pattern. The authors also investigated the rhetorical strategies and the employment of metadiscourse in the different abstract moves. Their analysis revealed the use of three main styles in abstracts: personal, impersonal and mixed. Results showed that both languages tended to prefer impersonal structures, which the authors regarded as a

type of hedging because they allowed researchers to avoid direct responsibility for their claims.

Within the field of Art, Tankó (2017) investigated the virtually unexplored Literature RA abstract. In her corpus of 135 abstracts from four international journals with high impact factors, she found that the canonical structure of the literary abstract was discipline-specific and corresponded to a mixed type of *indicative-informative* abstract. Her findings resulted in a proposed model of eight moves named (1) *topic*, (2) *background*, (3) *niche*, (4), *purpose*, (5) *method*, (6), *outcome*, (7) *conclusion*, and (8) *implications*. Tankó also analyzed the linguistic realizations of moves and found that literary abstracts are characterized by syntactic complexity and lexical density, which, added to their high information content, makes them difficult to process.

Genre analysis in the field of Design has received little attention. Noorizadeh-Honami and Chalak (2018) conducted a cross-linguistic study comparing the rhetorical structure of Architecture RA abstracts written by English and Persian authors. Their corpus consisted of 30 abstracts written by English native speakers, published in ISI (International Scientific Indexing) journals, and 30 abstracts written by Persian native speakers and published in Iranian academic journals. The model of analysis was the IMRD framework, as proposed by Swales (1990). They found that Persian authors tended to conform to the IMRD structure significantly more often than English authors, who frequently omitted the *Introduction* and *Discussion* sections. In contrast, English writers tended to provide more information than their counterparts in the *Methods* move.

2.6 Studies Focusing on the Analysis of Abstracts across Disciplines

Regarding cross-disciplinary research, a fundamental contribution was Hyland's (2000). Drawing on a large-scale corpus of 800 samples, his work compared the lexicogrammatical features and move structure of RA abstracts across eight disciplines ranging from the hard knowledge fields to the soft disciplines. In addition to the textual data, Hyland gathered interview data from a number of expert informants who provided insights into their linguistic choices as members of a particular scientific community. His aim was to find the link between linguistic patterns and disciplinary epistemologies. He

hypothesized that abstracts serve a promotional purpose because, unlike the RA in which writers seek to validate their claims as legitimate knowledge, abstracts offer a selective representation of the RA aimed at persuading readers that the paper is worth reading. In their effort to “hook” the readers, academics display a variety of linguistic and rhetorical practices regarded by their community as legitimate membership credentials. To analyze the generic structure of the abstracts, the author used his own five-move model. The study showed that practically all papers included the *Results* move, and that the most frequent move structure was the sequence *Purpose-Methods-Results* –a pattern preferred among the physicists and engineers, –followed by the *Background-Purpose-Results* sequence –more often used in the humanities/social sciences. These disciplinary differences were interpreted to reflect the need for authors in the soft sciences to “create a research space,” in Swales’s (1990) terms, while they seemed to indicate that authors in the science and engineering disciplines are expected to explain their *Methods*, a section which was also present in the more empirical social science studies. Concerning particular rhetorical strategies, Hyland identified the most common promotional items in the texts and found a clear disciplinary difference: whereas the hard knowledge abstracts tended to stress novelty and benefit, the soft knowledge texts drew on the notion of importance to promote their work. In order to analyze how generic patterns are evolving, the author compared his findings with previously published articles in each discipline. The results showed an increase in abstract length, occurring mainly in the Engineering and Science fields and in Marketing, and a marked tendency in most disciplines to include longer, more complex *Results* moves. Another feature identified was the increasing tendency to include the *Background* and the *Discussion* moves, mostly in the Sciences, Philosophy and Marketing, and particularly evident in fields that are rapidly expanding or becoming increasingly subdivided into specialized branches. It is understood that in such fields, authors make greater efforts to promote the significance and value of their work.

Martín-Martín (2003) carried out a comparative study of English and Spanish RA abstracts in experimental social sciences. The aim was to identify any rhetorical variation across languages in a corpus of 160 abstracts from Phonetics and Psychology. His findings did not show significant variation across disciplines but they revealed that the Spanish writers tended to omit the *Results* move, did not always include the four moves and

sometimes presented an unconventional order of moves. Additionally, the *Introduction* move was found to be more complex in English abstracts due to its internal organization into submoves. In fact, about a third of the English abstracts contained the three submoves described by Swales (1990) for RA *Introductions* while only 12% of the Spanish abstracts showed all submoves. The author attributes this difference to the higher need to establish a niche in the increasingly competitive international scientific community. Spanish writers, in contrast, are addressing a smaller academic community with different publishing expectations. With regard to linguistic features, the study showed that English authors use more hedges than Spanish writers and that English texts include a slightly higher degree of lexical density and variation.

In another study, Samraj (2005) compared the generic structure of RA *Introductions* and abstracts in two related fields: Conservation Biology and Wildlife Behavior, both components of Environmental Science. Her research aimed at establishing generic interrelations across disciplines. The analysis showed that texts from even closely related disciplines can display generic variation in both overall organization and linguistic choices. More specifically, Samraj's results revealed that abstracts and *Introductions* in Conservation Biology have a similar rhetorical structure and they both perform the persuasive function described by Swales (1990) in his CARS model. In Wildlife Behavior abstracts, in contrast, this rhetorical structure is not salient. However, the field does include in both abstracts and *Introductions* a submove that rarely appears in Conservation Biology texts, labeled *background on site or species*. All in all, while Conservation Biology abstracts appear to perform a persuasive function, Wildlife Behavior abstracts serve a more pragmatic function by clearly indicating the *Purpose, Results* and *Discussion* of the study. The author posited some possible explanations for this variation. On the one hand, there may be a greater effort to establish the value of a research area in an emerging field like Conservation Biology than in a well-established field like Wildlife Behavior. On the other hand, it is possible that the nature of the discipline –whether it is a theoretical or an applied area of inquiry –may determine its generic organization.

An investigation conducted by Pho (2008) sought to provide a more comprehensive description of abstracts by looking into not only textual organization but also linguistic realizations and authorial stance across moves. Her research employed a total of 30 RA

abstracts from three journals in the areas of Applied Linguistics and Educational Technology, both related to the broad field of teaching and learning. Unlike most previous studies on abstracts, Pho identified moves only on the basis of content, that is to say, using a top-down approach, and once moves were classified, she proceeded to identify the typical linguistic features in each move. Her analytical framework was Santos's (1996) five-move model, but without including the subdivision into further moves. Her findings showed cross-disciplinary differences at the macro-organizational level, with the three middle moves present in all texts but the *Discussion* move only common in the field of Applied Linguistics. On the other hand, the linguistic realizations of moves were similar across journals and disciplines, suggesting the existence of move-related generic patterns. Additionally, her study revealed that contrary to the general assumption that abstracts are objective, the author's presence was made explicit through different strategies in all but the *Methods* move, which tended to be more impersonal. (Table 7 summarizes the research reviewed on the RA abstract's rhetorical structure.)

2.7 Studies Focusing on the Linguistic Features of Abstracts

Added to the research focusing on the generic structure of the abstract, a few studies have also investigated particular linguistic features of abstracts or links between language and the communicative function of the different moves.

Salager-Meyer (1992) examined the distribution of modality and verb tenses across the different moves in the medical abstract. Her study showed that the predominant tense in abstract writing is the past, which serves the rhetorical function of reporting the phases of the study in the *Purpose*, *Methods* and *Results* moves. Meanwhile, the present tense is used to comment on the findings, and so it is typical of the *Discussion* move, but it was also found in the *Background* and *Purpose* moves. The third most frequent tense used is the present perfect, which was found predominantly in the *Background* move to show the authors' disagreement with previous findings as a way to justify the study and reveal a gap in knowledge. Modals, on the other hand, are particularly frequent in the *Discussion*. The most frequent modal was *may*, followed by *can*, and then *should*, when expressing recommendation.

Table 7*Summary of Move Types and Regularity Reported by Studies on Abstracts*

Study	Field	Move structure
Salager-Meyer (1990)	Medicine	Statement of the Problem (o) Purpose (c) Results (c) Conclusions (c) Recommendations (c)
Santos (1996)	Applied Linguistics	M1: Situating the research (o) M2: Presenting the research (c) M3: Describing the methodology (c) M4: Summarizing the findings (c) M5: Discussing the research (c)
Anderson & MacLean (1997)	Medicine (clinical medicine, surgery, epidemiology, biochemistry/biophysics)	Background (o) Purpose (c) Method (c) Results (c) Conclusion (c)
Hyland (2000)	Philosophy Sociology Applied Linguistics Marketing Electrical Engineering Mechanical Engineering Physics Biology	Introduction (o) Purpose (c) Method (c) Product (c) Conclusion (o)
Méndez-Cendón & López-Arroyo (2003)	Radiology	Introduction (c) Materials and Methods (c) Results (c) Conclusion (c)
Martín-Martín (2003)	Phonetics Psychology (English and Spanish)	Introduction (c) Methods (c) Results (c) Conclusion (c)
Lorés (2004)	Applied Linguistics	Introduction (c) Method (c) Results (c) Discussion (o)
Samraj (2005)	Wildlife Behavior Conservation Biology	Purpose (c) Methods (o) Results (c) Conclusions (c)
Cross & Oppenheim (2006)	Protozoology	M1: Relation to other research (o) M2: Purpose (o) M3: Methodology (c)

		M4: Summarizing the results (c) M5: Discussing the research (o)
Pho (2008)	Applied Linguistics Educational Technology	M1: Situating the research (o) M2: Presenting the research (c) M3: Describing the methodology (c) M4: Summarizing the findings (c) M5: Discussing the research (c)
Tseng (2011)	Applied Linguistics	Background (o) Aim (c) Method (c) Results (c) Conclusion (c)
San & Tan (2012)	Computer and Communications Systems Engineering	M1: Situating the research (c) M2: Presenting the research (c) M3: Describing the methodology (o) M4: Summarizing the findings (o) M5: Discussing the research (o)
Piqué- Noguera (2012)	Business	Background (o) Purpose (c) Method (o) Results (c) Conclusion (o)
Ahmed (2015)	Tourism Management	Introduction (o) Purpose (c) Method (c) Product (c) Conclusion (c)
Tankó (2017)	Literature	M1: Topic (c) M2: Background (c) M3: Niche (o) M4: Purpose (c) M5: Method (c) M6: Outcome (c) M7: Conclusion (o) M8: Implications (o)
Cavaliere & Preite (2017)	Criminology (English and French)	Background (o) Purpose (c) Method (c) Results (c) Discussion (c)
Noorizadeh- Honami & Chalak (2018)	Architecture (English and Persian)	Introduction (o) Methods (c) Results (c) Discussion (o)

(c) = conventional, (o) = optional

Stotesbury's (2003) research focused on authorial stance realized through evaluative lexis and modal constructions. Her corpus consisted of 300 abstracts from a variety of disciplines within broad areas such as humanities, social sciences and natural sciences. Findings revealed that evaluative attributes were the preferred way to express authorial stance in the humanities and social science abstracts, while modality was the favored choice in the natural sciences. This study showed that persuasion in RA abstracts is often expressed explicitly by means of conventional evaluative lexis across the three main disciplinary domains.

Another rhetorical feature explored in abstracts was academic criticism (Martín-Martín & Burgess, 2004). As the authors hypothesize, in an effort to create a research space in today's competitive academic world, writers may resort to *making counterclaims* or *indicating a knowledge gap*, both of which involve the criticism of members of their own discourse community. The authors studied this rhetorical strategy from a cross-linguistic perspective by analyzing a corpus of 160 abstracts written in English and Spanish in two disciplines, Phonetics and Psychology. The results showed that academic criticism is higher in English abstracts and that Anglophone writers tended to express their criticism in a more impersonal and indirect way, when compared to Spanish writers. This variation is interpreted in the light of the differing size and pressure of the discourse community addressed by the authors.

The issue of authorial voice was also addressed by Hyland (2003b), who examined the use of *self-citation* and *self-reference*⁴ in a large corpus of both research articles and abstracts from various disciplines to show the promotional endeavor underlying self-mention and the epistemological preferences of different disciplines. More specifically, the author found that self-citation was more frequent in RAs in the hard knowledge corpus and that self-mention was more prominent in both abstracts and articles in the soft fields.

Another expression of authorial stance was studied by Hyland and Tse (2005), who analyzed the use of evaluative *that*-clauses in abstracts. Their corpus comprised 465 academic abstracts in six disciplines from both social and natural sciences taken from

⁴ According to Hyland (2003b), *self-citation* and *self-reference* are rhetorical devices that allow writers to become visible to readers. Apart from citing other authors, writers also cite their own work (*self-citation*) and thus construct their professional credibility. Additionally, a key component of a scholar's academic identity is the promotional practice of using first person pronouns (*self-reference*) to ensure that readers recognize their individual contribution to knowledge.

published RAs and from post-graduate dissertations written in English by L2 students. This study showed that the *that*-construction is widely employed in abstracts as a means of providing author comment and evaluation. Like previous research (Hyland, 2003b; Martín-Martín & Burgess, 2004; Stotesbury, 2003), their findings demonstrated that the abstract is a heavily rhetorical genre.

Okamura and Shaw (2014) investigated the historical development (1970 to 2010) of abstracts in relation to the demands of stakeholders (research writers, information scientists, journal editors and publishers). In their study, they examined variation in personal pronouns, reporting verbs and theoretical nouns in 270 RA abstracts of three disciplines: Biology, Economics, and Marketing. They found that, in line with previous diachronic research of the social sciences (Hyland, 2000), the length of Marketing abstracts showed an increase although this was not a clear trend in the other disciplines. Their results also showed a consistent increase in the use of linguistic forms characteristic of promotional discourse tied to an increasing use of forms that contribute to readability. These changes show the evolution of the genre in the light of the conflicting pressures from different stakeholders.

Ebrahimi and Chan (2015) examined discourse functions of the grammatical subject in abstracts of Economics and Applied Linguistics using Gosden's (1993) analytical framework. Their study revealed disciplinary differences concerning the discourse functions enacted by the grammatical subject. These findings show that abstract writing is shaped by the writers' disciplinary background since the choice of grammatical subject as a theme in text development seems to be constrained by the discipline.

Ebrahimi (2016) conducted a further study on theme types and patterns across soft and hard sciences (Applied Linguistics, Economics, Agriculture, and Applied Physics). The analysis relied on Halliday's (1994) model of Thematic organization and Eggins's (2004) model of Thematic progression. Again, results revealed disciplinary differences. Although all disciplines used more Unmarked Topical Themes, the soft sciences seemed to resort to more Marked Topical Themes when compared to the hard science disciplines. In the light of these findings, the author inferred that soft science writers provide more aid to readers in the recognition of rhetorical moves. Also, it was found that Interpersonal Themes were rarely used across disciplines, which grants an impersonal tone to abstracts, and that the

Textual Theme was more often used in Economics, providing abstracts with a stronger factual tone and a more impersonal and objective nature. Textual Theme types also revealed disciplinary differences: Physics and Applied Linguistics writers favored the *additive* type, Agriculture writers more often used the *contrastive* type and Economics authors presented the highest use of the *time* type, mostly in the *Methods* section. Overall, the Economics writers used more cohesive elements in comparison with the other three fields. The analysis of thematic progression indicated that Applied Linguistics abstracts, which mainly resorted to the *Zig-zag pattern*, were more cohesive compared to the other sets of texts.

2.8 Summary

The literature review conducted above has provided information about the main research on the generic features of RAs and RA abstracts, and the textual and rhetorical links between them. The data brings to light the disciplinary variation existing within a single genre, which stresses the need to conduct discipline-specific research on the abstract genre. In particular, this thorough review of the existing literature shows that research on Art and Design abstracts is scarce and needs to be addressed. The following chapter will present the theoretical framework which provides the grounds for this study.

Chapter III: Theoretical Framework

3.1 Introduction

This chapter presents the theoretical framework that lends support to the present study (i.e. Genre Theory). Section 3.2 provides an overview of the three traditional schools of Genre Theory –New Rhetoric, English for Specific Purposes (ESP), and Systemic Functional Linguistics (SFL) –and their approaches to genre analysis and pedagogy, placing special emphasis on their main similarities and differences. Section 3.3 explains why the ESP perspective is relevant here and can provide an appropriate approach to the present research. Next, section 3.4 refers to the analytical model used in this study (i.e. Move Analysis), which was developed by Swales (1981, 1990, 2004) within the ESP tradition. Section 3.5 presents the abstract as a genre and describes the reasons that make it worthy of study. Finally, section 3.6 outlines some key disciplinary features of the Art and Design fields of study.

3.2 Genre Theory

Originally a literary construct, the notion of genre has been later applied to the analysis of non-literary discourse and to language research and pedagogy by what Hyon (1996) described as three scholarly traditions with different backgrounds and originating in different parts of the world: the North American New Rhetoric studies, the Australian Systemic-Functional School, and the international English for Specific Purposes (ESP) approach.

3.2.1 The New Rhetoric Approach to Genre

New Rhetoric scholars are influenced by post-structuralism, rhetoric, first language composition, and professional writing (Hyland, 2003a; Hyon, 1996). This perspective has been shaped mainly by Miller's (1984) seminal paper "Genre as social action," and the work of Bazerman (1988), Freedman and Medway (1994), and Berkenkotter and Huckin

(1995). According to Miller, “a rhetorically sound definition of genre must be centered not on the substance or form of discourse but on the action it is used to accomplish” (p. 151, as cited in Askehave & Swales, 2001, p.195), and thus she describes genres as “typified rhetorical actions based in recurrent situations” (p. 159). Placing their focus of attention on the socially constructed nature of genre, New Rhetoricians have helped throw light on the relations between text and context and the ways in which one reshapes the other (Hyland, 2003a). Researchers in this tradition tend to prefer ethnographic rather than linguistic methods of text analysis, with a focus on the attitudes, beliefs, activities, values, and patterns of behavior of the discourse community engaging in a particular genre (Flowerdew, 2011). The New Rhetoric School has been mainly concerned with providing descriptions of genres and their contexts to L1 university students and novice professionals. However, as Hyland points out, “its contribution to L2 writing instruction has been minimal” (2003a, p. 22).

3.2.2 The Systemic-Functional Approach to Genre

The Australian approach to genre, also referred to as the Sydney School, is influenced by the theory of language known as Systemic Functional Linguistics (SFL), which draws mainly on the theoretical work of Halliday (1994), and emphasizes “the importance of the social purposes of genres and of describing the schematic (rhetorical) structures that have evolved to serve these purposes” (Hyland, 2002, p. 115). The systemic perspective regards genre as “a staged, goal-oriented social process” (Martin, 1992, p. 505), stressing the purposeful, interactive, and sequential character of genres and the ways in which language is linked to context through patterns of lexical, grammatical and rhetorical features (Hyland, 2003a). Hence, from the SFL perspective, genres are patterns of discourse to express meanings in context (p. 119). The Systemic-Functional approach has employed a method of analysis derived from SFL theory to teach the discourse conventions of primary and secondary school genres and non-professional workplace genres. Its main motivation has been the development of a genre-based pedagogy that empowers students and historically disadvantaged communities and provides them with the linguistic resources that may grant them social success (Hyon, 1996).

3.2.3 The ESP Approach to Genre

The ESP approach to genre studies began with the work of Swales (1981, 1990) on academic genres, particularly the research paper, and Bhatia's (1993) research on business and legal genres. A defining feature of ESP has been the use of genre analysis for applied purposes, as analysts seek to translate their research findings into materials for teaching genre structures and linguistic conventions mostly to non-native speakers within academic and professional settings. Their pedagogical approach, as suggested by Swales, aims at consciousness-raising rather than the explicit teaching of linguistic and rhetorical forms. The basic idea is to establish systematic links between communicative purposes (expressed by particular discourse communities) and properties of texts (Flowerdew, 2011). According to Bawarshi and Reiff (2010, p. 42), "ESP and genre analysis have become in many ways synonymous" to a great extent because of the groundbreaking work of Swales and the research it has inspired over the last decades.

3.2.4 Similarities and Differences between the Three Traditions

The three approaches to genre are united by a common attempt to help students "become more successful readers and writers of academic and workplace texts" (Hyon, 1996). In fact, as Ciapuscio (2005) points out, from an applied perspective, the notion of genre becomes relevant to linguistics because knowledge about genre is essential to optimize the processes of acquisition and teaching of first, second and foreign languages (p.32). However, these three traditions differ mainly in their focus of interest, the audiences they address, and the pedagogies they employ.

First of all, while ESP and the Sydney School approach are linguistically oriented, the New Rhetoric approach is more contextually oriented. Based on these broad differences in emphasis, Flowerdew (2011) proposes recategorizing the three schools into two approaches: linguistic (for the ESP and the Systemics perspectives) and contextual (for the New Rhetoric School). This distinction points at the fact that both SFL and ESP orientations share the view that linguistic features are linked to social context and function (Bawarshi & Reiff, 2010) whereas New Rhetoric scholars "have focused more on the

situational contexts in which genres occur than on their forms and have placed special emphases on the special purposes, or actions, that these genres fulfill within these situations” (Hyon, 1996, p. 696).

Another difference is the target audiences of the three groups. The primary audience of New Rhetoric practitioners consists of undergraduate students taking composition or rhetoric courses as part of their college education (Swales, 2009). In contrast, the Systemic-Functional School has generally targeted school-age children and adult migrants in Australia who are culturally or economically disadvantaged. As a result, SFL practitioners have focused their attention on the so-called *pre-genres* (Johns, 1997), or *text types* (Paltridge, 1996, p. 237), that is to say, “groupings of texts which are similar in terms of co-occurrence of linguistic patterns,” (e.g. exposition, description, problem-solution, etc.). In turn, the main audiences of ESP specialists are non-native speakers of English who need to acquire specialized academic discourse as part of their professionalization. Therefore, they are most often international graduate-level students who are linguistically disadvantaged because their first language is not English. Clearly then, unlike New Rhetoricians, who center on L1 learners, both SFL and ESL theorists have fed L2 students with “a knowledge of relevant genres so that they can act effectively in their target contexts” (Hyland, 2003a, p. 22).

Because their target audiences and their learning contexts are different, the three schools have encouraged different pedagogies. The New Rhetoric School has been more reluctant to commit to the pedagogical relevance of genre studies (Swales, 2009). As a result, they tend to avoid explicit genre teaching and instead favor the creation of a learning environment that facilitates academic or professional writing. Naturally, the fact that the target students speak English as L1 helps ensure their proper motivation and socio-linguistic background to effectively engage with genres (Hyland, 2002). In contrast, SFL and ESL contexts require research-grounded descriptions to provide disadvantaged learners with relevant genre models. The SFL approach relies on “Vygotsky’s notion of scaffolding to support the learner through an interactive process of contextualization, analysis, discussion, and joint negotiation of texts” (Hyland, 2002, p. 126). In addition, Halliday’s theory of language provides a sophisticated functionally-oriented foundation to their pedagogic model. Finally, ESP has adopted a more eclectic set of pedagogies and linguistic

theories, and developed useful materials for the teaching of academic genres (e.g. Swales & Feak, 2000, 2009; Weissberg & Buker, 1990). Since the present study aims at exploring and describing an academic genre to inform L2 learning contexts, the ESP view of genre is the right framework for the research. The central aspects of genre analysis within this tradition are presented in the following section.

3.3 The ESP Perspective on Genre

The ESP approach to genre analysis focuses on describing and explaining the rationale underlying academic and professional genres by looking at the lexico-grammatical choices that realize their rhetorical structures. Scholars in this tradition share Miller's (1984) and Martin's (1989) view that genres are goal-directed (Dudley-Evans, 1994). As a prominent proponent of the ESP School and an influential force in the development of a theory of genre, Swales's (1990) definition states that:

A genre comprises a class of communicative events, the members of which share some set of communicative purposes. These purposes are recognized by the expert members of the parent discourse community, and thereby constitute the rationale for the genre. This rationale shapes the schematic structure of the discourse and influences and constrains choice of content and style. Communicative purpose is both a privileged criterion and one that operates to keep the scope of a genre as here conceived narrowly focused on comparable rhetorical action. In addition to purpose, exemplars of a genre exhibit various patterns of similarity in terms of structure, style, content and intended audience. If all high probability expectations are realized, the exemplar will be viewed as prototypical by the parent discourse community. The genre names inherited and produced by discourse communities and imported by others constitute valuable ethnographic communication, but typically need further validation. (p. 58)

In this definition, Swales characterizes the main aspects of genre. First, genre is defined as a class of communicative event in which language (and/or paralanguage) plays a

major role and which comprises the discourse itself, its participants, the role of that discourse and the environment of its production and reception. Secondly, the members of a genre share some set of communicative purposes, which implies that genres serve as communicative vehicles to achieve goals. It is in this segment where the purposive nature of genres is emphasized. Third, the recognition of purposes by the established members of the discourse community provides the rationale underlying the genre, and such rationale brings about the conventions, both rhetorical and linguistic, of the genre. These conventions are constantly evolving, and can be challenged, but only up to a certain extent because, as Bhatia (1993, p. 14) notes, “any mismatch in the use of generic resources is noticed as odd,” which may result in speakers that are regarded either as incompetent or outsiders (Flowerdew, 2011). Next, while genre membership is based primarily on communicative purpose, other properties such as structure, style, content, and intended audience help establish the extent to which an exemplar is prototypical of a particular genre. Thus, the most typical members of a genre category achieve prototypicality.

The concept of discourse community emphasizes the social nature of genre as it refers to the sociorhetorical grouping of people, related by occupation or specialty interest, who link up in order to pursue shared objectives by means of specific genres they possess knowledge of. Therefore, “genres are the properties of discourse communities; that is to say, genres belong to discourse communities, not to individuals” (Swales, 1990, p. 9). In a revised version of the concept, Swales (2017) updates its defining characteristics by explaining that a discourse community (1) has a potentially discoverable set of goals, which may be generally or partially recognized by its members, (2) needs mechanisms of intercommunication among its members, (3) and uses its participatory mechanisms to initiate actions and activities rather than to simply provide information, (4) utilizes an evolving selection of genres to communicate its goals, (5) has acquired and continues to refine its specific terminology, (6) has an explicit or implicit hierarchy and/or structure which manages the processes of entry into and advancement within the group, (7) develops a sense whereby in certain situations silence suffices and some things do not need to be said or spelled out in detail in either words or writing, and (8) develops horizons of expectation, defined rhythms of activity, a sense of its history, and value systems for what is good and less good work. In the context of the present study, Art and Design professionals are

members of particular discourse communities, who share the communicative purpose of advancing knowledge and they communicate such knowledge using their own disciplinary lexis through the research genres that have evolved to meet the goals of each discourse community. In order to belong to either the Art or Design research discourse community, novice writers need to learn the specific conventions of their research genres during their graduate studies.

3.4 Move Analysis

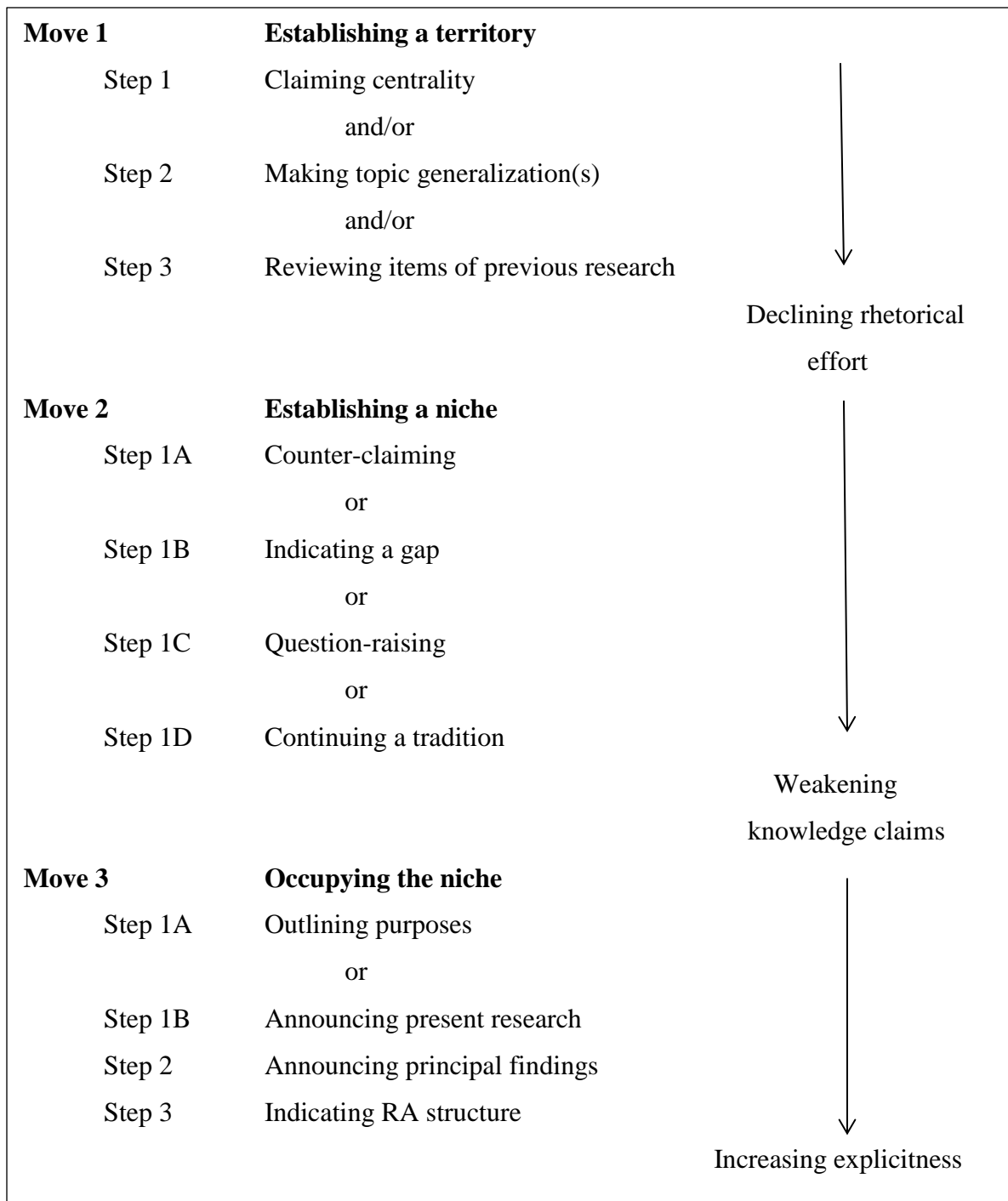
As part of his seminal contributions to Genre Theory, Swales proposed an innovative approach to analyze the schematic structure of a genre known as move analysis. This model of analysis originated with Swales's (1981) work on RA *Introductions*, and it posits that the rhetorical structure of a text consists of a series of parts or moves. A move refers to a section of a text that performs a specific communicative function. Each move not only has its own purpose but also contributes to the overall communicative purposes of the genre (Kanoksilapatham, 2007, p. 23). These moves can be further structured into submoves or steps that realize them. Both moves and steps may be obligatory or optional, may vary in their sequencing, may be repeated, and may be embedded one within another (Swales, 1990). Through the analysis of the rhetorical moves, the general organizational structure and overall communicative purpose of a genre is revealed. "The unique organization of the moves of a specific genre is what provides its identity and distinguishes it from other genres" (Parodi, 2010, p. 146).

As an analytical model, move analysis was outlined in detail in Swales (1990), in what came to be known as the CARS (Create a Research Space) model (p.141), as described in Figure 1.

Although Swales's (1981, 1990) original goal was to address the needs of advanced non-native English students and professionals learning to read and write scientific papers, his model of analysis was extended to other areas of ESP instruction, and within academic writing, it has been applied to various disciplines and academic genres (Kanoksilapathan, 2007), including the RA abstract, as reviewed in the previous chapter.

FIGURE 1

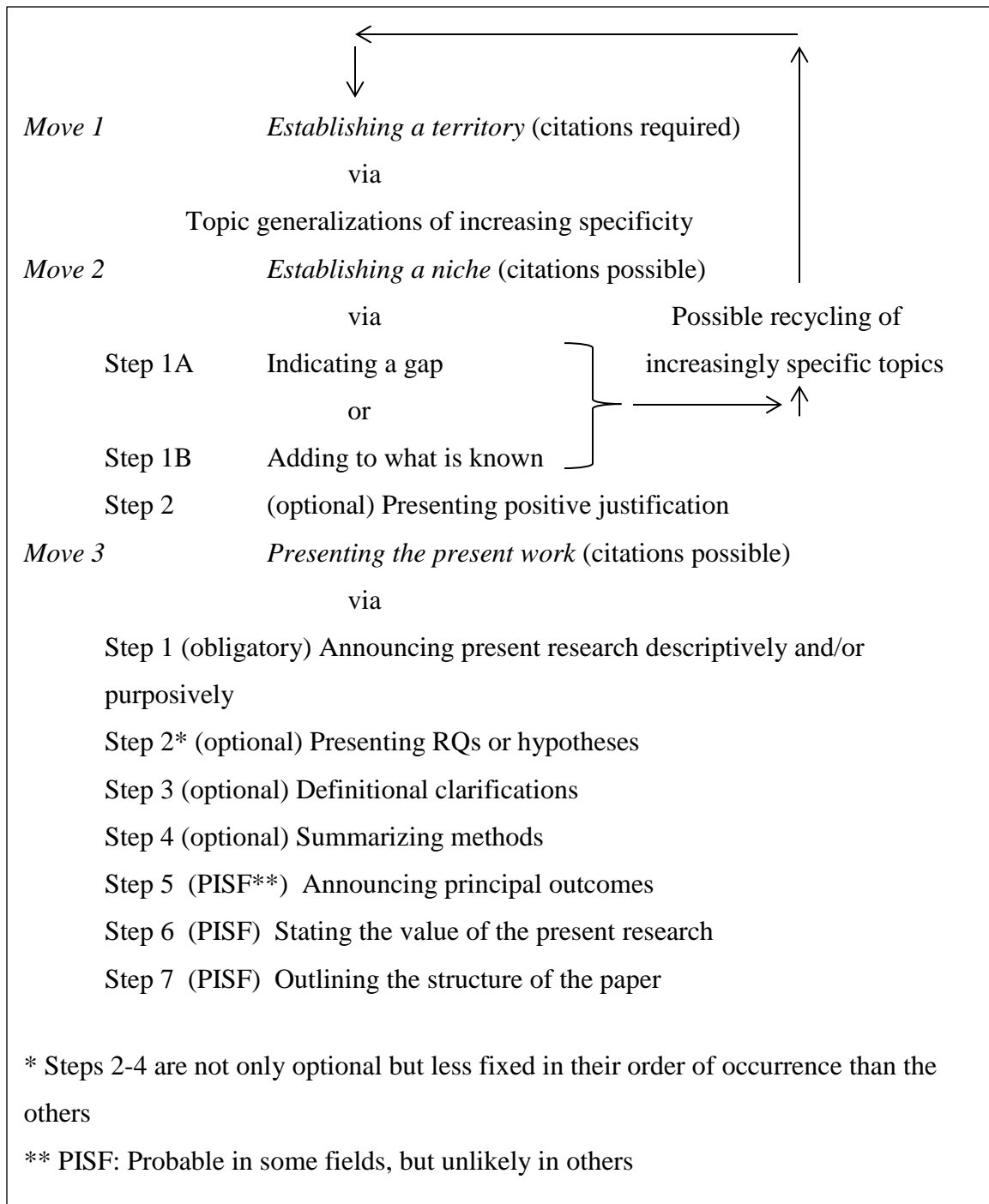
Swales's (1990) CARS (Create a Research Space) Model for Article Introductions



Note. This figure, developed by John Swales, presents the revised *Create a Research Space* (CARS) model for RA introductions. Adapted from *Genre analysis. English in academic and research settings*, (p. 141), by J. Swales, 1990, Cambridge University Press. Copyright 1990 by Cambridge University Press.

FIGURE 2

Swales's (2004) Revised CARS Model for Article Introductions



Note. This figure, developed by John Swales, presents the newly revised *Create a Research Space* (CARS) model for RA introductions. Adapted from *Research genres. Explorations and applications* (pp. 230-232), by J. Swales, 2004, Cambridge University Press. Copyright 2004 by Cambridge University Press.

The CARS model was also revised by Swales (2004) based on the observations contributed by a number of scholars who found disciplinary variation (mainly Anthony, 1990, and Samraj, 2002). Figure 2 presents Swales's modified version of the CARS model.

A typical ESP approach to genre analysis begins by identifying a genre within a discourse community and defining the communicative purpose the genre is designed to achieve. Then, the analysis focuses on the generic organization of the text through an examination of its rhetorical moves, and later turns to the analysis of the textual and linguistic features that realize the moves, but always attending to the genre's communicative purpose and the discourse community that defines such genre, hence moving from context to text (Bawarshi & Reiff, 2010).

According to the ESP view, knowing how to perform a genre involves knowing both the organizational pattern of the genre and the specific lexico-grammatical features that realize its rhetorical moves (Flowerdew, 2011). For this reason, the knowledge resulting from genre analysis research can make a significant contribution to the teaching of non-native speakers who need to achieve the right level of competence "to operate as members of the Anglophone discourse communities that most likely dominate their research areas" (Swales, 1990, p. 11). The applied purposes of genre-based research motivated the present study on Art and Design abstracts.

3.5 The abstract as a genre

The abstract is a relatively new genre. In the past, most papers did not have abstracts. They were introduced into medical RAs back in the 1960s, and were later adopted by other disciplines until they became widespread (Swales & Feak, 2009). Today, although a number of scholars consider the abstract a part-genre as it constitutes a section of the RA (Bhatia, 1993; Swales, 1990, 2004), some researchers have granted it the status of genre on the grounds that it differs from the RA in several key aspects, namely function, rhetorical structure, and linguistic realizations (Lorés, 2004; Pho, 2008). The present study will regard the abstract as a genre based on the distinct communicative purposes outlined for RAs and abstracts by Hyland (2000), who states that whereas the abstract may point towards an associated text, offering a representation of it, its purpose, rhetorical

construction and persuasive intent are distinct from the RA itself. The RA is essentially a codification of disciplinary knowledge, which authors expect their communities to certify as legitimate. The purpose of abstracts, on the other hand, is to selectively highlight important information and frame the article they precede so as to draw the reader into the more detailed exposition offered in the main text; in other words, abstracts aim at persuading readers that the article is worth reading (p. 64).

Thirty years ago, abstracts were an under-researched genre (Swales & Feak, 2010). However, the number of studies focusing on the rhetorical features of abstracts has increased over the years as discourse analysts acknowledge the role abstracts play in capturing the essence of the article (Pho, 2008), attracting readers' attention into the article (Hyland, 2000), and in some measure, obtaining editorial approval (Swales & Feak, 2010). Hyland points out that abstracts are worthy of study because "they are significant carriers of a discipline's epistemological and social assumptions, and therefore a rich source of interactional features that allow us to see how individuals work to position themselves within their communities" (p. 63). This means that, like other genres, abstracts reflect the beliefs, values and practices of the discourse communities that define them.

It is generally agreed that abstracts display the rhetorical structure of the RA, traditionally described as the IMRD structure (*Introduction-Methods-Results-Discussion*). Therefore, the various patterns that have been proposed for the analysis of the abstract moves basically reproduce that schema, some of them dividing the introductory move into two parts, one presenting the background of the study, and the other presenting the research purpose (Hyland, 2000; Pho, 2008; Santos, 1996). Research on the generic organization of abstracts has also identified links between the abstract moves and the communicative categories proposed by researchers for specific sections of the RA, such as the *Introduction* section (Martín-Martín, 2003; Samraj, 2005; Santos, 1996), the *Results* section (Martín-Martín, 2003) or the *Discussion* section (Martín-Martín, 2003; Santos, 1996).

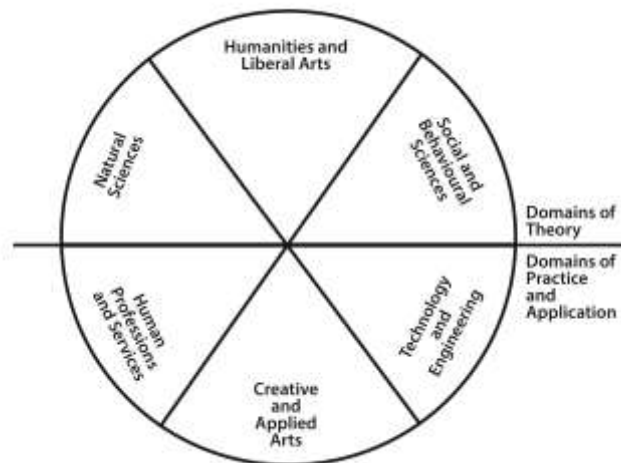
3.6 Some Epistemological Aspects of Art and Design

Although there is general consensus that Art is a discipline within the humanities, the epistemology of Design appears to be a little more complex. Friedman (2000) explains

that Design encompasses various sub-fields that include Industrial Design, Graphic Design, Textile Design, Furniture Design, Urban Design, Interface Design, and Architecture, among several others. These fields have different traditions and methods, and they involve distinct professional groups. However, the challenges they face and their common concerns bind them together into a converging research field. In examining the nature of Design, the author defines it as a broad domain that draws on a wide variety of disciplinary knowledge and as a field of practice and application drawing on multiple sources, as well. Figure 3 provides Friedman’s graphic representation of Design, whose integrative nature places it at the intersection of several large fields. Within this framework, Design is both a field of thinking and pure research, and a field of practice and applied research. Following Samraj’s (2005) rationale, Design can be described as an interdisciplinary field which “borrows from more than one parent discipline” (p.144).

Figure 3

Friedman’s (2000) Model of the Field of Design



Note. This figure, developed by Ken Friedman from the Norwegian School of Management, portrays Design as a six-field model. Design may involve any or all of these domains, in differing aspect and proportion depending on the nature of the project or the problem addressed. Adapted from “Design knowledge: context, content and continuity” (p. 11), by K. Friedman, 2000. In D. Durling & K. Friedman (Eds.), *Foundations for the Future – Doctoral education in design: Proceedings of the conference*, La Clusaz, France, 8-12 July 2000 (pp. 5-15). Staffordshire University Press. Copyright 2000 by Staffordshire University Press. <https://dl.designresearchsociety.org/conference-volumes/29>

3.7 Summary

This chapter has described the theoretical construct which provides support for the present study (i.e. Genre Analysis) and the framework used as an analytical model (Move Analysis). It has also outlined some features regarding the subject of study of this research as well as some disciplinary aspects of Art and Design. The next chapter deals with the materials and methods of the present research.

Chapter IV: Methods

4.1 Introduction

This chapter aims at describing the methodology implemented for this study. It begins by rendering the data collection method applied and follows by providing details of the materials used and the procedures followed.

4.2 Data Collection and Corpora Design Procedures

The present descriptive study relied on two corpora consisting of abstracts written in English in the areas of Art and Design. To compile the corpus, a total of 30 abstracts, divided into two categories were selected from recent publications in four leading international journals. The art corpus was made up of 15 abstracts from the *International Journal of Arts Management* and the *Empirical Studies of the Arts*, while the design corpus compiled 15 abstracts from the *International Journal of Design* and *Design Studies*, all of which were published between 2016 and 2019.

The procedure for the construction of the corpus was guided by sampling criteria ensuring representativeness, reputation and accessibility. In order to make sure that the texts were representative quality exemplars of research communication in the English-speaking academia in their fields, all of the abstracts collected were produced by authors working in English-speaking universities. This way, the texts selected provide examples of model abstracts of each discipline since “abstracts written by expert or native English speaking members of each scientific community are models for all the other members” (Montesi & Urdiciain, 2005, p. 65). As to the size of the sample, Swales & Feak (2010) along with other researchers (Pho, 2008; Samraj, 2005), have considered that 10-15 abstracts is an appropriate number to gain awareness of the rhetorical conventions of each discipline. Thus, the sample can be said to represent the group as a whole and to achieve *generalizability*, which refers to “the extent to which findings in a study can be generalized to a population that is larger than the samples tested” (Lowie & Seton, 2012, p. 6). A further variable considered for selection was the year of publication, which was restricted to

the period between 2016 and 2019, in an attempt to obtain data about the most recent conventions within each discipline. Also, in order to control for any possible variation arising from the rhetorical structure differences between theoretical research articles and data-based research articles, only empirical research abstracts were included in the selection.

Another criterion of corpus selection was *reputation*, that is to say, “the esteem which members of an assumed readership hold for a particular publication” (Nwogu, 1997, p. 121). The sources of the corpus are reputable journals in the fields of Art and Design with high impact factors according to the 2019 Journal Citation Reports: *Design Studies* (IF: 2780), *International Journal of Design* (IF: 1576), *Empirical Studies of the Arts* (IF: 1000), and *International Journal of Arts Management* (IF: 0.360). Within the Design field, *Design Studies* is a leading international academic journal focused on developing understanding of design processes. It studies design activity across all domains of application, including Engineering and Product Design, Architectural and Urban Design, Computer Artefacts and Systems Design. The *International Journal of Design* is a peer-reviewed, open-access journal devoted to publishing research papers in all fields of Design, including Industrial Design, Visual Communication Design, Interface Design, Animation and Game Design, Architectural Design, Urban Design, and other design related fields. In the field of Art, *Empirical Studies of the Arts* is an interdisciplinary journal that includes theoretical and empirical research which spans anthropological, psychological, neuroscientific, semiotic, and sociological studies of the creation, perception, and appreciation of literary, musical, visual and other art forms. In turn, the *International Journal of Arts Management* is published by the Chair in Arts Management of HEC Montreal, the oldest business school in Canada, affiliated with the University of Montreal. The journal covers a wide range of topics and viewpoints of direct interest to academics and practitioners in the Arts Management community.

Finally, *accessibility*, which refers to the ease of obtaining the texts (Nwogu, 1997), was ensured as publishers provide free access to their research article abstracts on their online journal sites.

After the sample abstracts were randomly selected, they were numbered and coded for ease of identification: A was used to identify Art abstracts while D was used for Design abstracts, as shown in the following examples:

D3: North, D., Thurgood, C., & van den Hoven, E. (2018). Designing objects with meaningful associations. *International Journal of Design*, 12(2), 91-104.

A9: Friedenbert, J. (2018). Geometric regularity, symmetry and the perceived beauty of simple shapes. *Empirical Studies of the Arts*, 36(1), 71-89.

4.3 Data Analysis Procedure

The present study aims to answer the following research questions:

1. What is the rhetorical structure of the abstract in Art and Design research articles?
2. What distinctive rhetorical organization features characterize each discipline?

In order to answer these questions, a two-staged approach was applied. In the first stage, the most adequate rhetorical schema for each area of study was chosen after carrying out a preliminary analysis of two randomly selected abstracts (one from each disciplinary area) using existing models from previous research, namely Weissberg and Buker (1990), Bhatia (1993), Hyland (2000), Pho (2008), and Swales and Feak (2009). In the second stage, an analysis of the full corpus was carried out to classify each move according to the model of analysis selected.

Previous exploratory analyses were performed in order to find the most accurate way of identifying the rhetorical function of each move. An inductive approach guided this search, aimed at analyzing each case based on some of the procedures proposed by noted scholars Dudley-Evans (1994) and Holmes (1997): (a) identify the moves in each sample abstract using a combination of linguistic evidence and text comprehension, in an attempt to prove the applicability of the model, (b) analyze each sentence (fragment) of the abstract

and assign it to a move, (c) determine the possible occurrence of new categories not present in other disciplines, (d) analyze the frequency of appearance of each move in the corpora, and (e) validate the classification by testing inter-rater and intra-rater agreement.

4.3.1 Approach to the Analysis of Move Structure

Following the preliminary analysis of two randomly chosen abstracts (D3 and A12), Pho's (2008) move classification model was selected for both Art and Design abstracts. Thus, the analytical framework for the rhetorical structure of the abstracts in the corpora was as follows: (1) *Situating the research* (2) *Presenting the research* (3) *Describing the methodology* (4) *Summarizing the findings*, and (5) *Discussing the research*. The reason for adopting this model of analysis is that the labels used to classify moves are more meaningful since they describe the function performed by each move in a more comprehensive manner than those in other models. Apart from the labels, Pho's framework of analysis includes questions that guide the search and identification of moves, as presented in Table 8.

Considering that a move is most commonly realized in a sentence, the unit of analysis employed to classify the moves was the sentence. However, since abstracts are condensed texts and moves are functional units, not grammatical units (Swales & Feak, 2010, p. 172), in cases in which a sentence encompassed more than one move, it was subdivided into clauses, and even into smaller segments (phrases). Therefore, in the present study, a move can be realized by structures that range from one or more sentences to a clause or a phrase. When a move was realized as part of a sentence and it was syntactically linked to another move, an indentation was used to signal the hierarchical relation between moves, as shown in the following example:

[M3 <DTM>] Using ethnographic data from a building project,

[M2 <PTR>] this paper explores how architects and engineers mobilize visual objects to coordinate their professional visions around a design issue.

4.3.2 Frequency Analysis

In order to determine regularity, a frequency analysis was carried out of the various moves in the abstracts representing each discipline. Following Nwogu (1997), only those moves appearing 50% of the time or above were regarded as meaningful. If the move was present in 50% of the texts or over, it was considered stable and classified as “conventional”. If frequency of occurrence was below 50%, the move was regarded as “optional”. If a move appeared in every single text of a corpus, it was classified as “obligatory”.

Table 8

Model of Analysis for the Present Study

	<i>Moves</i>	<i>Function/description</i>	<i>Question asked</i>
M1	Situating the research <STR>	Setting the scene for the current research (topic generalization)	What has been known about the field/topic of research?
M2	Presenting the research <PTR>	Stating the purpose of the study, research questions and/or hypotheses	What is the study about?
M3	Describing the methodology <DTM>	Describing the materials, subjects, variables, procedures, ...	How was the research done?
M4	Summarizing the findings <STF>	Reporting the main findings of the study	What did the researcher find?
M5	Discussing the research <DTR>	Interpreting the results/findings and /or giving recommendations, implications/applications of the study	What do the results mean? So what?

Note. This table presents the model of analysis for abstract move structure selected for this study. The model was proposed by Phuong Pho, and it is based on Santos’s (1996) model for applied linguistics abstracts, but without the internal division into further submoves. From “Research article abstracts in applied linguistics and educational technology: a study of linguistic realizations of rhetorical structure and authorial stance,” by P.D. Pho, 2008. *Discourse Studies*, 10(2), p. 234. Copyright 2008 by Sage Journals. <https://doi.org/10.1177/1461445607087010>

4.3.3 Validation

To ensure objectivity in the analysis, two raters were invited to monitor and check the move classification of the entire corpora (Ebrahimi & Chan, 2015; San & Tan, 2012). The raters were colleagues working in the field of research and trained in Genre Analysis studies. When there was any discrepancy in the identification of a move, the case was discussed and negotiated with the raters until an agreement was reached.

Finally, inter-rater and intra-rater tests were conducted to assess reliability and validity of move classification using the Kappa coefficient, an index that reflects with a high degree of accuracy “the proportion of agreement over and above what would be expected by chance” (Watkins & Pacheco, 2000, p. 209). The *k* value obtained from these tests is presented in the following chapter.

4.4 Summary

This chapter described the phases that make up the research design for the present study. The following chapter describes the results yielded by the analysis.

Chapter V: Results

5.1 Introduction

This chapter presents and describes the findings resulting from the analysis of the rhetorical features of the Art and Design research article abstracts in the corpus. It begins by presenting differences and similarities between the two corpora analyzed, and then follows with a thorough examination of each move in both fields of study.

5.2 Inter-rater and Intra-rater Reliability

Because the coding of the corpus was carried out by three different people (the researcher and two raters), consistency across subjective raters had to be assessed to make sure the data obtained were valid and reliable. In order to ensure that the results meet accepted criteria of reliability, inter-rater and intra-rater agreement were measured using Cohen's Kappa coefficient, which has long been proposed as a sound method for establishing agreement between observers. As shown in Table 9, the reliability index for both inter-rater and intra-rater agreement was 0.77.

Table 9
Kappa Coefficient of Agreement

Inter-rater agreement	Rater 1	0.72
	Rater 2	0.86
Intra-rater agreement		0.72
Reliability index		0.77

To interpret this *k* value, Watkins and Pacheco (2000) explain that “values of less than .40 are poor, values of .40 to .60 suggest fair agreement, values of .60 to .75 represent

good agreement, and values greater than .75 indicate excellent agreement” (p. 209). Therefore, the Kappa coefficient obtained can be deemed as reliable.

5.3 Main Findings

In order to address the first research question posed for this study –What is the rhetorical structure of the abstract in Art and Design research articles? –the move structure of the texts was analyzed and the moves identified based on semantic and linguistic criteria. The frequency of occurrence of each move in the two corpora was recorded to determine whether the moves found in the texts could be regarded as conventional in each disciplinary field. In general terms, the five moves of the model used were found to be stable in Design abstracts while Art texts presented a regular pattern of four moves, with Move 2 appearing more often as the opening section of the abstract. On the whole, and to answer the second research question of this study –namely, what distinctive rhetorical organization features characterize each discipline? –results show that the abstracts from these two disciplines are similar in rhetorical structure although the nonconventional nature of Move 1 in Art texts reveals a closer correspondence between Art abstracts and the traditional 4-move model (Bhatia, 1993). In any case, the dominant move pattern of both disciplines includes the communicative categories found by most researchers in abstracts in various fields, and two moves –Move 2 (*Presenting the research*) and Move 3 (*Describing the methodology*) – appear as obligatory. A further distinctive feature between the two areas of study is the fact that Move 5 (*Discussing the research*) was found to be obligatory in Art texts but conventional in Design abstracts. The next sections will take a closer look at the data.

5.3.1 Move Frequency

Overall, regarding their rhetorical structure, most Design abstracts (53.3%) included all five moves, whereas most Art abstracts had four moves, with the nonconventional move (M1: *Situating the research*) still occurring with a frequency close to 47%. These findings agree with previous research revealing how the rhetorical organization of the abstract broadly mirrors the structure of the research article itself (Bhatia, 1993; Hyland, 2000; Pho,

2008; Santos, 1996), although the 5-move-model used in this study reformulates the four moves traditionally ascribed to abstracts in what has come to be known as the IMRD structure. The results in Table 10 show the frequency of occurrence of moves across journals and disciplines.

Table 10
Frequency of Occurrence of Moves across Disciplines and Journals

JOURNALS	Number of texts per journal	M1	M2	M3	M4	M5	Dominant move pattern	Prototypical pattern by discipline
<i>International Journal of Design</i>	6	5	6	6	5	5	1-2-3-4-5	<i>Design</i>
<i>Design Studies</i>	9	7	9	9	8	8	1-2-3-4-5	1-2-3-4-5
<i>Int'l Journal of Arts Management</i>	7	2	7	7	6	7	2-3-4-5	<i>Art</i>
<i>Empirical Studies of the Arts</i>	8	5	8	8	8	8	1-2-3-4-5	2-3-4-5

The analysis of the abstracts revealed that two moves were present in the totality of the texts in both disciplines: Move 2 (*Presenting the research*), and Move 3 (*Describing the methodology*), even though only the *Design Studies* journal specifically requires the presence of both moves in its editorial guidelines. Another similarity between the two disciplinary areas was the frequency of occurrence of Move 4 (*Summarizing the findings*), appearing in 86.6% of the Design texts and in 93.3% of the Art texts. A further common feature to both fields was the regular appearance of Move 5 (*Discussing the research*), which was present in 13 Design abstracts and 15 Art abstracts, and it is, therefore, regarded as conventional in Design and as obligatory in Art.

A disciplinary variation worthy of mention is the importance attributed to Move 1 (*Situating the research*), which was found in 12 out of the 15 Design abstracts in the corpus whereas it was present in fewer than half of the Art abstracts (7 cases). Yet, although Move

1 did not appear as frequently in Art abstracts as in Design texts, the move does include in both disciplines a number of constituent parts or submoves which bear clear resemblance to the rhetorical structure of the RA *Introduction* –a section that performs a persuasive function and whose structure has given way to Swales’s (1981, 1990) CARS model, where authors create a research space that justifies their study. The internal structure of Move 1 will be discussed in further detail in the Description of Functional Units section.

Table 11 presents the frequency of occurrence classified by number of cases and by percentages in each field.

Table 11

Frequency of Occurrence of Moves in Art and Design Abstracts

ART (15 abstracts)			DESIGN (15 abstracts)		
Move	Frequency	%	Move	Frequency	%
<i>Move 1: Situating the research</i>	7	46.6%	<i>Move 1: Situating the research</i>	12	80%
<i>Move 2: Presenting the research</i>	15	100%	<i>Move 2: Presenting the research</i>	15	100%
<i>Move 3: Describing the methodology</i>	15	100%	<i>Move 3: Describing the methodology</i>	15	100%
<i>Move 4: Summarizing the findings</i>	14	93.3%	<i>Move 4: Summarizing the findings</i>	13	86.6%
<i>Move 5: Discussing the research</i>	15	100%	<i>Move 5: Discussing the research</i>	13	86.6%

In short, the small scale corpora analyzed here help put forward a preliminary rhetorical organization for Art and Design abstracts, which appear to typically follow the structure described in Table 12. Because the move stability threshold of this study was set at 50%, except for Move 1, which was found not to be conventional in Art texts, all the other moves were used conventionally, with Moves 2 and 3 appearing as obligatory in both fields and Move 5 as an obligatory move in Art abstracts.

Table 12*Prototypical Structure of Art and Design Abstracts*

ART	DESIGN
M1 <i>Situating the research</i> (optional)	M1 <i>Situating the research</i> (conventional)
M2 <i>Presenting the research</i> (obligatory)	M2 <i>Presenting the research</i> (obligatory)
M3 <i>Describing the methodology</i> (obligatory)	M3 <i>Describing the methodology</i> (obligatory)
M4 <i>Summarizing the findings</i> (conventional)	M4 <i>Summarizing the findings</i> (conventional)
M5 <i>Discussing the research</i> (obligatory)	M5 <i>Discussing the research</i> (conventional)

5.3.2 Move Sequence

In both disciplines, the sequence of moves conformed in the main to the order presented in the model, that is, M1 (*STR*) - M2 (*PTR*) - M3 (*DTM*) - M4 (*STF*) - M5 (*DTR*). The exceptions, which will be discussed in further detail in the Description of Functional Units section, were characterized by the inverted order, i.e. *move reversal*⁵, and/or the merging of two moves by means of *move embedding*⁵; for example, Move 3 preceding Move 2 (*move reversal*), but both of them appearing in the same sentence and one of them being syntactically dependent on the other (*move embedding*). In these corpora, *move reversal* was present in seven Design abstracts (D2, D5, D8, D10, D12, D13, and D15), and only one Art text (A2), which indicates it is not a textual resource of such frequent use in Art as it is in Design. *Move embedding*, on the other hand, is used quite often in both disciplines totaling 10 cases in Art and nine in Design. The move that showed the greatest flexibility for *embedding* was Move 3 as most cases of *embedding* in the corpora occurred with the *Describing the methodology* move joined syntactically to either Move 2 or Move 4 and even in some cases to Move 5 (D12, A2).

⁵ Both *move embedding* and *move reversal* are devices used by writers to achieve move cohesion. Santos (1996) defines *move embedding* as “the blending of moves into the same statement” and *move reversal* as “the reversed sequence of moves” (p. 497).

An infrequent though distinctive feature in two of the Art abstracts is the appearance of two moves that coalesce in a single communicative unit structured as a sentence, and yet, as the examples below show, the dividing line between Move 2 and Move 3 is blurred and realized semantically rather than syntactically.

Example 1: (A8 – *Empirical Studies of the Art*, Vol. 36(2), 2018)

[M2 <PTR>] + [M3 <DTM>] The present research tests whether the energy and BPM (proxies for the arousal dimension) and popularity as expressed in terms of sale charts (a possible proxy for the pleasantness dimension) could predict scores on six moods in 143,353 musical pieces.

Example 2: (A14 – *Empirical Studies of the Art*, Vol. 37(1), 2019)

[M2 <PTR>] + [M3 <DTM>] In this study, 174 participants rated instruments according to how much they sounded like the human voice.

5.3.3 Move Cycles⁶

There were also a few cases of move cycles in both Art and Design texts, occurring in a set of two-, three-, or four-move sequences. Such cyclical configurations involve the repetition of a sequence of moves, forming a pattern. Previous studies (Hyland, 2000; Martín-Martín, 2003; Pho, 2008; Santos, 1996; Tankó, 2017) have reported the occasional presence of move cycles as a clear reflection of the steps followed in the research process. The following example (with added underlining) illustrates how the cyclical sequence of moves reflects a pilot + follow-up study.

Example 3: (A9 – *Empirical Studies of the Art*, Vol. 36(1), 2018)

[M3 <DTM>] In Experiment 1, undergraduates rated the perceived beauty of triangles varying in geometric regularity defined by their side-length standard deviation. Each type of triangle was used: equilateral, isosceles, right, and scalene.

⁶ Move cycling refers to the repetition of moves (Swales, 1990).

[M4 <STF>] Ratings increased with an increase in regularity and were highest for symmetric shapes.

[M3 <DTM>] The results were replicated in a second experiment using each type of quadrilateral: square, rectangle, parallelogram, rhombus, kite, isosceles, and trapezoid.

[M4 <STF>] Although ratings in Experiment 2 also increased with regularity, symmetry did not perfectly predict ranked order of preference.

In addition to a couple of cases in Art texts of these occurrences reported as fairly common, in this study, a few cases of move cycling in Design show patterns of hybridity similar to those found by Lorés-Sanz (2016), which will be discussed in the next chapter. The following examples illustrate this phenomenon:

Example 4: (D12 – *Design Studies*, Vol. 62, 2019)

[M2 <PTR>] This paper introduces Hybrid Prototyping as a way to couple different prototyping methods; combining their complementary affordances and mitigating their limitations. To characterise and investigate this approach,

[M3 <DTM>] a simulation-based study was conducted into the coupling of low-cost 3D printing and LEGO®.

[M2 <PTR>] Key benefits hypothesised are reduced fabrication time and increased reconfigurability.

[M3 <DTM>] Six primitive 3D shapes are simulated using a continuum of hypothetical brick sizes.

[M4 <STF>] Results show a reduction in fabrication time of 45% and a reconfigurability of 57% at the optimum.

[M3 <DTM>] A case study

[M5 <DTR>] highlights the compounded improvements over 3D printing for an iterative prototyping process. These findings mean that increases in prototyping iterations can be made due to reduced time and material costs, accelerating the product development process.

Example 5: (D2 –*International Journal of Design*, Vol. 10(2), 2016)

[M1 <STR>] Over the last decade, design for behaviour change has become increasingly recognised as a strategy for enabling social change. Despite this, we are far from understanding its implementation, especially through the private and public sectors.

[M3 <DTM>] This study has surveyed private and public sector stakeholders with regard to their current knowledge of, and approach to, design for behaviour change.

[M2 <PTR>] The aim was to identify the challenges for professional stakeholders in understanding, accessing and implementing design for behaviour change.

[M3 <DTM>] Underpinned by a literature review of design for behaviour change theories and approaches, an online survey and two focus groups with private and public sector stakeholders were conducted with particular focus on small and medium size enterprises (SMEs).

[M4 <STF>] The results identified that there is a significant disconnect between available theoretical knowledge of design for behaviour change and its practical implementation. Reasons for this include a lack of awareness and common language, of evidence based examples, and of evaluation methods and inter-sector collaborations.

[M5 <DTR>] In response, a set of recommendations has been developed to propose ways forward for the wider understanding and application of design for behaviour change.

Example 4 illustrates what Lorés-Sanz (2016) defines as moves that show a non-linear structure and appear in a *cascading* or ‘hanging’ mode, where one section depends syntactically on another. Thus, the cycle here is structured as M2-M3-M2-M3-M4-M3-M5, and shows syntactic dependence (*move embedding*) at both ends: M2-M3 and M3-M5. Example 5, on the other hand, is characterized by what Lorés-Sanz defines as a *chain* structure, where Move 3 intertwines with and precedes (*move reversal*) Move 2. These hybrid ways of articulating moves were present in five Design texts and only one Art

abstract, from the *International Journal of Arts Management* –a publication that is likely to draw on conventions used in the field of business management.

5.3.4 Move Length

All the texts in the corpora were one-paragraph abstracts. The moves identified in them showed varying degrees of length, with a prototypical pattern of one sentence realizing one move. A closer analysis of those moves that are realized by more than one sentence reveals a disciplinary variation. Whereas in Design abstracts the longer moves were predominantly Move 1 (*STR*) and Move 3 (*DTM*), in Art texts, the longer sections were found in Move 4 (*STF*) and Move 5 (*DTR*). This rhetorical difference shows how the textual space allocated to a move may reflect the visibility that each discipline needs to give to that aspect of the research which is regarded as the most relevant.

5.4 Description of Functional Units

5.4.1 Move 1 - Situating the Research

Even though Move 1 was not as frequently found in Art abstracts (46.6%) as it was in Design (80%), a close examination of this move reveals a high degree of rhetorical complexity in its structure which mirrors the CARS model proposed by Swales (1990). These findings are consistent with what Martín-Martín (2003) described in his analysis of abstracts in the area of experimental social sciences and what Samraj (2005) found in connection to abstracts in Conservation Biology: the function of the introductory move(s) in the abstract is linked to the persuasive function that Swales ascribed to the *Introduction* of the RA.

In these corpora, a rhetorical structure embracing Move 1 (*STR*) and Move 2 (*PTR*) revealed the underlying function of creating a research space, in which either two or the three moves in Swales's model for *Introductions* are included. The communicative unit of Move 1 (*Situating the research*) has a similar structure to the two initial moves of the CARS model: (1) *establishing a territory*, and (2) *establishing a niche*, both of which are

subdivided into a number of rhetorical strategies or *steps*, as described in Table 13. The last move in the CARS framework –*occupying the niche* –will be discussed under the Move 2 (*Presenting the research*) section as it relates to what the study is about. It is presented, though, in Table 13, in which all abstracts that contain Move 2 (*PTR*), regardless of whether they also include Move 1 (*STR*) or not, have been quantified.

Table 13

Frequency and Distribution of CARS Moves in the STR and PTR Sections of the Abstracts

Pho's model	CARS model	ART	DESIGN
M1 (STR)	<i>Move 1 –Establishing a territory</i>	(7) 100%	(10)83.3%
	Step 1 –Claiming centrality and/or	2	4
	Step 2–Making topic generalization(s) and/or	6	6
	Step 3 –Reviewing items of previous research	2	-
	<i>Move 2 –Establishing a niche</i>	(4) 57%	(8) 66.6%
M2 (PTR)	Step 1A –Counter-claiming or	1	1
	Step 1B –Indicating a gap or	2	5
	Step 1C –Question-raising or	1	2
	Step 1D –Continuing a tradition	-	-
	<i>Move 3 –Occupying the niche</i>	15 (100%)	15 (100%)
M2 (PTR)	Step 1A –Outlining purposes or	3	11
	Step 1B –Announcing present research	11	6
	Step 2 –Announcing principal findings	-	-
	Step 3 –Indicating RA structure	-	-

As can be seen from Table 13, the element that was present in all abstracts was Move 3, by means of which authors introduce their research. In Art abstracts, this move is mostly realized by Step 1B, that is, by the author(s) describing what they consider to be the main features of their research. In contrast, the preferred form of Design abstracts is that of Step 1A, in which author(s) indicate their main purpose(s). As to Moves 1 and 2, both Art and Design writers favored *topic generalizations* in Move 1 and *establishing a gap in research* in Move 2. The move that appeared the least in both fields was Move 2. However,

when Art and Design texts are compared, the latter show a higher frequency of occurrence of Move 2, revealing a stronger need to compete for a research space in the field of Design.

The presence of a rhetorical structure encompassing Move 1 (*STR*) and Move 2 (*PTR*) which performs the function of creating a research space shows that the role of the abstract is linked to the persuasive function that Swales (1981, 1990) ascribed to the *Introduction* of the RA. The internal analysis of the introductory moves partly confirms that the organization of the abstract reflects the rhetorical structure of the RA.

Furthermore, Table 14 shows that Design abstracts have a higher complexity than Art abstracts in terms of rhetorical structure since 40% of the texts contain all three moves described by Swales in RA *Introductions* while only 26.6% of Art texts include the three moves and most of them include only one of them.

Table 14

Number of CARS Moves in the Internal Structure of M1 (STR) and M2 (PTR) in Art and Design Abstracts

<i>CARS model</i>	<i>ART abstracts</i>	<i>DESIGN abstracts</i>
3 moves	4 (26.6%)	6 (40%)
2 moves	3 (20%)	6 (40%)
1 move	8 (53.3%)	3 (20%)

The internal organization of Move 1 (*STR*) and Move 2 (*PTR*) that has become evident through a closer examination shows that the initial framework used for this exploratory analysis requires adding to the rhetorical structure of Design abstracts a set of submoves based on Swales's (1990) model for *Introductions*. In Art abstracts, these submoves should be included as optional given that Move 1 (*Situating the research*) was found to be optional in Art.

With regard to linguistic choices in Design, the tense that predominates in Move 1 (*STR*) is the present, with some instances of present perfect and the modal auxiliary *can* (four occurrences), and a single case of passive voice. In Art texts, Move 1 (*STR*) is also characterized by the use of present simple with some instances of present perfect verbs, an occasional occurrence of a modal verb (*can*) and a passive form. These findings are similar

to Pho's (2008) in terms not only of frequency but also of distribution based on context of use. Indeed, the corpora analyzed here showed a tendency for grammatical subjects addressing a general topic in the field to co-occur with verbs in the present simple whereas subjects that describe previous research in general (without referring to a specific researcher) tend to be used with present perfect verbs. For example (added underlining):

Example 6: (D13 – *Design Studies*, Vol. 61, 2019)

[M1 <STR>] Inspirational stimuli, such as analogies, are a prominent mechanism used to support designers. However, generating relevant inspirational stimuli remains challenging.

Example 7: (D8 – *Design Studies*, Vol. 50, 2017)

[M1 <STR>] While scholars have studied benefits and drawbacks of prototype development, few have attempted to create a holistic framework to structure prototyping and combine insights from across technical domains.

Example 8: (A13 – *Empirical Studies of the Art*, Vol. 37(2), 2019)

[M1 <STR>] Feeling like crying is a common response to music.

Example 9: (A11 – *Empirical Studies of the Art*, Vol. 36(1), 2018)

[M1 <STR>] Researchers in the evolutionary aesthetics tradition have suggested that people prefer shiny objects because glossiness connotes water.

This correlation between tense and choice of subject has also been discussed by Swales (1990) in relation to RA *Introductions*.

5.4.2 Move 2 - Presenting the Research

As previously mentioned, Move 2 (*PTR*) is an obligatory element in both Art and Design. The difference, however, is that while Design authors favor statements that indicate purpose, Art writers tend to convey this move as a description of the key features of the

research; in other words, the move is most frequently realized as Steps 1A and 1B of the CARS model respectively.

A rhetorical strategy that is not accounted for in Swales's model for *Introductions* is the explanation or definition of a concept which is relevant to the study. This category was found in four instances of Design texts and one Art text –usually in Move 2 but also in Move 3 –as illustrated in the following examples (added underlining):

Example 10: (D6 – *International Journal of Design*, Vol. 11(2), 2017)

[M2 <PTR>] This paper introduces such a model called generative play that integrates psychology, game theory, and economics with design. Specifically, generative play takes root at the intersection of activity theory, generative research, flow, play, and generative justice. It offers an interdisciplinary methodology that addresses wicked problems in health through social innovation and instills cognizance of social responsibility in design students.

Example 11: (A5 – *International Journal of Arts Management*, Vol. 20(2), 2018)

[M2 <PTR>] This study deepens our understanding of an element of the infrastructure for cultural entrepreneurship in the United States: the arts incubator, an organizational form or programmatic initiative that exists at the intersection of artistic production, entrepreneurship and public policy.

Along with other submoves, such as *evaluation of research*, which is present in just one Design text in the corpus, *definitions* were found to be standard practice in research article *Introductions* in Engineering (Anthony, 1999). Given that Design draws partly on Engineering, it is not surprising to find instances of rhetorical devices that are often used by authors in this field.

Regarding language, in Design abstracts, Move 2 (*PTR*) was mostly realized by the present simple tense with one case featuring the simple past and a further example using simply an infinitive of purpose to convey its communicative intent. The majority of the subjects used were signaled by a metadiscoursal⁷ expression (e.g. *this paper*, *this article*,

this work, this study), which represents a more indirect and objective way of referring to the author(s) as the performer(s) of the action. There were two cases of self-reference (i.e. *our goal, we*), which marks a clear contrast with the less personal style preferred by most writers, according to the literature.

The verb choices in Art abstracts showed a less uniform pattern than in Design. Although most cases were expressed in the present simple, the simple past was also used with no particular identifiable pattern of use. There were a few Moves 2 expressed in the passive voice, particularly when the subject referred to some specific aspect of the research, (e.g. *Potential differences...were investigated, Geometric regularity is introduced as...*). Finally, there was one instance of a modal auxiliary verb (Example 12) used to express hypothesis or assumption. Reasonably, this type of modal verb differs from the modal of possibility *can* used in Move 1 (*STR*) to refer to the findings of previous research or to knowledge generalizations.

Example 12: (A8 –*Empirical Studies of the Art*, Vol. 36(2), 2018)

[M2 <PTR>] + [M3 <DTM>] The present research tests whether the energy and BPM (proxies for the arousal dimension) and popularity as expressed in terms of sale charts (a possible proxy for the pleasantness dimension) could predict scores on six moods in 143,353 musical pieces.

Subjects in the Art moves used either deictics to produce metadiscoursal⁷ expressions (e.g. *this study, this article*) that incorporate the abstract into the body of the research paper or resorted to the use of the article *the* (e.g. *the present study/research*), which seemed to detach the abstract from the paper as if the main text was “standing apart from the abstract” (Swales, personal communication, as cited by Santos, 1996, p. 489). In contrast with Design, Art texts used twice as many instances of self-referential subjects (e.g. *we, the authors*), and, as mentioned before, included three instances of subjects

⁷ The term *metadiscourse* is employed in this study to refer to “text about your text”, as used by Swales and Feak (2010, p. 171). This narrow definition of the term is what Hyland and Tse (2004) call *interactive metadiscourse* following Thompson (2001, as cited in Hyland & Tse, 2004, p. 168), which serves the purpose of organizing texts and guiding readers through them.

referring to elements of research (e.g. *The cognitive processing mode...was examined*) followed by a verb in the passive voice.

5.4.3 Move 3 - Describing the Methodology

The most distinctive aspect of Move 3 (*DTM*) was the considerable textual space taken by Design abstracts when compared to Art abstracts and indeed to other disciplines in previous studies, which have consistently found the *Methods* unit in abstracts to be quite short (Martín-Martín, 2003; Santos, 1996). The average number of words per section in Design abstracts was 50, in contrast to an average of 25 words in Art *DTM* texts. Table 15 compares the relative value given to the *DTM* section by each discipline, revealing that this unit is particularly relevant in Design: when measured in terms of number of words, Move 3 constitutes 34% of the Design abstract, in contrast to the 18% that the move represents in Art texts. Furthermore, the *embedding* of this element is slightly less frequent in Design than it is in Art texts. The strategy of merging the *DTM* unit to either the previous or the following move has been reported by the above mentioned authors as fairly frequent due to space constraints. The findings of this study show that, on average, this is not the case in Design abstracts, which tend to present the *DTM* move as a longer independent unit.

Table 15

Average Number of Words in Move 3 (DTM) and Relative Value of Move across Disciplines

	Average # of words		
	Abstract	Move 3 (<i>DTM</i>)	Percentage represented in abstract
ART	143.5	25.9	18%
DESIGN	149.9	50.8	34%

Regarding language, the predominant tense used in the *DTM* move of Design abstracts was the past tense although there were also a few cases of present tense. Similar to the corpora described by Weissberg and Buker (1990), the *DTM* move of Design abstracts

was also characterized by the use of the passive voice. Similarly, the past tense occurred more frequently in Art abstracts, but the passive voice was not a salient feature of the move.

A linguistic resource appearing in both Art and Design *DTM* moves is the self-referential subject. Examples include the use of “we”, “the authors”, and “the group”. These findings, which are more salient in Design, contrast with the overall fairly impersonal style preferred by authors in other disciplines, as has been reported by several researchers (Martín-Martín, 2003; Pho, 2008; Santos, 1996; Weissberg and Buker, 1990).

5.4.4 Move 4 - Summarizing the Findings

As Pho (2008) points out, reporting the results is an important part of empirical research articles and this is evident in the corpus of the present study as the *STF* move was found to be conventional in both fields though it was longer in Art texts. A close examination of this rhetorical unit shows that Art *STF* moves display more features reported as conventional by the literature (Martín-Martín, 2003; Pho, 2008; Santos, 1996) whereas Design texts contain some elements that are not typically found in this section. One such feature is the presence of first-person pronouns as subjects, as shown in the following example (added underlining):

Example 13: (D7 – *Design Studies*, Vol. 52, 2017)

[M4 <STF>] We learnt that users prefer the gallery to their accustomed workarounds.

Just as it was present in the *DTM* move, self-mention was found in four *STF* moves in Design. This finding coincides with Hyland’s (2003b) identification of self-reference words in abstracts, which he interpreted as a way of foregrounding the writer(s)’ contribution to knowledge when stating results. Furthermore, in one text of the Design corpus, this persuasive function was further enhanced by the use of the emphatic *do* (Example 14), which serves the purpose of confirming or validating the original hypothesis.

Example 14: (D6 – *International Journal of Design*, Vol. 11(2), 2017)

[M4 <STF>] ...we found that generative play does engender cognizance of social responsibility and pleasure and does facilitate social innovation.

In addition, as a way to highlight the value of the findings, several *STF* moves provide measurable results by means of concrete numbers. Below are only some examples of this trend:

Example 15: (D12 – *Design Studies*, Vol. 62, 2019)

[M4 <STF>] Results show a reduction in fabrication time of 45% and a reconfigurability of 57% at the optimum.

Example 16: (D14 – *Design Studies*, Vol. 57, 2018)

[M4 <STF>] We observed collaborative inquiry practices as four modes of evoking ways of knowing and two modes of building coherence.

Example 17: (D15 – *Design Studies*, Vol. 46, 2016)

[M4 <STF>] The resulting set of patterns, in the form of 77 Design Heuristics, catalog how designers appear to introduce intentional variation into conceptual product designs.

A linguistic feature that most research does not regard as a recurrent element is the use of the present tense to report the findings of a study. In Design texts, the simple present was used more frequently than the past, unlike Art *STF* moves, which were mainly realized in the past.

Although the dominant syntactic structure reported by Hyland and Tse (2005) as typically used to present the writer(s)' findings was the *that* clause preceded by a reporting verb, both Art and Design texts showed a preference for a direct report of the findings over the *that* construction. The following examples illustrate this tendency in both fields:

Example 18: (D13 – *Design Studies*, Vol. 61, 2019)

[M4 <STF>] Near stimuli improve the feasibility and usefulness of designs solutions, while distant stimuli improved their uniqueness

Example 19: (A10 – *Empirical Studies of the Art*, Vol. 34(2), 2016)

[M4 <STF>] The distract condition improved affect (by increasing positive and decreasing negative affect) more than did the express condition, regardless of writing format. The poetry format resulted in greater enjoyment than the narrative format, but flow did not differ by condition.

Finally, the *STF* moves in Art were characterized by a description of results ordered either from general to particular or from more significant to less significant finding, as illustrated in the following examples.

Example 20: (A3 – *International Journal of Arts Management*, Vol. 20(2), 2018)

[M4 <STF>] (Data from 20 interviews) indicate that the exhibition is viewed as a useful steppingstone, offering such benefits as recognition and exposure, networking, marketing, and enhanced ambition and motivation. Only a few exhibiting artists receive monetary rewards from sales or prizes. The lack of financial assistance means that most artists are financially challenged. Artists also lack knowledge of market conditions and have a tendency to undervalue their art work. Nevertheless, many artists express no interest in developing commercial skills and have a pessimistic view of public funding. Some artists show signs of an anti-entrepreneurial mindset.

Example 21: (A6 – *International Journal of Arts Management*, Vol. 19(1), 2016)

[M4 <STF>] The personality traits of optimism and emotional stability were substantively correlated with career satisfaction. Other traits, such as teamwork orientation, work drive and customer orientation, were correlated as well, though not as strongly.

5.4.5 Move 5 - *Discussing the Research*

After a thorough examination of the data, authors make claims about the significance of their research in the closing move. In the corpora analyzed, the discussion of findings was slightly longer in Art abstracts. On average, while Art *DTR* moves contained two sentences, the writers of Design texts employed usually one sentence in the *DTR* move. Table 16 shows the differences between the disciplines in terms of average number of words and sentences. A further observation, referred to earlier, was the fact that, in contrast to Design, the totality of the Art abstracts in the corpus included this move.

Table 16

Average Number of Words and Sentences in Move 5 (DTR) across Disciplines

Move 5 (<i>DTR</i>)			
	Average number of sentences	Average number of words	Percentage of abstracts containing Move 5 (<i>DTR</i>)
ART	2	35.4	100%
DESIGN	1	27.4	86.6%

When analyzed considering the communicative purpose intended, a disciplinary difference emerges. Art texts refer mainly to the *conclusions* or *implications of the study* and often include *recommendations for future research*. In contrast, Design texts generally highlight the value of the research by presenting the *practical applications* of the study. Examples of both cases follow:

Example 22: (A1 – *International Journal of Arts Management*, Vol. 19(1), 2016)

[M5 <DTR>] The results suggest that what we know about behavioural loyalty towards brands also applies at the macro level to arts. Furthermore, this holds across regions of England. The analysis is restricted to arts attendance at an aggregate level. The results indicate that the same patterns would be seen across genres or venues. However, the more detailed data required to test this do not seem to be available.

Example 23: (A7 – *Empirical Studies of the Art*, Vol. 35(2), 2017)

[M5 <DTR>] The philosophy that beauty is completely in the eye of the beholder, at least for music perception, was only empirically supported in the case of nonprofessional, nonexpert judges.

Example 24: (D9 – *Design Studies*, Vol. 42, 2016)

[M5 <DTR>] Results from this experiment show that function tree representations offer advantages for reducing fixation during idea generation.

Example 25: (D15 – *Design Studies*, Vol. 46, 2016)

[M5 <DTR>] These heuristics provide ‘cognitive shortcuts’ that can help designers generate more, and more varied, candidate concepts to consider in the early phases of design.

In both disciplines, the preferred verb form for the *DTR* move was the present, with some instances of passive voice. Based on the findings of previous research, it was expected that self-reference would be a prominent element in this move. However, there were only two cases in Art and one in Design. Instead, the choice of subjects was mostly impersonal and referring to the genre or to some aspect of the research (e.g. *This study*, *The findings*, *The results*, etc.). Still, the author’s voice was present through the use of attitudinal lexis –a feature that was far more salient in Design than in Art. Some examples of such stance words are *effectively*, *fruitfully*, or *useful* in Art and *impactful*, *inspirational*, *new*, *potential*, or *practical* in Design.

Hedging devices⁸, on the other hand, were more frequent and varied in Art texts while Design texts included only a small number of cases. Table 17 below shows the distribution and frequency of both epistemic verbs and modal verbs functioning as hedges in both disciplines as well as the few cases of boosting devices⁹ observed.

⁸ Both *hedges* and *boosters* are devices for expressing the writer’s textual voice or stance. According to Hyland (1998), *hedges* allow information to be presented as an opinion rather than a fact marking “the writer’s reluctance to present or evaluate propositional information categorically” (p. 443).

⁹ *Boosters*, on the other hand, “allow writers to express their certainty in what they say and to mark involvement with the topic and solidarity with their audience” (Hyland, 2005, p. 8).

Table 17*Hedging Devices and Boosters in Move 5 (DTR) across Disciplines*

<i>Hedging devices in DTR move</i>		<i>ART</i>	<i>DESIGN</i>
Epistemic verbs	suggest	4	1
	seem	2	-
	appear	1	-
Modal verbs (epistemic)	can	5	4
	could	1	-
	may	1	-
	would	1	-
<i>Boosting devices in DTR move</i>		<i>ART</i>	<i>DESIGN</i>
Modal verbs (deontic)	should	1	-
	must	1	1

While the use of hedging devices mitigates the force of the statement made, the boosting devices strengthen the author's claim. The distribution and frequency of occurrence shown in Table 17 reveals a preference for hedges, particularly in Art *DTR* moves. Unlike the data reported by Stotesbury (2003), who identifies the modal *may* as the most frequently employed in abstracts, the findings in the present study reveal that *can* appeared most commonly in both Art and Design.

5.5 Summary of Main Linguistic Findings

Table 18 summarizes the main linguistic signals characterizing each move and the differences between Art and Design abstracts yielded by the analysis of the corpora.

Table 18*Salient Linguistic Signals across Moves in Art and Design Abstracts*

<i>Linguistic features</i>		<i>M1 (STR)</i>	<i>M2 (PTR)</i>	<i>M3 (DTM)</i>	<i>M4 (STF)</i>	<i>M5 (DTR)</i>
Dominant tense	<i>Art</i> <i>Design</i>	Present Present	Present Present	Past Past	Past Present	Present Present
Dominant voice	<i>Art</i> <i>Design</i>	Active Active	Active Active	Active Passive	Active Active	Active Active
Epistemic modality (probability)	<i>Art</i>	can (1)	could (1)	could (1)	could (1)	can (5) could (1) may (1) would (1)
	<i>Design</i>	can (4)	-	-	could (1)	can (4)
Deontic modality (obligation)	<i>Art</i>	-	-	-	-	must (1)
	<i>Design</i>	-	-	-	-	must (1)
Instances of metadiscourse	<i>Art</i>	-	7 out of 15 subjects	7	-	15
	<i>Design</i>	-	10 subjects	3	2	7
Instances of self-reference	<i>Art</i>	-	4	4	-	2
	<i>Design</i>	-	2	12	4	1
Attitudinal lexis	<i>Art</i>	-	-	-	-	5 cases
	<i>Design</i>	2 cases	1	-	-	16 cases
Main reporting verb	<i>Art</i>	-	-	-	show	suggest
	<i>Design</i>	-	-	-	show	highlight

5.6 Summary

This chapter presented the main results obtained from the analysis of the data. The detailed examination of the texts revealed an overall generic structure that is similar to that found in other disciplines consisting of four conventional moves in Art and five in Design. The analysis also showed disciplinary differences in relation to move sequence, to the relative value attached to move length, and to the rhetorical complexity displayed within moves. The significance of these findings will be discussed in the next chapter.

Chapter VI: Discussion

6.1 Introduction

The aim of this study was to describe the rhetorical organization of the RA abstract in the fields of Art and Design. Based on the findings, this section discusses similarities and differences between the two corpora, and then posits some final conclusions followed by a proposed pattern for the abstract in each field. The chapter closes by setting out the implications and limitations of the study while suggesting some recommendations for future research.

6.2 Discussion

The examination of the corpus has revealed some similarities between the two different and yet related disciplines in terms of the macro-organization of the abstracts. On the other hand, the results also point at some subject-specific differences that are worth discussing.

6.3 Similarities

The analysis of the rhetorical structure of abstracts in the two fields has indicated a fairly similar conventional framework mirroring the IMRD structure of the RA that is consistent with the findings in other disciplinary studies: Anderson and MacLean (1997) in Medicine, Ahmed (2015) in Tourism Management, Cavalieri and Preite (2017) in Criminology, Hyland (2000) in multiple disciplines, Martín-Martín (2003) in Phonetics and Psychology, Méndez-Cendón and López-Arroyo (2003) in Radiology, and Santos (1996) and Tseng (2011) in Applied Linguistics. Therefore, it appears that in Art and Design, as in other fields of study, writers are likely to conform to the overall rhetorical structure of this genre, which is described by the American National Standards Institute (ANSI) as a brief representation of the contents of the RA (ANSI, 1997). As the ANSI standard suggests, a complete abstract should contain all four sections –*Purpose*, *Methodology*, *Results*, and

Conclusions –and it may occasionally include *Background* information. In these corpora, the move distribution shows a high degree of homogeneity as far as the traditional moves are concerned. However, Design abstracts also include the initial *Situating the research* move, added to the framework originally proposed by Santos (1996) and then reformulated by Pho (2008). Such degree of variability in the frequency of occurrence and the internal structure of moves allows for the delineation of two distinctive disciplinary templates, as it will be discussed further on.

Regarding move length, a feature that emerges as common to both corpora is the presence of *move embedding*, that is to say, the merging of two moves. Because abstracts are brief, condensed texts, the appearance of move embedding is not uncommon. In fact, Santos (1996) regards it as a genre-specific convention. In turn, Tankó (2017) interprets it as a summary resource that allows authors to condense information in order to maximize results. In this context, the embedding of moves might be a useful resource for complying with editorial guidelines of brevity.

A further similarity concerns language use, particularly the predominant use of active voice across moves. This tendency, which is verified in all moves except for the *Methods* move in Design, is consistent with the findings of Okamura and Shaw (2014), who report a shift from the passive to the active voice in recent years associated to an increasingly promotional discourse. The trend is further realized by the preferred choice of personal pronouns (self-reference) and by the use of an active voice impersonal style: a shift from *it is argued* to *this paper argues*, both of which are widespread in these corpora. In a similar vein, the American National Standards Institute (ANSI, 1997) recommends the use of active voice whenever possible for purposes of clarity and readability. It appears that promotional discourse might result in texts that are easier to read.

6.4 Differences

Even when the findings show that at the macro-organizational level, Art and Design abstracts share some broad similarities, they also reveal a number of differences that set them apart. Disciplinary variation is evident in relation to move frequency, move sequence, move length and value, and rhetorical complexity within particular moves.

6.4.1 Art Abstracts

The results obtained in this study suggest that Art abstracts consist of a four-move canonical structure in which the opening move is most often Move 2 (*Presenting the research*). This pattern of organization is in agreement with other findings within the humanities (Lorés, 2004; Santos, 1996; Tseng, 2011) and in the social sciences (Ahmed, 2015; Cavalieri & Preite, 2017; Pho, 2008), in which Move 1 (*Situating the research*) stood consistently as an optional constitutive unit. Like Santos's research, in the present study, the conventional opening move (*Presenting the research*) tends to take a descriptive form by stating the main features of the study (corresponding to Step 1B in the CARS model) rather than indicating the purpose of the research. Move 2 is sometimes preceded by Move 1 (*Situating the research*). However, when Move 1 is present, it usually involves a fairly simple internal structure, typically characterized by a topic generalization that serves the purpose of establishing a territory (in Swales's terms), but generally lacking the move that creates a niche within that territory. This trend can probably be interpreted as a lower need to compete for a territory and to establish a niche, perhaps because the academic community which authors are addressing is not under intense pressure to publish. Using the ecological analogy underlying the CARS framework, Swales (1990) explains that "the amount of rhetorical work needed to create such a space depends on the existing ecological competition, on the size and importance of the niche to be established, and on various other factors such as the writer's reputation" (p. 142). In this sense, Art abstracts show a clear contrast with Design abstracts by revealing a lower degree of rhetorical complexity in their introductory moves.

Like Move 2 (*Presenting the research*), Move 3 (*Describing the methodology*) is obligatory in Art abstracts. The reason for this may be attributed to the type of research. In an empirical study, the inclusion of an adequate methodology is probably deemed necessary. As observed by Hyland (2000), the *Methods* section is evident in empirical studies, whose modes of inquiry "can be objectively characterized and labelled," while they are rare in theoretical research, "where procedures generally involve the elaboration of concepts and arguments through analogy, detailed exemplifications, hypothetical cases, peer engagement and so on" (p. 74). In his analysis of the *Methods* section of Management RAs, Lim (2006) points out that "Without a sound Method section, writers will not be able

to convince the readership of the validity of the means employed to obtain findings” (p. 283).

Another feature that was found to characterize Art abstracts is the importance attributed to Move 4 (*Summarizing the findings*) resulting from both frequency and length. When measured in terms of number of words, the average length of this move constitutes 39% of the abstract. Thus, both its frequency (93%) and its length and degree of detail grant it a prominent position as compared to other sections. According to Santos (1996), the salient textual space allocated to a move may reflect the visibility that the discipline needs to give to that aspect of the research regarded as the most relevant. Hyland (2009) notes that although the results of a study tend to be thought of as a mere list of findings, the section may actually serve a persuasive function by urging readers to accept the value of the research. In this light, Art writers may find it necessary to invest a high rhetorical effort to establish an empirical truth in a field with a stronger preference for theoretical research. Since only abstracts of data-based RAs were included in the corpus, this finding may be foregrounding the rhetorical value of Move 4. As noted by Thompson (1993) in her study of the Results section of RAs, “To legitimize scientific knowledge, scientists do not simply allow experimental results to speak for themselves, as advised by style manuals. Experimental results in science gain acceptance from an expert audience by means of a rhetorical presentation” (p. 126). In the case of Art texts, the persuasive force of Move 4 is likely to be projected by a varied repertoire of rhetorical resources, most of which have been identified by Thomson (p. 111): (1) *a detailed ordering of findings ranging from general to particular or from significant to non-significant*, (“The personality traits of ... were substantively correlated with ... Other traits, such as ... were correlated as well, though not as strongly.”) (2) *a methodological justification instead of a simple report of the method used* (“the penetration rate, frequency of attendance,... are closely approximated by the predictions of the Dirichlet model...”), (3) *the use of a that clause for introducing findings and thus highlighting and promoting the importance of the study* (“the result showed that...”), (4) *evaluations* (“Unlike in the case of small business incubators ... the value created by arts incubators ... is often intended to be extra-economic...”), (5) *comments on discrepancies* (“Despite issues surfaced through the study, arts incubators are

an effective tool for...”), and (6) *interpretations of the meaning/ significance of experimental data* (“Data from 20 interviews indicate that...”).

The second longest section in Art abstracts is Move 5 (*Discussing the research*), occupying 22% of the textual space and often consisting of two sentences. In addition, even though only one of the journals selected for the corpus, *The International Journal of Arts Management*, requires its inclusion, the section was found to be obligatory, according to the data analyzed. The move generally comprises the *conclusions* or *implications of the study*, and it sometimes includes *recommendations for future research*. The frequency of occurrence of this move in Art abstracts may be indicating the writers’ engagement in actively promoting the significance of the research. Hyland (2000) explains it as follows: “Conclusions therefore explicitly emphasize the value of the paper, either to the discipline or to the wider community” (p. 74). Scholarly persuasion is partly accomplished by a relatively long and obligatory move and partly conveyed by attitudinal lexis such as *effectively*, *fruitfully* or *useful*. However, persuasion is mostly evident in Art abstracts through the use of hedging devices such as modal and epistemic verbs. These devices allow authors to present facts as opinions, and in this way to mitigate the force of their claims by projecting modesty and appropriate caution (Hyland, 2009). The predominant use of modality as a way of expressing authorial stance may be interpreted in the light of academic background. The corpus shows that empirical research in the Art field draws mainly on the social sciences; the studies published in *The International Journal of Arts Management* are linked to the business domain whereas research in the journal *Empirical Studies of the Arts* receives its greatest contribution from psychology, judging from the authors’ backgrounds. Stotesbury (2003) found a different distribution in hedging devices based on areas of knowledge as hedges tended to appear in the *Results* or *Discussion* moves of social sciences abstracts but gathered mainly in the *Background* section in the humanities and the natural sciences. According to this finding, experimental research in Art is likely to borrow more from the social sciences than from the humanities.

Concerning style, Art writers appear to conform largely to EAP/ESP guidebooks such as Weissberg and Buker (1990), and Swales and Feak (2009), and to the standards set out by the ANSI (1997) style manual in terms of verb tense distribution, move sequence and length. These convergence patterns account for generic stability.

6.4.2 Design Abstracts

The data analyzed reveals differences between the two corpora in terms of frequency of occurrence, sequence, prominence and complexity of moves. Results show that Design abstracts consist of five conventional moves. Unlike Art texts, Design abstracts tend to include Move 1 (*Situating the research*), which appears to perform a clear rhetorical function in the research report and is the second longest move in the abstract. In this study, the length (21% of the text) and frequency of appearance (80%) of Move 1 prompted the analysis of its internal structure using Swales's (1990) CARS model for *Introductions*. This examination revealed a high degree of complexity in the opening moves that reproduces the rhetorical work performed in RA *Introductions*. In general, the sequence Move 1-2 in Design includes either two or three submoves, which are typically a *topic generalization* or a *centrality claim*, followed by the *creation of a gap*, and a closing *purpose* unit. This pattern of organization, which was also identified by researchers in other fields (Martín-Martín, 2003; Samraj, 2005), allows authors to provide a context within which their research has significance and value, and therefore, it results in abstracts with a marked persuasive function revealing a strong need to compete for a research space. The tendency is explained by Hyland (2000) as follows:

The soft disciplines, on the other hand, are characterized by the relative absence of well-defined sets of problems and a definite direction in which to follow them. Community members participate in less clearly identifiable areas of study and proceed along less heavily trodden paths of research. As a result, writers have to work much harder to acquaint readers with the background to their research and to construct its significance rhetorically. The presence of sometimes lengthy introductions in these abstracts therefore demonstrates attempts both to accommodate and engage explicitly with readers. (pp.71-72)

Within Move 2 (*Presenting the research*), a functional unit gained relevance in the findings, not on account of its frequency (26%) but because it did not fit any of the categories in the model used: the presence of definitions. This finding is consistent with Anthony (1999), whose study showed that including *definitions of concepts* was a standard

practice in RA *Introductions* of Computer Engineering. The interdisciplinary nature of the domain may explain the presence of this submove in Design, which, following on from Anthony's findings, Swales (2004) included as an optional step in his revised version of the *occupying the niche* move, renamed as *presenting the present work* (p. 232).

While the opening moves set the scene for the readers, Move 3 (*Describing the methodology*) explains how the research is done. What is particularly distinctive about this move is its length, which on average, corresponds to 34% of the textual space of the abstract. As mentioned before, researchers conducting experimental studies are likely to describe and justify the methodology used. However, considering that there is a marked tendency for the *Methods* section to be increasingly downplayed in abstracts (Hyland, 2000), Move 3 was not expected to be the longest constituent unit in the text. Perhaps other factors are coming into play here. A reason for this trend might be the lack of disciplinary agreement about appropriate methodology. Brett (1994) noted a similar phenomenon in Sociology RAs and concluded that "The greater length of the Methods section in sociology, as compared to the hard sciences, reflects a discipline in which there is less unanimity as to methodological practice" (p. 50). Furthermore, Swales (1990) points out that in areas in which research methodologies are well established, and even protocolized, the *Methods* section can appear as a succinct text or not be included at all. In these fields, an active discourse community of specialists can supply the shared knowledge needed for coherence (Piqué-Noguera, 2012; Samraj, 2005; San & Tan, 2012). This is not the case of Design. Possibly due to the relatively young age of the discipline, there is no consensus as to research methodologies, and therefore, writers take considerable textual space to explain and justify their procedures. On the other hand, the *DTM* move may be longer because empirical research in Design seems to be strongly linked to the engineering disciplines, where, as Hyland (2000) reports, there is "a fairly strong expectation that the abstract would indicate how the study was conducted" (p.73). In Design, this expectation might be even stronger in order to guarantee reliable findings that justify the creation of a research space.

Another salient feature of Move 3 in Design is the frequent use of self-referential subjects, such as "we" and "the group". This finding contradicts the widely-held belief that the methods are described with an impersonal style, as has been reportedly identified in other disciplines (Martín-Martín, 2003; Pho, 2008; Santos, 1996; Weissberg & Buker,

1990). Self-mention markers, however, were identified by Hyland (2003b). His data revealed that in the hard sciences, and particularly in Engineering, first-person pronouns were used in the *description of procedures* (Move 3) in order to foreground the author(s)' competence. In this respect, this data shows that Design may be drawing on conventions from the hard disciplines.

Regarding language, a distinctive feature of Move 4 (*STF*) was the choice of tense. While results are generally reported in the past, Design abstracts showed a preference for the present tense (53%). This trend may be considered a persuasive strategy that emphasizes the value of the research producing a more assertive rhetoric. According to Santos (1996), the use of the present tense in this move can be regarded as “a bold attempt to imply that the research reported has yielded indisputable, established knowledge” (p. 494). In the context of an increasingly competitive research field in which more academics are seeking to publish, the preferred use of the present is likely to perform a useful rhetorical function.

Both Move 4 (*Summarizing the findings*) and Move 5 (*Discussing the research*) were found to be conventional in Design and they were usually structured into one sentence. While Move 4 is articulated in an unmarked, conventional way, Move 5 is characterized by three salient features. First of all, its internal structure shows that Design texts tend to highlight the value of the research by presenting the practical applications of the study. Swales and Feak (2009) refer to this strategy as widespread, particularly in Engineering and Computer Science, where writers often promote the value of their findings by either stressing their utility and wider applications or claiming that the results are intrinsically positive (in several cases in this corpus, by providing a numerical summary of the results), as the following examples show:

Example 26: (D3 – *International Journal of Design*, Vol. 12(2), 2018)

[M5 <DTR>] Our findings highlight the potential of design to bring emotional value to products by embodying significant aspects of a person's self-identity. To do so, designers must consider both the importance and authenticity of the associations formed between an object and an individual.

Example 27: (D14 – *Design Studies*, Vol. 57, 2018)

[M5 <DTR>] This study offers a new perspective on design as collaborative inquiry –a social process of building coherence to co-construct valid knowledge.

The examples above provide evidence of a trend also discussed by Hyland (2000), who found that hard knowledge abstracts mainly resorted to rhetorical appeals to “novelty” and “benefit” to emphasize the significance of their findings, and that engineers, in particular, “underlined their practical, applied orientation by combining novelty with the utility of their research to the industrial world” (Hyland, 2009, p. 71). The results of the corpus used in the present study show a clear link between Design and Engineering.

The choice of functional units marked by promotional appeals is further reinforced by another prominent feature in Move 5: the widespread use of attitudinal lexis. The most common stance words used in Design were found to be adjectives such as *impactful*, *inspirational*, *new*, *potential*, or *practical*, nouns such as *potential*, *impact*, *innovation*, *transformation*, *advantages*, *improvements*, and the use of reporting verbs like *highlight* and *contribute*. These findings are congruent with Stotesbury (2003), who reported that “evaluative attributes were twice as common in the humanities and social science abstracts as in those from the natural sciences” (p. 332). Her study on evaluation in RA abstracts also revealed that in emerging fields, like Design, writers tend to resort mostly to attitudinal lexis as a way of persuasion.

The third worth-mentioning characteristic of Move 5 is that it rarely includes recommendations for further research. Huckin (personal communication, as cited by Swales, 1990, p. 173) referred to the trend among some scientists to omit the *recommendation* move so as to avoid giving advantage to others in view of the increasing competition among researchers. The pattern seems to apply to the Design domain.

A final distinction between Art and Design abstracts is related to move sequence. While Art abstracts tend to follow a fairly logical sequence that reproduces the IMRD structure except for occasional cases of *move reversal* (i.e. the inverted order of moves) or *move cycling* (i.e. the division of a move into parts), Design texts appear to display less regular sequencing patterns. Findings show some hybrid ways of articulating moves that bear similarities with patterns of hybridity found by Lorés-Sanz (2016). One of them is the

chain structure which involves the split of a move into two parts intertwined with another move. The other is a non-linear structure that appears in a *cascading* mode producing a sequence like M2-M3-M2-M3-M4-M3-M5. The author identified these hybrid structures in the context of a study of Sociology abstracts written by speakers of English as an additional language (EAL). She posits that these hybrid patterns emerge due to the influence of rhetorical uses of the language by non-Anglophone academics publishing in English. Her findings reveal how the use of English as a lingua franca on the academic stage has the potential to reshape scientific genres. The hybrid patterns found in Design texts might be pointing in that direction. One revealing feature is the presence of EAL scholars among the researchers authoring the texts in the corpus. Although when compiling the corpus conscious effort was made to select texts from authors affiliated with English speaking universities, a closer analysis shows that the research work carried out is multi-cultural, and that several authors might be EAL speakers. For this reason, varying writing practices are likely to permeate the discourse of the genre. In addition, because the publications are international journals that attract contributions from all over the world, they create a perfect breeding ground for the emergence of hybrid patterns which may, to some degree, have an impact on the writing practices of speakers of English as a native language (ENL). The cases of hybridity in the Design corpus are not significant in terms of occurrence (five samples), but they are revealing of a plausible trend. In Lorés-Sanz's view, "these new patterns manifest a modified manner of narrating the research, in ways which do not seem to be in keeping with Anglophone conventions but which may be equally effective for an international readership" (p. 74).

6.5 Concluding Remarks

On the whole, this study has shown that far from being an "objective" representation of the research article (ANSI, 1997, p.1), abstracts are a "selective" representation of the article's content (Hyland, 2000, p. 64). Through abstracts, writers foreground the information that will encourage further reading, and they demonstrate the significance of their contribution to the discipline, thus gaining acceptance as legitimate members of their academic community. Therefore, the analysis of the abstracts that

characterize each field helps throw light on what defines each disciplinary domain, and what is important and relevant to their scientific communities.

The structural and rhetorical characteristics of the abstracts in the corpora outline two distinct patterns. On the one hand, Art abstracts display a stable structure which reflects the logical order followed in the process of empirical research. The text achieves balance since all four conventional moves are prominent: Moves 2 and 3 on account of their frequency (they are obligatory moves), and Moves 4 and 5 due to their frequency and length. Because Art is a field that generates a significant amount of theoretical research, writers are likely to give center stage to reporting the results of empirical studies, and to later emphasize the value of the work when discussing the research in the final move, toned down predominantly by means of modality. Therefore, although Art is traditionally regarded as a humanistic discipline, it subscribes to patterns of evaluative language more often found in the social sciences, and to the reporting patterns of empirical research typical of the hard sciences. This is what Stotesbury (2003) refers to as the fluid nature of the dichotomy soft vs. hard sciences. Art abstract writing also provides a window to the research community addressed, in which there appears to be less competition for research space, and an interest in the outcome of any investigation endeavor.

On the other hand, Design abstracts exhibit less stability in terms of move sequence by including a number of hybrid cyclic configurations that divert from the expected order. Typically, abstracts conform to a five-move pattern and open with the moves that perform a persuasive function in RA *Introductions*, aimed at creating a research space. Also, authors appear to ascribe significant weight to Move 3 by providing a detailed account of the methodology, and they express evaluation mostly in Move 5 through attitudinal lexis. A number of elements make Design abstracts highly promotional texts: the rhetorical complexity of the introductory moves, the textual complexity of Move 3 and the use of self-reference when reporting the methodology, the preferred choice of the present tense when reporting results, and the rhetorical appeals to novelty, benefit, and utility in the closing move. Through the analysis of the Design corpus, it is possible to visualize an academic culture where competition is strong. It also becomes clear that Design is an emerging interdisciplinary field, which borrows from various disciplines and is likely to be branching into more specialized sub-fields. An additional feature provides further evidence of its

disciplinary context: the high incidence of multiple-authored papers (all samples in the corpus), which has been regarded by Okamura and Shaw (2014) as more frequent in fast-changing disciplines in which there is more competition.

All in all, whereas Design abstracts perform mainly a persuasive function aimed at establishing significance claims, Art abstracts appear to serve predominantly the pragmatic function of guiding readers through a well-organized, accessible text. Through this distinction, the applied nature of Design becomes transparent. As an applied science, it is probably under higher pressure to justify its research. This disciplinary variation may show how Art and Design have adapted to the conflicting pressures from different stakeholders. Following on from Okamura and Shaw (2014), it is possible to conclude that whereas Art abstracts have given priority to satisfying the demands of researchers as readers, editors, publishers, and information scientists, whose main concern is readability, Design abstracts have developed towards adapting to a more competitive environment that addresses the needs of researchers as authors. Ultimately, all abstracts, as suggested by the literature (Hyland, 2000; Hyland, 2003b; Hyland & Tse, 2004; Martín-Martín & Burgess, 2004; Stotesbury, 2003), are exponents of promotional discourse; however, the predominant patterns of each discipline reflect what their respective academic cultures give priority to.

6.6 Proposed Patterns of Constituent Moves

In order to address the second research question posed for this study –What distinctive rhetorical organization features characterize each discipline? –the analysis of the rhetorical structure of abstracts in the two corpora provides a model of the elements that are constitutive of each discipline. The hierarchical structure of the abstracts into submoves (Santos, 1996) or steps (Swales, 1990) results from the internal analysis of the constituent parts that show higher complexity. This framework is a combination of Santos's proposed pattern for abstracts and Swales's schema for RA *Introductions*.

6.6.1 Art Template

According to the preliminary data on this study, a typical RA abstract in Art is made up of the following moves (the unit enclosed between brackets is optional):

(Move 1 – Situating the research)

Submove 1A – Claiming centrality and/or

Submove 1B – Making topic generalizations and/or

Submove 1C – Reviewing items of previous research and/or

Submove 1D – Counter claiming and/or

Submove 1E – Indicating a gap and/or

Submove 1F – Question raising

Move 2 – Presenting the research

Submove 2A – Outlining purposes and/or

Submove 2B – Announcing present research

Move 3 – Describing the methodology

Move 4 – Summarizing the findings

Move 5 – Discussing the research

Submove 5A – Drawing conclusions and/or

Submove 5B – Making recommendations

6.6.2 Design Template

In turn, an abstract of Design is likely to include the following elements (again, the unit enclosed between brackets is optional):

Move 1 – Situating the research

Submove 1A – Claiming centrality and/or

Submove 1B – Making topic generalizations and/or

Submove 1C – Counter claiming and/or

Submove 1D –Indicating a gap and/or

Submove 1E –Question raising

Move 2 –Presenting the research

Submove 2A – Outlining purposes and/or

Submove 2B –Announcing present research and/or

Submove 2C –Explaining or defining a concept

Move 3 –Describing the methodology

(Submove 3A –Explaining or defining a concept)

Move 4 –Summarizing the findings

Move 5 –Discussing the research

Submove 5A –Drawing conclusions and/or

Submove 5B –Highlighting the value of the findings and/or

Submove 5C –Making recommendations

6.7 Limitations of the Study

In the context of this study, there are some limitations that must be addressed. First of all, as compared to other disciplinary studies that relied on a bigger corpus (Hyland, 2000; Santos, 1996; Tseng, 2011), this descriptive research aimed at providing a first exploratory examination into Art and Design abstracts using a relatively small sample. Therefore, further research using larger corpora from a wider variety of journals may help corroborate and expand these findings. In addition, the data could be validated and enhanced by means of interviews with expert informants in the fields of Art and Design. Their contributions about disciplinary writing practices and expectations might add further insights into the analysis. According to Swales (2004, p. 97), “the use of specialist informants can often provide a viable shortcut to gathering the necessary background for understanding how the discourses we are interested in have come to be as they are.” Also, it should be remembered that the findings of this study are applicable to empirical research articles. Theoretical papers may have a different organizational pattern and linguistic realizations. Thus, further lines of research might be the analysis of the rhetorical features of theoretical papers and the development of comparative studies of both genres in order to

have a more accurate picture of abstracts in these two disciplines. Just as Tankó's (2017) study on literary abstracts illustrates, knowledge about this genre may also be enriched by an examination of subdisciplinary variation (e.g. Fashion Design, Industrial Design, Music, Visual Arts, etc.) as each subdiscipline is a different discourse community with its own values and norms (Kanoksilapathan, 2012). Finally, more research is needed on the linguistic features that signal move boundaries and on the language choices that differentiate moves. On the whole, it is expected that the present study may provide a starting point for the delineation of conventional abstracts in Art and Design, and that the move patterns proposed may serve only as tentative models until further research helps map the conventions of these virtually unexplored fields.

6.8 Implications of the Study

Considering that there appears to be no documented research into the generic features of abstracts in the fields of Art and Design, the present study can make a valuable pedagogical contribution to EAP/ESP. The findings of this investigation are expected to be relevant for novice researchers, students, and teachers who train them. First, understanding the rhetorical conventions that govern abstract writing in their respective fields may open up opportunities for novice writers in the research publishing environment. The central role that abstracts play in the RA points to the need for effective research space creation and move organization. This training may benefit not only novice researchers who intend to publish in English, but also writers in EFL (English as a Foreign Language) contexts like Argentina, where they are increasingly required to write an English version of the abstracts for their Spanish-written papers. Second, becoming aware of the function and generic conventions of abstracts in their fields of specialization can help improve students' reading and writing skills. Third, being familiar with the trends and discipline-specific conventions that shape abstracts can assist instructors in the design of course materials for teaching the RA abstract genre. This knowledge is essential to raise rhetorical awareness about the RA abstracts of the Art and Design fields.

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Appendix A: References of the corpora

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Appendix B: Analysis of the corpora

A1 –*International Journal of Arts Management*, Vol. 19(1), 2016

Audience behaviour or buyer behaviour: what can models of brand behaviour say about arts audiences?

[M2 <PTR>] This study investigates the extent to which an empirically based model of consumer brand choice behaviour applies to arts participation.

[M3 <DTM>] Based on data from a national survey conducted in England,

[M4 <STF>] the penetration rate, frequency of attendance, share of total audience and proportion of audience members who are loyal to one art form only are closely approximated by the predictions of the Dirichlet model, with one or two exceptions.

[M5 <DTR>] The results suggest that what we know about behavioural loyalty towards brands also applies at the macro level to arts. Furthermore, this holds across regions of England. The analysis is restricted to arts attendance at an aggregate level. The results indicate that the same patterns would be seen across genres or venues. However, the more detailed data required to test this do not seem to be available.

A2 –*International Journal of Arts Management*, Vol. 19(2), 2017

Knowledge-centric arts organization: connecting practice to performance.

[M2 <PTR>] The authors explore the concepts of knowledge-centric organizations in the performing arts sector as a means to understand how specific organizational practices might relate to measures of financial and operational performance.

[M3 <DTM>] Employing their definition of a knowledge-centric arts organization, the authors conduct an exploratory quantitative study of 368 small and mid-sized non-profit performing arts organizations in the United States using primary data on 36 organizational practices and secondary data on 21 performance metrics. Analysis of these two data sources independently

[M5 <DTR>] suggests a gap between organizations' practices and their performance.

[M3 <DTM>] Statistical analyses using factor analysis and linear regression

[M4 <STF>] identify seven distinct performance metrics that are positively associated with knowledge-centric practices.

[M5 <DTR>] These findings can serve as a basis for investigation of how organizations can be sustainable and operate effectively in a knowledge-driven society.

A3 –*International Journal of Arts Management*, Vol. 20(2), 2018

Creative futures for new contemporary artists: Opportunities and barriers.

[M1 <STR>] Career prospects for recent art college graduates transitioning to self-employment remain challenging.

[M2 <PTR>] The authors investigate the opportunities and barriers faced by emerging artists

[M3 <DTM>] using a case study of a major contemporary art exhibition and its follow-up shows. Data from 20 interviews

[M4 <STF>] indicate that the exhibition is viewed as a useful steppingstone, offering such benefits as recognition and exposure, networking, marketing, and enhanced ambition and motivation. Only a few exhibiting artists receive monetary rewards from sales or prizes. The lack of financial assistance means that most artists are financially challenged. Artists also lack knowledge of market conditions and have a tendency to undervalue their art work. Nevertheless, many artists express no interest in developing commercial skills and have a pessimistic view of public funding. Some artists show signs of an anti-entrepreneurial mindset.

[M5 <DTR>] The authors argue that permanent platforms are required in order to provide emerging artists with both tangible and emotional support.

A4 –*International Journal of Arts Management*, Vol. 20(3), 2018

Distributed agility: Artist co-management in the music attention economy.

[M2 <PTR>] This article investigates the relationship between the concept of attention- and reputation-building mechanisms in the new music industries, with a specific focus on artist co-management. It addresses the following research question: How can artists and artist managers design artist-led organizations that operate effectively and efficiently in a world in which attention is increasingly scarce? The argument is made that agile artist comanagement practices are becoming ever more useful due to the plunging costs of experimentation in the increasingly globalized music industries.

[M3 <DTM>] In order to explore these issues, interviews were held with 20 artist managers from a number of different territories of the international music industries, including Australia, Canada, the United Kingdom and the United States.

[M5 <DTR>] The findings highlight both the challenges and the opportunities facing artists and artist managers in relation to the specific deal structures that can facilitate distributed agility.

A5 –*International Journal of Arts Management*, Vol. 20(2), 2018

Value creation by and evaluation of US arts incubators.

[M2 <PTR>] This study deepens our understanding of an element of the infrastructure for cultural entrepreneurship in the United States: the arts incubator, an organizational form or programmatic initiative that exists at the intersection of artistic production, entrepreneurship and public policy.

[M3 <DTM>] The qualitative cross-case analysis of four arts incubators of different types [M4 <STF>] opens the black box of incubator operations to find that arts incubators create value for artists and arts organizations through both direct service provision and indirect echo effects, but that the provision of value to communities or systems is attenuated and largely undocumented. Unlike in the case of small business incubators or tech incubators, the value created by arts incubators in the United States is often intended to be “extra-economic” – that is, not defined by wealth creation. All four arts incubators are found to play some part in lowering barriers to entrepreneurial action, helping their clients, directly or indirectly, to

connect their means with their ends. Despite issues surfaced through the study, arts incubators are an effective tool for supporting cultural entrepreneurship.

[M5 <DTR>] The findings have implications for policy-makers and for arts incubator managers and their clients.

A6 –*International Journal of Arts Management*, Vol. 19(1), 2016

A portrait of the artist as an employee: The impact of personality on career development.

[M1 <STR>] Although there is a long history of research showing strong evidence that artists differ from the general population along personality dimensions related to creativity, there has been little investigation of the impact of personality on job and career satisfaction. Research has focused on attributes related to creativity and on the vocational interests of those who choose a career in art.

[M2 <PTR>] To address this gap in the literature,

[M3 <DTM>] the authors conducted an analysis of personality and job/career satisfaction among a sample of 566 artists employed in a variety of work settings.

[M4 <STF>] The personality traits of optimism and emotional stability were substantively correlated with career satisfaction. Other traits, such as teamwork orientation, work drive and customer orientation, were correlated as well, though not as strongly.

[M5 <DTR>] The findings provide some important implications for how artists should be managed. These implications are discussed, along with some suggestions for future research.

A7 –*Empirical Studies of the Arts*, Vol. 35(2), 2017

It's tough to be a critic: Professional versus nonprofessional music judgment.

[M2 <PTR>] Potential differences between professional critics' and nonprofessional undergraduates' aesthetic appraisals in music were investigated

[M3 <DTM>] via intercorrelations and frequency distributions of ratings.

[M4 <STF>] As expected, for 50 randomly selected albums, professional critics (“experts”) who had previously rated these albums showed highly consensual ratings ($r = +.61$, $p < .0005$), as well as mound-shaped distributions approaching normality (i.e., the majority of ratings near neutrality and fewer scores at greater extremes). In contrast, 15 nonprofessionals’ rating distributions (“nonexperts”) for the same sample of albums varied more from mound-shaped distributions compared to the professional critics. Also, none of the nonprofessionals’ ratings were correlated with the critics’ ratings, and relatively few of the nonprofessionals’ ratings were correlated with each other (average $r = +.08$, $N = 105$ pairs).

[M5 <DTR>] The philosophy that beauty is completely in the eye of the beholder, at least for music perception, was only empirically supported in the case of nonprofessional, nonexpert judges.

A8 –*Empirical Studies of the Arts*, Vol. 36(2), 2018

Energy, popularity, and the circumplex: A computerized analysis of emotion in 143,353 musical pieces.

[M1 <STR>] The circumplex model of affect claims that emotions can be understood in terms of their relative positions along two dimensions, namely pleasant-unpleasant and active-sleepy; and numerous studies of small samples of music have yielded data consistent with this.

[M2 <PTR>] + [M3 <DTM>] The present research tests whether the energy and BPM (proxies for the arousal dimension) and popularity as expressed in terms of sale charts (a possible proxy for the pleasantness dimension) could predict scores on six moods in 143,353 musical pieces.

[M4 <STF>] Findings concerning energy were clearly consistent with the circumplex model; findings for BPM were consistent though more equivocal; and findings concerning popularity yielded only limited support.

[M5 <DTR>] Numerous relationships between popularity and mood were indicative of the commercial market for specific genres; and evidence demonstrated considerable differences in the mood scores between genres. In addition to the circumplex model and aesthetic

responses, the findings have implications for music marketing, therapy, and everyday listening.

A9 –*Empirical Studies of the Arts*, Vol. 36(1), 2018

Geometric regularity, symmetry and the perceived beauty of simple shapes.

[M2 <PTR>] Geometric regularity is introduced as a simplicity metric for understanding the esthetics of basic polygons.

[M3 <DTM>] In Experiment 1, undergraduates rated the perceived beauty of triangles varying in geometric regularity defined by their side-length standard deviation. Each type of triangle was used: equilateral, isosceles, right, and scalene.

[M4 <STF>] Ratings increased with an increase in regularity and were highest for symmetric shapes.

[M3 <DTM>] The results were replicated in a second experiment using each type of quadrilateral: square, rectangle, parallelogram, rhombus, kite, isosceles, and trapezoid.

[M4 <STF>] Although ratings in Experiment 2 also increased with regularity, symmetry did not perfectly predict ranked order of preference.

[M5 <DTR>] Symmetry, partial symmetry, and familiarity are discussed as factors that can account for the results. On the basis of the shapes used in this study, we conclude that simplicity in the form of geometric regularity is usually but not always preferred.

A10 –*Empirical Studies of the Arts*, Vol. 34(2), 2016

Mood and flow: Comparing the benefits of narrative versus poetry writing.

[M2 <PTR>] We examined the benefits of a single session of narrative and poetry writing to determine the immediate effects of each on mood and flow.

[M3 <DTM>] Following a sad mood induction, we randomly assigned participants to a narrative versus poetry format and to an express versus a distract condition. We measured affect before and after writing and asked participants to complete a flow and enjoyment questionnaire after writing.

[M4 <STF>] The distract condition improved affect (by increasing positive and decreasing negative affect) more than did the express condition, regardless of writing format. The poetry format resulted in greater enjoyment than the narrative format, but flow did not differ by condition.

[M5 <DTR>] Results show that, parallel to findings with drawing, writing to distract is a more effective means of mood improvement than writing to express, at least in the short term. Distraction appears to be the driving force leading to greater mood improvement, regardless of writing format.

A11 –*Empirical Studies of the Arts*, Vol. 36(1), 2018

Do people have a thing for bling? Examining aesthetic preferences for shiny objects.

[M1 <STR>] Researchers in the evolutionary aesthetics tradition have suggested that people prefer shiny objects because glossiness connotes water.

[M2 <PTR>] We consider some methodological issues in past research and present an experiment that manipulated the glossiness of metal objects.

[M3 <DTM>] Young adults ($n = 134$) viewed silver coins that were either dull or in “brilliant uncirculated” condition as well as copper cylinders that were either rough and tarnished, polished with a brushed surface, or polished with a mirror finish.

[M4 <STF>] Ratings of attractiveness showed that people preferred the shiny over the tarnished coin and the glossy copper bar over the tarnished and brushed ones.

[M5 <DTR>] These effects were not simply due to perceived quality or implied effort. The findings demonstrate that, after many potential confounds have been avoided or controlled for, people do seem to have a thing for bling.

A12 –*Empirical Studies of the Arts*, Vol. 35(2), 2017

Posing orientation in van Gogh’s portraits and self-portraits.

[M1 <STR>] In the history of portraiture, left cheek poses dominate. However, self-portraits favor the right cheek. Previous studies consistently report left biases for portraits

of others and right biases for self-portraits; only one study has examined self-portrait pose orientation across a single artist's corpus.

[M2 <PTR>] The present study investigated posing biases of prolific self-portraitist Vincent van Gogh.

[M3 <DTM>] Posing orientation in single-figure portrait ($N = 174$) and self-portrait ($N = 37$) paintings was coded.

[M4 <STF>] Unlike other artists, van Gogh was equally likely to paint himself in left and right cheek poses. Similarly, portraits of others showed no difference in left and right cheek frequencies but were distinguished by the inclusion of midline poses.

[M5 <DTR>] These data highlight the importance of single artist cases studies when investigating portrait posing biases.

A13 – *Empirical Studies of the Arts*, Vol. 37(2), 2019

Feeling like crying when listening to music: Exploring musical and contextual features.

[M1 <STR>] Feeling like crying is a common response to music. Recent work suggests two forms of aesthetic crying: an awe-inspired, positive kind and a distressed, sad kind. Besides their emotional tone, what differentiates these experiences?

[M2 <PTR>] The present research examined the context and subjective musical content of aesthetic crying.

[M3 <DTM>] A sample of 961 adults described the emotional tone, musical features, and social and environmental contexts of a feeling like crying experience.

[M4 <STF>] Awe experiences more often involved religious or classical music that was complex and beautiful, and people were often with others and hearing the music live. Sad experiences more often involved popular genres (e.g., Pop, Soul or R&B, Country) that were cold and unpleasant, and people often noted that the music reminded them of someone or that they already felt like crying before listening to the music.

[M5 <DTR>] The distinctions between these two kinds of experiences suggest that current theories of aesthetic crying could be fruitfully expanded.

A14 –*Empirical Studies of the Arts*, Vol. 37(1), 2019

Which nonvocal musical instrument sounds like the human voice? An empirical investigation.

[M1 <STR>] Nonvocal musical instruments like the oboe, cello, and violin, have been described as resembling the human voice. However, much of the evidence is based on historical reports and hearsay.

[M2 <PTR>] + [M3 <DTM>] In this study, 174 participants rated instruments according to how much they sounded like the human voice.

[M4 <STF>] Analysis revealed that no nonvocal instrument was rated as being voicelike, with moderate mean ratings for the clarinet, oboe, violin, and cello. The violin was rated as statistically more voicelike than the trumpet. Voicelikeness was statistically higher for the instrument which the individual played or an instrument which the individual valued.

Monophonic instruments such as the clarinet were also rated as overall more voicelike than those which typically could sound several parts at the same time such as the piano.

[M5 <DTR>] Referring to an instrument as voicelike may be better thought of as a defacto for the instrument's (and player's) expressive capabilities.

A15 –*Empirical Studies of the Arts*, Vol. 34(1), 2016

The effect of color on automaticity of aesthetic judgments.

[M2 <PTR>] The cognitive processing mode used to process color while making aesthetic judgments was examined.

[M3 <DTM>] In two experiments, participants rated artistic photographs for preference. Half the participants performed a concurrent memory preload task while rating the photographs to index whether automatic or controlled modes of processing was engaged.

[M4 <STF>] Overall, the results showed that preload had little effect on the pattern of ratings for color, black and white, and false color versions of the photographs.

[M5 <DTR>] The results suggest that color processing during the judgment task was automatic and required few cognitive resources. Furthermore, the results indicate that the

dual-mode processing framework can be a useful theoretical tool for examining the cognitive processes that underlie aesthetic experience.

D1 –*International Journal of Design*, Vol. 13(1), 2019

Practice-centered design of an anesthesia medication template to reduce medication handling errors in the operating room.

[M2 <PTR>] This case study examines the design process of the Anesthesia Medication Template (AMT), a low cost, standardized layout template for the staging and identification of syringes on top of the anesthesia cart in the hospital operating room.

[M3 <DTM>] The project was conducted in a participatory design framework as co-design between physicians and designers. Led by anesthesiologists and immersed in the work setting as practice-centered design, design development addresses individual, environmental and organizational aspects of the hospital as high-stakes work setting. The layout of the AMT was developed based on observational studies and a cognitive analysis of medication management workflows, conducted by medical practitioners. The physical design and product development of the template reflects best practices in Interaction Design, Visual Communication Design and Industrial Design. The design was incrementally refined using a series of iterative prototypes that were evaluated with expert practitioners in simulation studies and in the work setting. The final design of the template was implemented and monitored in a long-term study.

[M4 <STF>] Four years of data since the introduction of the AMT document significant improvements in medication handling safety

[M5 <DTR>] and the AMT has been adapted for use at other medical centers across the United States.

D2 –*International Journal of Design*, Vol. 10(2), 2016

Design for behavior change as a driver for sustainable innovation: Challenges and opportunities for implementation in the private and public sectors.

[M1 <STR>] Over the last decade, design for behaviour change has become increasingly recognised as a strategy for enabling social change. Despite this, we are far from understanding its implementation, especially through the private and public sectors.

[M3 <DTM>] This study has surveyed private and public sector stakeholders with regard to their current knowledge of, and approach to, design for behaviour change.

[M2 <PTR>] The aim was to identify the challenges for professional stakeholders in understanding, accessing and implementing design for behaviour change.

[M3 <DTM>] Underpinned by a literature review of design for behaviour change theories and approaches, an online survey and two focus groups with private and public sector stakeholders were conducted with particular focus on small and medium size enterprises (SMEs).

[M4 <STF>] The results identified that there is a significant disconnect between available theoretical knowledge of design for behaviour change and its practical implementation. Reasons for this include a lack of awareness and common language, of evidence based examples, and of evaluation methods and inter-sector collaborations.

[M5 <DTR>] In response, a set of recommendations has been developed to propose ways forward for the wider understanding and application of design for behaviour change.

D3 –*International Journal of Design*, Vol. 12(2), 2018

Designing objects with meaningful associations.

[M1 <STR>] Objects often become cherished for their ties to beliefs, experiences, memories, people, places or values that are significant to their owner. These ties can reflect the ways in which we as humans use objects to characterise, communicate and develop our sense of self.

[M2 <PTR>] This paper outlines our approach to applying product attachment theory to design practices.

[M3 <DTM>] We created six artefacts that were inspired by interviews conducted with three individuals who discussed details of their life stories. We then evaluated the

associations that came to mind for our participants when interacting with these newly designed artefacts to determine whether these links brought meaning to them.

[M5 <DTR >] Our findings highlight the potential of design to bring emotional value to products by embodying significant aspects of a person’s self-identity. To do so, designers must consider both the importance and authenticity of the associations formed between an object and an individual.

D4 –*International Journal of Design*, Vol. 12(3), 2018

Memory probes: Exploring retrospective user experience through traces of use on cherished objects.

[M1 <STR>] Our daily interactions with objects can not only leave traces of use on the objects but also leave memories in our minds. These human traces on objects are potential cues that can trigger our autobiographical memories and connect us to social networks.

[M2 <PTR>] The first aim of this paper is to demonstrate what might be a suitable method of inquiry into the way materials can enrich dialogues about remembered experiences derived from human traces left on cherished possessions. The second aim is to investigate how the accumulation of human traces on objects influences people’s remembering and usage.

[M3 <DTM>] The design of our research artifacts, Memory Probes, was situated in relation to three spectra of paired values: (1) the familiarity and strangeness of tool use, (2) the definiteness and ambiguity of data capture, and (3) the objective and subjective reality of interpretation.

[M4 <STF>] Our field study revealed a transactive nature between traces of interaction with possessions and memories in the owners’ minds. It also informed us of how gradual and curiosity-driven understanding could become a methodological nuance when we are empathetically engaged in a collaborative way of knowing with other participants.

[M5 <DTR>] To conclude, several implications for designing products that can participate in our everyday reminiscing and meaning-making are proposed.

D5 –*International Journal of Design*, Vol. 10(1), 2016

The Goldilocks Conundrum: The “just right” conditions for design to achieve impact in public and third sector projects.

[M1 <STR>] What are the most important conditions necessary for a design-led approach to innovation or transformation to flourish in an organization?

[M2 <PTR>] This paper introduces and discusses three ‘just right’ conditions for design to achieve the desired impact in the context of public and third sector projects, where *third sector* refers to a broad range of community and volunteer groups. The paper draws on a six-month Arts and Humanities Research Council (AHRC) funded project, aimed at identifying and mapping the impact and value of design in public and third sector organizations.

[M3 <DTM>] Our research insights are derived from six case studies that were co-created with the project participants of service innovation projects. The case studies were selected based on three criteria: 1) an acknowledged value that design-led approaches have brought to the project; 2) access to a triangulated base of stakeholders: service users, service commissioners and service designers; 3) projects that cover a range of sectors from healthcare, mental well-being, youth services and social care across England, Scotland and Australia.

[M4 <STF>] In total eighteen conditions were identified and

[M3 <DTM>] the ten most important conditions were selected and ranked by the research participants through a workshop validation session. We further clustered these into three overarching themes: *community building*, *capacity*, and *leadership* based on the authors’ previous experiences with public service innovation projects.

[M5 <DTR>] This research suggests that *community building* is valued above *leadership* and *capacity* as the most important condition for design to have the greatest impact in innovation and transformation projects.

D6 –*International Journal of Design*, Vol. 11(2), 2017

How design education can use generative play to innovate for social change: A case study on the design of South African children’s health education toolkits.

[M1 <STR>] There’s been a paradigm shift in design from focusing on aesthetic worth to focusing more on the interplay of form and function to assume social responsibility and to pursue social change through innovation. As a result, the discipline needs models for how to educate responsible designers who see design not only as a commercial enterprise but more importantly as a catalyst for social change, and are able to innovate visual technologies that address social problems that are wicked by nature, and are far more complex and interdisciplinary than merely problem-solving how to aestheticize a client’s content.

[M2 <PTR>] This paper introduces such a model called generative play that integrates psychology, game theory, and economics with design. Specifically, generative play takes root at the intersection of activity theory, generative research, flow, play, and generative justice. It offers an interdisciplinary methodology that addresses wicked problems in health through social innovation and instills cognizance of social responsibility in design students.

[M3 <DTM>] In a case study of the wicked problem of children’s health education in South Africa, 40 fourth-year design students used generative play; and, through an analysis of their logbook entries and design outcomes,

[M4 <STF>] we found that generative play does engender cognizance of social responsibility and pleasure and does facilitate social innovation.

D7 –*Design Studies*, Vol. 52, 2017

Interactive design galleries: A general approach to interacting with design alternatives.

[M1 <STR>] Designers work by exploring alternatives. While extant parametric modelers theoretically define alternatives, their interfaces generally provide access to designs serially.

[M2 <PTR>] Our goal is to change this near-universal feature of parametric interfaces to support exploration using multiple alternatives.

[M3 <DTM>] We built a prototype gallery system on a web browser that supports saving alternatives from three graph-based parametric modeling tools. Users can retrieve alternatives from the gallery, share them with others, and combine them to generate more alternatives. We evaluated this system qualitatively in a workshop with ten expert designers working on their own design problems.

[M4 <STF>] We learnt that users prefer the gallery to their accustomed workarounds.

[M5 <DTR>] The study produced several directions for new user interface designs.

D8 –*Design Studies*, Vol. 50, 2017

Prototype for X (PFX): A holistic framework for structuring prototyping methods to support engineering design.

[M1 <STR>] While scholars have studied benefits and drawbacks of prototype development, few have attempted to create a holistic framework to structure prototyping and combine insights from across technical domains.

[M3 <DTM>] An extensive literature review of prototyping research and study of novice designers' mental models of prototyping is used

[M2 <PTR>] to develop and validate a set of specifications for a holistic and structured prototyping framework. This work then introduces a novel framework to help structure prototyping, Prototype for X (PFX), as an alternative to traditional prototyping approaches in engineering design.

[M5 <DTR>] Early results highlight the potential impact PFX can have on the design process and on the final design product compared to those achieved through ‘prototyping in the wild’. Future research directions are also discussed.

D9 –*Design Studies*, Vol. 42, 2016

The effects of representation on idea generation and design fixation: A study comparing sketches and function trees.

[M1 <STR>] Representations in engineering design can be hand sketches, photographs, CAD, functional models, physical models, or text. Using representations allows engineers to gain a clearer picture of how a design works.

[M2 <PTR>] We present an experiment that compares the influence of representations on fixation and creativity.

[M3 <DTM>] This experiment presents designers with an example solution represented as a function tree and a sketch, we compare how these different external representations influence design fixation as they complete a design task.

[M4 <STF>] Results show that function trees do not cause fixation to ideas compared to a control group, and that function trees reduce fixation when compared to sketches.

[M5 <DTR>] Results from this experiment show that function tree representations offer advantages for reducing fixation during idea generation.

D10 –*Design Studies*, Vol. 64, 2019

Constructing shared professional vision in design work: The role of visual objects and their material mediation.

[M1 <STR>] The design process requires coordination between professions that have different ways of seeing.

[M3 <DTM>] Using ethnographic data from a building project,

[M2 <PTR>] this paper explores how architects and engineers mobilize visual objects to coordinate their professional visions around a design issue.

[M4 <STF>] The findings articulate the visual practices whereby design professionals move from a *fragmented* towards a *shared professional vision*. In this move, they cease looking at the design issue from within their disciplinary perspective, and begin taking inspiration from each other's. They further adjust the emergent shared professional vision, by iteratively narrowing and broadening its focus.

[M5 <DTR>] The paper contributes to the practice perspective in design studies, explaining how different ways of seeing are coordinated through practical engagement with visual objects.

D11 – *Design Studies*, Vol. 53, 2017

Investigating the effects of client imagery on the ideation process of graphic design.

[M1 <STR>] Prior work has examined how images supplied by design clients influence the output of graphic design ideation, however, little is known about the effect upon the ideation process itself.

[M2 <PTR>] This article reports on an empirical study conducted with graphic design students engaged in design ideation.

[M3 <DTM>] Findings are based on think-aloud protocol data, as well as participants' subjective ratings of their ideation process using factors based on the principle of design flow.

[M4 <STF>] Results show some statistically significant effects on the design process of the participants, particularly increases in their reported anxiety and sense of involvement in the task. In addition, some correlations are identified between design output resulting from exposure to client provided images, and the process of designing those outputs.

D12 – *Design Studies*, Vol. 62, 2019

Accelerating product prototyping through hybrid methods: Coupling 3D printing and LEGO.

[M2 <PTR>] This paper introduces Hybrid Prototyping as a way to couple different prototyping methods; combining their complementary affordances and mitigating their limitations. To characterise and investigate this approach,

[M3 <DTM>] a simulation-based study was conducted into the coupling of low-cost 3D printing and LEGO®.

[M2 <PTR>] Key benefits hypothesised are reduced fabrication time and increased reconfigurability.

[M3 <DTM>] Six primitive 3D shapes are simulated using a continuum of hypothetical brick sizes.

[M4 <STF>] Results show a reduction in fabrication time of 45% and a reconfigurability of 57% at the optimum.

[M3 <DTM>] A case study

[M5 <DTR>] highlights the compounded improvements over 3D printing for an iterative prototyping process. These findings mean that increases in prototyping iterations can be made due to reduced time and material costs, accelerating the product development process.

D13 –*Design Studies*, Vol. 61, 2019

Crowdsourcing inspiration: Using crowd generated inspirational stimuli to support designer ideation.

[M1 <STR>] Inspirational stimuli, such as analogies, are a prominent mechanism used to support designers. However, generating relevant inspirational stimuli remains challenging.

[M2 <PTR>] This work explores the potential of using an untrained crowd workforce to generate stimuli for trained designers.

[M3 <DTM>] Crowd workers developed solutions for twelve open-ended design problems from the literature. Solutions were text-mined to extract words along a frequency domain, which, along with computationally derived semantic distances, partitioned stimuli into closer or further distance categories for each problem. The utility of these stimuli was tested in a human subjects experiment ($N = 96$).

[M5 <DTR>] Results indicate crowdsourcing holds potential to gather impactful inspirational stimuli for open-ended design problems.

[M4 <STF>] Near stimuli improve the feasibility and usefulness of designs solutions, while distant stimuli improved their uniqueness.

D14 –*Design Studies*, Vol. 57, 2018

Rendering multi-dimensional problem space as an unfolding collaborative inquiry process.

[M2 <PTR>] This study investigates a group working together in an authentic work setting as they collaboratively render a problem space.

[M3 <DTM>] We employed an existing data set of a group designing for an European automaker. We used a collaborative inquiry paradigm as a lens for investigation. We analysed the dimensions of the problem space the group renders and the collaborative inquiry practices used. The group rendered a multi-dimensional problem space integrating user experience and organizational considerations for realizing user-centred products.

[M4 <STF>] We observed collaborative inquiry practices as four modes of evoking ways of knowing and two modes of building coherence.

[M5 <DTR>] This study offers a new perspective on design as collaborative inquiry – a social process of building coherence to co-construct valid knowledge.

D15 –*Design Studies*, Vol. 46, 2016

Evidence-based design heuristics for idea generation.

[M1 <STR>] How do product designers create multiple concepts to consider?

[M2 <PTR>] To address this question,

[M3 <DTM>] we combine evidence from four empirical studies of design process and outcomes, including award-winning products, multiple concepts for a project by an experienced industrial designer, and concept sets from 48 industrial and engineering designers for a single design problem. This compilation of over 3450 design process outcomes is analyzed

[M2 <PTR>] to extract concept variations evident across design problems and solutions.

[M4 <STF>] The resulting set of patterns, in the form of 77 Design Heuristics, catalog how designers appear to introduce intentional variation into conceptual product designs.

[M5 <DTR>] These heuristics provide ‘cognitive shortcuts’ that can help designers generate more, and more varied, candidate concepts to consider in the early phases of design.

Appendix C: Move classification by Rater 1

A1 –*International Journal of Arts Management*, Vol. 19(1), 2016

Audience behaviour or buyer behaviour: what can models of brand behaviour say about arts audiences?

[M2 <PTR>] This study investigates the extent to which an empirically based model of consumer brand choice behaviour applies to arts participation.

[M3 <DTM>] Based on data from a national survey conducted in England,

[M4 <STF>] the penetration rate, frequency of attendance, share of total audience and proportion of audience members who are loyal to one art form only are closely approximated by the predictions of the Dirichlet model, with one or two exceptions.

[M5 <DTR>] The results suggest that what we know about behavioural loyalty towards brands also applies at the macro level to arts. Furthermore, this holds across regions of England. The analysis is restricted to arts attendance at an aggregate level. The results indicate that the same patterns would be seen across genres or venues. However, the more detailed data required to test this do not seem to be available.

A2 –*International Journal of Arts Management*, Vol. 19(2), 2017

Knowledge-centric arts organization: connecting practice to performance.

[M2 <PTR>] The authors explore the concepts of knowledge-centric organizations in the performing arts sector as a means to understand how specific organizational practices might relate to measures of financial and operational performance.

[M3 <DTM>] Employing their definition of a knowledge-centric arts organization, the authors conduct an exploratory quantitative study of 368 small and mid-sized non-profit performing arts organizations in the United States using primary data on 36 organizational practices and secondary data on 21 performance metrics. Analysis of these two data sources independently

[M5 <DTR>] suggests a gap between organizations' practices and their performance.

[M3 <DTM>] Statistical analyses using factor analysis and linear regression

[M4 <STF>] identify seven distinct performance metrics that are positively associated with knowledge-centric practices.

[M5 <DTR>] These findings can serve as a basis for investigation of how organizations can be sustainable and operate effectively in a knowledge-driven society.

A3 –*International Journal of Arts Management*, Vol. 20(2), 2018

Creative futures for new contemporary artists: Opportunities and barriers.

[M1 <STR>] Career prospects for recent art college graduates transitioning to self-employment remain challenging.

[M2 <PTR>] The authors investigate the opportunities and barriers faced by emerging artists

[M3 <DTM>] using a case study of a major contemporary art exhibition and its follow-up shows. Data from 20 interviews

[M4 <STF>] indicate that the exhibition is viewed as a useful steppingstone, offering such benefits as recognition and exposure, networking, marketing, and enhanced ambition and motivation. Only a few exhibiting artists receive monetary rewards from sales or prizes. The lack of financial assistance means that most artists are financially challenged. Artists also lack knowledge of market conditions and have a tendency to undervalue their art work. Nevertheless, many artists express no interest in developing commercial skills and have a pessimistic view of public funding. Some artists show signs of an anti-entrepreneurial mindset.

[M5 <DTR>] The authors argue that permanent platforms are required in order to provide emerging artists with both tangible and emotional support.

A4 –*International Journal of Arts Management*, Vol. 20(3), 2018

Distributed agility: Artist co-management in the music attention economy.

[M2 <PTR>] This article investigates the relationship between the concept of attention- and reputation-building mechanisms in the new music industries, with a specific focus on artist co-management. It addresses the following research question: How can artists and artist managers design artist-led organizations that operate effectively and efficiently in a world in which attention is increasingly scarce? The argument is made that agile artist comanagement practices are becoming ever more useful due to the plunging costs of experimentation in the increasingly globalized music industries.

[M3 <DTM>] In order to explore these issues, interviews were held with 20 artist managers from a number of different territories of the international music industries, including Australia, Canada, the United Kingdom and the United States.

[M5 <DTR>] The findings highlight both the challenges and the opportunities facing artists and artist managers in relation to the specific deal structures that can facilitate distributed agility.

A5 –*International Journal of Arts Management*, Vol. 20(2), 2018

Value creation by and evaluation of US arts incubators.

[M2 <PTR>] This study deepens our understanding of an element of the infrastructure for cultural entrepreneurship in the United States: the arts incubator, an organizational form or programmatic initiative that exists at the intersection of artistic production, entrepreneurship and public policy.

[M3 <DTM>] The qualitative cross-case analysis of four arts incubators of different types
 [M4 <STF>] opens the black box of incubator operations to find that arts incubators create value for artists and arts organizations through both direct service provision and indirect echo effects, but that the provision of value to communities or systems is attenuated and largely undocumented. Unlike in the case of small business incubators or tech incubators, the value created by arts incubators in the United States is often intended to be “extra-economic” – that is, not defined by wealth creation. All four arts incubators are found to play some part in lowering barriers to entrepreneurial action, helping their clients, directly or indirectly, to

connect their means with their ends. Despite issues surfaced through the study, arts incubators are an effective tool for supporting cultural entrepreneurship.

[M5 <DTR>] The findings have implications for policy-makers and for arts incubator managers and their clients.

A6 –*International Journal of Arts Management*, Vol. 19(1), 2016

A portrait of the artist as an employee: The impact of personality on career development.

[M1 <STR>] Although there is a long history of research showing strong evidence that artists differ from the general population along personality dimensions related to creativity, there has been little investigation of the impact of personality on job and career satisfaction. Research has focused on attributes related to creativity and on the vocational interests of those who choose a career in art.

[M2 <PTR>] To address this gap in the literature,

[M3 <DTM>] the authors conducted an analysis of personality and job/career satisfaction among a sample of 566 artists employed in a variety of work settings.

[M4 <STF>] The personality traits of optimism and emotional stability were substantively correlated with career satisfaction. Other traits, such as teamwork orientation, work drive and customer orientation, were correlated as well, though not as strongly.

[M5 <DTR>] The findings provide some important implications for how artists should be managed. These implications are discussed, along with some suggestions for future research.

A7 –*Empirical Studies of the Arts*, Vol. 35(2), 2017

It's tough to be a critic: Professional versus nonprofessional music judgment.

[M2 <PTR>] Potential differences between professional critics' and nonprofessional undergraduates' aesthetic appraisals in music were investigated

[M3 <DTM>] via intercorrelations and frequency distributions of ratings.

[M4 <STF>] As expected, for 50 randomly selected albums, professional critics (“experts”) who had previously rated these albums showed highly consensual ratings ($r = +.61$, $p < .0005$), as well as mound-shaped distributions approaching normality (i.e., the majority of ratings near neutrality and fewer scores at greater extremes). In contrast, 15 nonprofessionals' rating distributions (“nonexperts”) for the same sample of albums varied more from mound-shaped distributions compared to the professional critics. Also, none of the nonprofessionals' ratings were correlated with the critics' ratings, and relatively few of the nonprofessionals' ratings were correlated with each other (average $r = +.08$, $N = 105$ pairs).

[M5 <DTR>] The philosophy that beauty is completely in the eye of the beholder, at least for music perception,

[M4 <STF>] was only empirically supported in the case of nonprofessional, nonexpert judges.

A8 –*Empirical Studies of the Arts*, Vol. 36(2), 2018

Energy, popularity, and the circumplex: A computerized analysis of emotion in 143,353 musical pieces.

[M1 <STR>] The circumplex model of affect claims that emotions can be understood in terms of their relative positions along two dimensions, namely pleasant-unpleasant and active-sleepy; and numerous studies of small samples of music have yielded data consistent with this.

[M2 <PTR>] + [M3 <DTM>] The present research tests whether the energy and BPM (proxies for the arousal dimension) and popularity as expressed in terms of sale charts (a possible proxy for the pleasantness dimension) could predict scores on six moods in 143,353 musical pieces.

[M4 <STF>] Findings concerning energy were clearly consistent with the circumplex model; findings for BPM were consistent though more equivocal; and findings concerning popularity yielded only limited support. Numerous relationships between popularity and mood were indicative of the commercial market for specific genres; and evidence demonstrated considerable differences in the mood scores between genres.

[M5 <DTR>] In addition to the circumplex model and aesthetic responses, the findings have implications for music marketing, therapy, and everyday listening.

A9 –*Empirical Studies of the Arts*, Vol. 36(1), 2018

Geometric regularity, symmetry and the perceived beauty of simple shapes.

[M2 <PTR>] Geometric regularity is introduced as a simplicity metric for understanding the esthetics of basic polygons.

[M3 <DTM>] In Experiment 1, undergraduates rated the perceived beauty of triangles varying in geometric regularity defined by their side-length standard deviation. Each type of triangle was used: equilateral, isosceles, right, and scalene.

[M4 <STF>] Ratings increased with an increase in regularity and were highest for symmetric shapes.

[M3 <DTM>] The results were replicated in a second experiment using each type of quadrilateral: square, rectangle, parallelogram, rhombus, kite, isosceles, and trapezoid.

[M4 <STF>] Although ratings in Experiment 2 also increased with regularity, symmetry did not perfectly predict ranked order of preference.

[M5 <DTR>] Symmetry, partial symmetry, and familiarity are discussed as factors that can account for the results. On the basis of the shapes used in this study, we conclude that simplicity in the form of geometric regularity is usually but not always preferred.

A10 –*Empirical Studies of the Arts*, Vol. 34(2), 2016

Mood and flow: Comparing the benefits of narrative versus poetry writing.

[M2 <PTR>] We examined the benefits of a single session of narrative and poetry writing to determine the immediate effects of each on mood and flow.

[M3 <DTM>] Following a sad mood induction, we randomly assigned participants to a narrative versus poetry format and to an express versus a distract condition. We measured affect before and after writing and asked participants to complete a flow and enjoyment questionnaire after writing.

[M4 <STF>] The distract condition improved affect (by increasing positive and decreasing negative affect) more than did the express condition, regardless of writing format. The poetry format resulted in greater enjoyment than the narrative format, but flow did not differ by condition.

[M5 <DTR>] Results show that, parallel to findings with drawing, writing to distract is a more effective means of mood improvement than writing to express, at least in the short term. Distraction appears to be the driving force leading to greater mood improvement, regardless of writing format.

A11 –*Empirical Studies of the Arts*, Vol. 36(1), 2018

Do people have a thing for bling? Examining aesthetic preferences for shiny objects.

[M1 <STR>] Researchers in the evolutionary aesthetics tradition have suggested that people prefer shiny objects because glossiness connotes water.

[M2 <PTR>] We consider some methodological issues in past research and present an experiment that manipulated the glossiness of metal objects.

[M3 <DTM>] Young adults ($n = 134$) viewed silver coins that were either dull or in “brilliant uncirculated” condition as well as copper cylinders that were either rough and tarnished, polished with a brushed surface, or polished with a mirror finish.

[M4 <STF>] Ratings of attractiveness showed that people preferred the shiny over the tarnished coin and the glossy copper bar over the tarnished and brushed ones.

[M5 <DTR>] These effects were not simply due to perceived quality or implied effort. The findings demonstrate that, after many potential confounds have been avoided or controlled for, people do seem to have a thing for bling.

A12 –*Empirical Studies of the Arts*, Vol. 35(2), 2017

Posing orientation in van Gogh’s portraits and self-portraits.

[M1 <STR>] In the history of portraiture, left cheek poses dominate. However, self-portraits favor the right cheek. Previous studies consistently report left biases for portraits

of others and right biases for self-portraits; only one study has examined self-portrait pose orientation across a single artist's corpus.

[M2 <PTR>] The present study investigated posing biases of prolific self-portraitist Vincent van Gogh.

[M3 <DTM>] Posing orientation in single-figure portrait ($N = 174$) and self-portrait ($N = 37$) paintings was coded.

[M4 <STF>] Unlike other artists, van Gogh was equally likely to paint himself in left and right cheek poses. Similarly, portraits of others showed no difference in left and right cheek frequencies but were distinguished by the inclusion of midline poses.

[M5 <DTR>] These data highlight the importance of single artist cases studies when investigating portrait posing biases.

A13 – *Empirical Studies of the Arts*, Vol. 37(2), 2019

Feeling like crying when listening to music: Exploring musical and contextual features.

[M1 <STR>] Feeling like crying is a common response to music. Recent work suggests two forms of aesthetic crying: an awe-inspired, positive kind and a distressed, sad kind. Besides their emotional tone, what differentiates these experiences?

[M2 <PTR>] The present research examined the context and subjective musical content of aesthetic crying.

[M3 <DTM>] A sample of 961 adults described the emotional tone, musical features, and social and environmental contexts of a feeling like crying experience.

[M4 <STF>] Awe experiences more often involved religious or classical music that was complex and beautiful, and people were often with others and hearing the music live. Sad experiences more often involved popular genres (e.g., Pop, Soul or R&B, Country) that were cold and unpleasant, and people often noted that the music reminded them of someone or that they already felt like crying before listening to the music.

[M5 <DTR>] The distinctions between these two kinds of experiences suggest that current theories of aesthetic crying could be fruitfully expanded.

A14 –*Empirical Studies of the Arts*, Vol. 37(1), 2019

Which nonvocal musical instrument sounds like the human voice? An empirical investigation.

[M1 <STR>] Nonvocal musical instruments like the oboe, cello, and violin, have been described as resembling the human voice. However, much of the evidence is based on historical reports and hearsay.

[M2 <PTR>] + [M3 <DTM>] In this study, 174 participants rated instruments according to how much they sounded like the human voice.

[M4 <STF>] Analysis revealed that no nonvocal instrument was rated as being voicelike, with moderate mean ratings for the clarinet, oboe, violin, and cello. The violin was rated as statistically more voicelike than the trumpet. Voicelikeness was statistically higher for the instrument which the individual played or an instrument which the individual valued.

Monophonic instruments such as the clarinet were also rated as overall more voicelike than those which typically could sound several parts at the same time such as the piano.

[M5 <DTR>] Referring to an instrument as voicelike may be better thought of as a defacto for the instrument's (and player's) expressive capabilities.

A15 –*Empirical Studies of the Arts*, Vol. 34(1), 2016

The effect of color on automaticity of aesthetic judgments.

[M2 <PTR>] The cognitive processing mode used to process color while making aesthetic judgments was examined.

[M3 <DTM>] In two experiments, participants rated artistic photographs for preference. Half the participants performed a concurrent memory preload task while rating the photographs to index whether automatic or controlled modes of processing was engaged.

[M4 <STF>] Overall, the results showed that preload had little effect on the pattern of ratings for color, black and white, and false color versions of the photographs.

[M5 <DTR>] The results suggest that color processing during the judgment task was automatic and required few cognitive resources. Furthermore, the results indicate that the

dual-mode processing framework can be a useful theoretical tool for examining the cognitive processes that underlie aesthetic experience.

D1 –*International Journal of Design*, Vol. 13(1), 2019

Practice-centered design of an anesthesia medication template to reduce medication handling errors in the operating room.

[M2 <PTR>] This case study examines the design process of the Anesthesia Medication Template (AMT), a low cost, standardized layout template for the staging and identification of syringes on top of the anesthesia cart in the hospital operating room.

[M3 <DTM>] The project was conducted in a participatory design framework as co-design between physicians and designers. Led by anesthesiologists and immersed in the work setting as practice-centered design, design development addresses individual, environmental and organizational aspects of the hospital as high-stakes work setting. The layout of the AMT was developed based on observational studies and a cognitive analysis of medication management workflows, conducted by medical practitioners. The physical design and product development of the template reflects best practices in Interaction Design, Visual Communication Design and Industrial Design. The design was incrementally refined using a series of iterative prototypes that were evaluated with expert practitioners in simulation studies and in the work setting. The final design of the template was implemented and monitored in a long-term study.

[M4 <STF>] Four years of data since the introduction of the AMT document significant improvements in medication handling safety

[M5 <DTR>] and the AMT has been adapted for use at other medical centers across the United States.

D2 –*International Journal of Design*, Vol. 10(2), 2016

Design for behavior change as a driver for sustainable innovation: Challenges and opportunities for implementation in the private and public sectors.

[M1 <STR>] Over the last decade, design for behaviour change has become increasingly recognised as a strategy for enabling social change. Despite this, we are far from understanding its implementation, especially through the private and public sectors.

[M3 <DTM>] This study has surveyed private and public sector stakeholders with regard to their current knowledge of, and approach to, design for behaviour change.

[M2 <PTR>] The aim was to identify the challenges for professional stakeholders in understanding, accessing and implementing design for behaviour change.

[M3 <DTM>] Underpinned by a literature review of design for behaviour change theories and approaches, an online survey and two focus groups with private and public sector stakeholders were conducted with particular focus on small and medium size enterprises (SMEs).

[M4 <STF>] The results identified that there is a significant disconnect between available theoretical knowledge of design for behaviour change and its practical implementation. Reasons for this include a lack of awareness and common language, of evidence based examples, and of evaluation methods and inter-sector collaborations.

[M5 <DTR>] In response, a set of recommendations has been developed to propose ways forward for the wider understanding and application of design for behaviour change.

D3 –*International Journal of Design*, Vol. 12(2), 2018

Designing objects with meaningful associations.

[M1 <STR>] Objects often become cherished for their ties to beliefs, experiences, memories, people, places or values that are significant to their owner. These ties can reflect the ways in which we as humans use objects to characterise, communicate and develop our sense of self.

[M2 <PTR>] This paper outlines our approach to applying product attachment theory to design practices.

[M3 <DTM>] We created six artefacts that were inspired by interviews conducted with three individuals who discussed details of their life stories. We then evaluated the

associations that came to mind for our participants when interacting with these newly designed artefacts to determine whether these links brought meaning to them.

[M5 <DTR >] Our findings highlight the potential of design to bring emotional value to products by embodying significant aspects of a person's self-identity. To do so, designers must consider both the importance and authenticity of the associations formed between an object and an individual.

D4 –*International Journal of Design*, Vol. 12(3), 2018

Memory probes: Exploring retrospective user experience through traces of use on cherished objects.

[M1 <STR>] Our daily interactions with objects can not only leave traces of use on the objects but also leave memories in our minds. These human traces on objects are potential cues that can trigger our autobiographical memories and connect us to social networks.

[M2 <PTR>] The first aim of this paper is to demonstrate what might be a suitable method of inquiry into the way materials can enrich dialogues about remembered experiences derived from human traces left on cherished possessions. The second aim is to investigate how the accumulation of human traces on objects influences people's remembering and usage.

[M3 <DTM>] The design of our research artifacts, Memory Probes, was situated in relation to three spectra of paired values: (1) the familiarity and strangeness of tool use, (2) the definiteness and ambiguity of data capture, and (3) the objective and subjective reality of interpretation.

[M4 <STF>] Our field study revealed a transactive nature between traces of interaction with possessions and memories in the owners' minds. It also informed us of how gradual and curiosity-driven understanding could become a methodological nuance when we are empathetically engaged in a collaborative way of knowing with other participants.

[M5 <DTR>] To conclude, several implications for designing products that can participate in our everyday reminiscing and meaning-making are proposed.

D5 –*International Journal of Design*, Vol. 10(1), 2016

The Goldilocks Conundrum: The “just right” conditions for design to achieve impact in public and third sector projects.

[M1 <STR>] What are the most important conditions necessary for a design-led approach to innovation or transformation to flourish in an organization?

[M2 <PTR>] This paper introduces and discusses three ‘just right’ conditions for design to achieve the desired impact in the context of public and third sector projects, where *third sector* refers to a broad range of community and volunteer groups. The paper draws on a six-month Arts and Humanities Research Council (AHRC) funded project, aimed at identifying and mapping the impact and value of design in public and third sector organizations.

[M3 <DTM>] Our research insights are derived from six case studies that were co-created with the project participants of service innovation projects. The case studies were selected based on three criteria: 1) an acknowledged value that design-led approaches have brought to the project; 2) access to a triangulated base of stakeholders: service users, service commissioners and service designers; 3) projects that cover a range of sectors from healthcare, mental well-being, youth services and social care across England, Scotland and Australia.

[M4 <STF>] In total eighteen conditions were identified and

[M3 <DTM>] the ten most important conditions were selected and ranked by the research participants through a workshop validation session. We further clustered these into three overarching themes: *community building*, *capacity*, and *leadership* based on the authors’ previous experiences with public service innovation projects.

[M5 <DTR>] This research suggests that *community building* is valued above *leadership* and *capacity* as the most important condition for design to have the greatest impact in innovation and transformation projects.

D6 –*International Journal of Design*, Vol. 11(2), 2017

How design education can use generative play to innovate for social change: A case study on the design of South African children’s health education toolkits.

[M1 <STR>] There’s been a paradigm shift in design from focusing on aesthetic worth to focusing more on the interplay of form and function to assume social responsibility and to pursue social change through innovation. As a result, the discipline needs models for how to educate responsible designers who see design not only as a commercial enterprise but more importantly as a catalyst for social change, and are able to innovate visual technologies that address social problems that are wicked by nature, and are far more complex and interdisciplinary than merely problem-solving how to aestheticize a client’s content.

[M2 <PTR>] This paper introduces such a model called generative play that integrates psychology, game theory, and economics with design. Specifically, generative play takes root at the intersection of activity theory, generative research, flow, play, and generative justice. It offers an interdisciplinary methodology that addresses wicked problems in health through social innovation and instills cognizance of social responsibility in design students.

[M3 <DTM>] In a case study of the wicked problem of children’s health education in South Africa, 40 fourth-year design students used generative play; and, through an analysis of their logbook entries and design outcomes,

[M4 <STF>] we found that generative play does engender cognizance of social responsibility and pleasure and does facilitate social innovation.

D7 –*Design Studies*, Vol. 52, 2017

Interactive design galleries: A general approach to interacting with design alternatives.

[M1 <STR>] Designers work by exploring alternatives. While extant parametric modelers theoretically define alternatives, their interfaces generally provide access to designs serially.

[M2 <PTR>] Our goal is to change this near-universal feature of parametric interfaces to support exploration using multiple alternatives.

[M3 <DTM>] We built a prototype gallery system on a web browser that supports saving alternatives from three graph-based parametric modeling tools. Users can retrieve alternatives from the gallery, share them with others, and combine them to generate more alternatives. We evaluated this system qualitatively in a workshop with ten expert designers working on their own design problems.

[M4 <STF>] We learnt that users prefer the gallery to their accustomed workarounds.

[M5 <DTR>] The study produced several directions for new user interface designs.

D8 –*Design Studies*, Vol. 50, 2017

Prototype for X (PFX): A holistic framework for structuring prototyping methods to support engineering design.

[M1 <STR>] While scholars have studied benefits and drawbacks of prototype development, few have attempted to create a holistic framework to structure prototyping and combine insights from across technical domains.

[M3 <DTM>] An extensive literature review of prototyping research and study of novice designers' mental models of prototyping is used

[M2 <PTR>] to develop and validate a set of specifications for a holistic and structured prototyping framework. This work then introduces a novel framework to help structure prototyping, Prototype for X (PFX), as an alternative to traditional prototyping approaches in engineering design.

[M5 <DTR>] Early results highlight the potential impact PFX can have on the design process and on the final design product compared to those achieved through ‘prototyping in the wild’. Future research directions are also discussed.

D9 –*Design Studies*, Vol. 42, 2016

The effects of representation on idea generation and design fixation: A study comparing sketches and function trees.

[M1 <STR>] Representations in engineering design can be hand sketches, photographs, CAD, functional models, physical models, or text. Using representations allows engineers to gain a clearer picture of how a design works.

[M2 <PTR>] We present an experiment that compares the influence of representations on fixation and creativity.

[M3 <DTM>] This experiment presents designers with an example solution represented as a function tree and a sketch, we compare how these different external representations influence design fixation as they complete a design task.

[M4 <STF>] Results show that function trees do not cause fixation to ideas compared to a control group, and that function trees reduce fixation when compared to sketches.

[M5 <DTR>] Results from this experiment show that function tree representations offer advantages for reducing fixation during idea generation.

D10 –*Design Studies*, Vol. 64, 2019

Constructing shared professional vision in design work: The role of visual objects and their material mediation.

[M1 <STR>] The design process requires coordination between professions that have different ways of seeing.

[M3 <DTM>] Using ethnographic data from a building project,

[M2 <PTR>] this paper explores how architects and engineers mobilize visual objects to coordinate their professional visions around a design issue.

[M5 <DTR>] The findings articulate the visual practices whereby design professionals move from a *fragmented* towards a *shared professional vision*. In this move, they cease looking at the design issue from within their disciplinary perspective, and begin taking inspiration from each other's. They further adjust the emergent shared professional vision, by iteratively narrowing and broadening its focus. The paper contributes to the practice perspective in design studies, explaining how different ways of seeing are coordinated through practical engagement with visual objects.

D11 –*Design Studies*, Vol. 53, 2017

Investigating the effects of client imagery on the ideation process of graphic design.

[M1 <STR>] Prior work has examined how images supplied by design clients influence the output of graphic design ideation, however, little is known about the effect upon the ideation process itself.

[M2 <PTR>] This article reports on an empirical study conducted with graphic design students engaged in design ideation.

[M3 <DTM>] Findings are based on think-aloud protocol data, as well as participants' subjective ratings of their ideation process using factors based on the principle of design flow.

[M4 <STF>] Results show some statistically significant effects on the design process of the participants, particularly increases in their reported anxiety and sense of involvement in the task. In addition, some correlations are identified between design output resulting from exposure to client provided images, and the process of designing those outputs.

D12 –*Design Studies*, Vol. 62, 2019

Accelerating product prototyping through hybrid methods: Coupling 3D printing and LEGO.

[M2 <PTR>] This paper introduces Hybrid Prototyping as a way to couple different prototyping methods; combining their complementary affordances and mitigating their limitations. To characterise and investigate this approach,

[M3 <DTM>] a simulation-based study was conducted into the coupling of low-cost 3D printing and LEGO®.

[M2 <PTR>] Key benefits hypothesised are reduced fabrication time and increased reconfigurability.

[M3 <DTM>] Six primitive 3D shapes are simulated using a continuum of hypothetical brick sizes.

[M4 <STF>] Results show a reduction in fabrication time of 45% and a reconfigurability of 57% at the optimum.

[M3 <DTM>] A case study

[M5 <DTR>] highlights the compounded improvements over 3D printing for an iterative prototyping process. These findings mean that increases in prototyping iterations can be made due to reduced time and material costs, accelerating the product development process.

D13 –*Design Studies*, Vol. 61, 2019

Crowdsourcing inspiration: Using crowd generated inspirational stimuli to support designer ideation.

[M1 <STR>] Inspirational stimuli, such as analogies, are a prominent mechanism used to support designers. However, generating relevant inspirational stimuli remains challenging.

[M2 <PTR>] This work explores the potential of using an untrained crowd workforce to generate stimuli for trained designers.

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Rendering multi-dimensional problem space as an unfolding collaborative inquiry process.

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[M5 <DTR>] how designers appear to introduce intentional variation into conceptual product designs. These heuristics provide ‘cognitive shortcuts’ that can help designers generate more, and more varied, candidate concepts to consider in the early phases of design.

Appendix D: Move classification by Rater 2

A1 –*International Journal of Arts Management*, Vol. 19(1), 2016

Audience behaviour or buyer behaviour: what can models of brand behaviour say about arts audiences?

[M2 <PTR>] This study investigates the extent to which an empirically based model of consumer brand choice behaviour applies to arts participation.

[M3 <DTM>] Based on data from a national survey conducted in England,

[M4 <STF>] the penetration rate, frequency of attendance, share of total audience and proportion of audience members who are loyal to one art form only are closely approximated by the predictions of the Dirichlet model, with one or two exceptions.

[M5 <DTR>] The results suggest that what we know about behavioural loyalty towards brands also applies at the macro level to arts. Furthermore, this holds across regions of England. The analysis is restricted to arts attendance at an aggregate level. The results indicate that the same patterns would be seen across genres or venues. However, the more detailed data required to test this do not seem to be available.

A2 –*International Journal of Arts Management*, Vol. 19(2), 2017

Knowledge-centric arts organization: connecting practice to performance.

[M2 <PTR>] The authors explore the concepts of knowledge-centric organizations in the performing arts sector as a means to understand how specific organizational practices might relate to measures of financial and operational performance.

[M3 <DTM>] Employing their definition of a knowledge-centric arts organization, the authors conduct an exploratory quantitative study of 368 small and mid-sized non-profit performing arts organizations in the United States using primary data on 36 organizational practices and secondary data on 21 performance metrics. Analysis of these two data sources independently

[M5 <DTR>] suggests a gap between organizations' practices and their performance.

[M3 <DTM>] Statistical analyses using factor analysis and linear regression

[M4 <STF>] identify seven distinct performance metrics that are positively associated with knowledge-centric practices.

[M5 <DTR>] These findings can serve as a basis for investigation of how organizations can be sustainable and operate effectively in a knowledge-driven society.

A3 –*International Journal of Arts Management*, Vol. 20(2), 2018

Creative futures for new contemporary artists: Opportunities and barriers.

[M1 <STR>] Career prospects for recent art college graduates transitioning to self-employment remain challenging.

[M2 <PTR>] The authors investigate the opportunities and barriers faced by emerging artists

[M3 <DTM>] using a case study of a major contemporary art exhibition and its follow-up shows. Data from 20 interviews indicate that

[M4 <STF>] the exhibition is viewed as a useful steppingstone, offering such benefits as recognition and exposure, networking, marketing, and enhanced ambition and motivation. Only a few exhibiting artists receive monetary rewards from sales or prizes.

[M5 <DTR>] The lack of financial assistance means that most artists are financially challenged.

[M4 <STF>] Artists also lack knowledge of market conditions and have a tendency to undervalue their art work. Nevertheless, many artists express no interest in developing commercial skills and have a pessimistic view of public funding. Some artists show signs of an anti-entrepreneurial mindset.

[M5 <DTR>] The authors argue that permanent platforms are required in order to provide emerging artists with both tangible and emotional support.

A4 –*International Journal of Arts Management*, Vol. 20(3), 2018

Distributed agility: Artist co-management in the music attention economy.

[M2 <PTR>] This article investigates the relationship between the concept of attention- and reputation-building mechanisms in the new music industries, with a specific focus on artist co-management. It addresses the following research question: How can artists and artist managers design artist-led organizations that operate effectively and efficiently in a world in which attention is increasingly scarce? The argument is made that agile artist comanagement practices are becoming ever more useful due to the plunging costs of experimentation in the increasingly globalized music industries.

[M3 <DTM>] In order to explore these issues, interviews were held with 20 artist managers from a number of different territories of the international music industries, including Australia, Canada, the United Kingdom and the United States.

[M5 <DTR>] The findings highlight both the challenges and the opportunities facing artists and artist managers in relation to the specific deal structures that can facilitate distributed agility.

A5 –*International Journal of Arts Management*, Vol. 20(2), 2018

Value creation by and evaluation of US arts incubators.

[M2 <PTR>] This study deepens our understanding of an element of the infrastructure for cultural entrepreneurship in the United States: the arts incubator, an organizational form or programmatic initiative that exists at the intersection of artistic production, entrepreneurship and public policy.

[M3 <DTM>] The qualitative cross-case analysis of four arts incubators of different types
 [M4 <STF>] opens the black box of incubator operations to find that arts incubators create value for artists and arts organizations through both direct service provision and indirect echo effects, but that the provision of value to communities or systems is attenuated and largely undocumented. Unlike in the case of small

business incubators or tech incubators, the value created by arts incubators in the United States is often intended to be “extra-economic” – that is, not defined by wealth creation. All four arts incubators are found to play some part in lowering barriers to entrepreneurial action, helping their clients, directly or indirectly, to connect their means with their ends. Despite issues surfaced through the study, arts incubators are an effective tool for supporting cultural entrepreneurship.

[M5 <DTR>] The findings have implications for policy-makers and for arts incubator managers and their clients.

A6 –*International Journal of Arts Management*, Vol. 19(1), 2016

A portrait of the artist as an employee: The impact of personality on career development.

[M1 <STR>] Although there is a long history of research showing strong evidence that artists differ from the general population along personality dimensions related to creativity, there has been little investigation of the impact of personality on job and career satisfaction. Research has focused on attributes related to creativity and on the vocational interests of those who choose a career in art.

[M2 <PTR>] To address this gap in the literature,

[M3 <DTM>] the authors conducted an analysis of personality and job/career satisfaction among a sample of 566 artists employed in a variety of work settings.

[M4 <STF>] The personality traits of optimism and emotional stability were substantively correlated with career satisfaction. Other traits, such as teamwork orientation, work drive and customer orientation, were correlated as well, though not as strongly.

[M5 <DTR>] The findings provide some important implications for how artists should be managed. These implications are discussed, along with some suggestions for future research.

A7 –*Empirical Studies of the Arts*, Vol. 35(2), 2017

It’s tough to be a critic: Professional versus nonprofessional music judgment.

[M2 <PTR>] Potential differences between professional critics' and nonprofessional undergraduates' aesthetic appraisals in music were investigated

[M3 <DTM>] via intercorrelations and frequency distributions of ratings.

[M4 <STF>] As expected, for 50 randomly selected albums, professional critics ("experts") who had previously rated these albums showed highly consensual ratings ($r = +.61$, $p < .0005$), as well as mound-shaped distributions approaching normality (i.e., the majority of ratings near neutrality and fewer scores at greater extremes). In contrast, 15 nonprofessionals' rating distributions ("nonexperts") for the same sample of albums varied more from mound-shaped distributions compared to the professional critics. Also, none of the nonprofessionals' ratings were correlated with the critics' ratings, and relatively few of the nonprofessionals' ratings were correlated with each other (average $r = +.08$, $N = 105$ pairs).

[M5 <DTR>] The philosophy that beauty is completely in the eye of the beholder, at least for music perception, was only empirically supported in the case of nonprofessional, nonexpert judges.

A8 –*Empirical Studies of the Arts*, Vol. 36(2), 2018

Energy, popularity, and the circumplex: A computerized analysis of emotion in 143,353 musical pieces.

[M1 <STR>] The circumplex model of affect claims that emotions can be understood in terms of their relative positions along two dimensions, namely pleasant-unpleasant and active-sleepy; and numerous studies of small samples of music have yielded data consistent with this.

[M2 <PTR>] + [M3 <DTM>] The present research tests whether the energy and BPM (proxies for the arousal dimension) and popularity as expressed in terms of sale charts (a possible proxy for the pleasantness dimension) could predict scores on six moods in 143,353 musical pieces.

[M4 <STF>] Findings concerning energy were clearly consistent with the circumplex model; findings for BPM were consistent though more equivocal; and findings concerning popularity yielded only limited support.

[M5 <DTR>] Numerous relationships between popularity and mood were indicative of the commercial market for specific genres; and evidence demonstrated considerable differences in the mood scores between genres. In addition to the circumplex model and aesthetic responses, the findings have implications for music marketing, therapy, and everyday listening.

A9 –*Empirical Studies of the Arts*, Vol. 36(1), 2018

Geometric regularity, symmetry and the perceived beauty of simple shapes.

[M2 <PTR>] Geometric regularity is introduced as a simplicity metric for understanding the esthetics of basic polygons.

[M3 <DTM>] In Experiment 1, undergraduates rated the perceived beauty of triangles varying in geometric regularity defined by their side-length standard deviation. Each type of triangle was used: equilateral, isosceles, right, and scalene.

[M4 <STF>] Ratings increased with an increase in regularity and were highest for symmetric shapes.

[M3 <DTM>] The results were replicated in a second experiment using each type of quadrilateral: square, rectangle, parallelogram, rhombus, kite, isosceles, and trapezoid.

[M4 <STF>] Although ratings in Experiment 2 also increased with regularity, symmetry did not perfectly predict ranked order of preference.

[M5 <DTR>] Symmetry, partial symmetry, and familiarity are discussed as factors that can account for the results. On the basis of the shapes used in this study, we conclude that simplicity in the form of geometric regularity is usually but not always preferred.

A10 –*Empirical Studies of the Arts*, Vol. 34(2), 2016

Mood and flow: Comparing the benefits of narrative versus poetry writing.

[M2 <PTR>] We examined the benefits of a single session of narrative and poetry writing to determine the immediate effects of each on mood and flow.

[M3 <DTM>] Following a sad mood induction, we randomly assigned participants to a narrative versus poetry format and to an express versus a distract condition. We measured affect before and after writing and asked participants to complete a flow and enjoyment questionnaire after writing.

[M4 <STF>] The distract condition improved affect (by increasing positive and decreasing negative affect) more than did the express condition, regardless of writing format. The poetry format resulted in greater enjoyment than the narrative format, but flow did not differ by condition.

[M5 <DTR>] Results show that, parallel to findings with drawing, writing to distract is a more effective means of mood improvement than writing to express, at least in the short term. Distraction appears to be the driving force leading to greater mood improvement, regardless of writing format.

A11 –*Empirical Studies of the Arts*, Vol. 36(1), 2018

Do people have a thing for bling? Examining aesthetic preferences for shiny objects.

[M1 <STR>] Researchers in the evolutionary aesthetics tradition have suggested that people prefer shiny objects because glossiness connotes water.

[M2 <PTR>] We consider some methodological issues in past research and present an experiment that manipulated the glossiness of metal objects.

[M3 <DTM>] Young adults ($n = 134$) viewed silver coins that were either dull or in “brilliant uncirculated” condition as well as copper cylinders that were either rough and tarnished, polished with a brushed surface, or polished with a mirror finish.

[M4 <STF>] Ratings of attractiveness showed that people preferred the shiny over the tarnished coin and the glossy copper bar over the tarnished and brushed ones.

[M5 <DTR>] These effects were not simply due to perceived quality or implied effort. The findings demonstrate that, after many potential confounds have been avoided or controlled for, people do seem to have a thing for bling.

A12 –*Empirical Studies of the Arts*, Vol. 35(2), 2017

Posing orientation in van Gogh's portraits and self-portraits.

[M1 <STR>] In the history of portraiture, left cheek poses dominate. However, self-portraits favor the right cheek. Previous studies consistently report left biases for portraits of others and right biases for self-portraits; only one study has examined self-portrait pose orientation across a single artist's corpus.

[M2 <PTR>] The present study investigated posing biases of prolific self-portraitist Vincent van Gogh.

[M3 <DTM>] Posing orientation in single-figure portrait ($N = 174$) and self-portrait ($N = 37$) paintings was coded.

[M4 <STF>] Unlike other artists, van Gogh was equally likely to paint himself in left and right cheek poses. Similarly, portraits of others showed no difference in left and right cheek frequencies but were distinguished by the inclusion of midline poses.

[M5 <DTR>] These data highlight the importance of single artist cases studies when investigating portrait posing biases.

A13 –*Empirical Studies of the Arts*, Vol. 37(2), 2019

Feeling like crying when listening to music: Exploring musical and contextual features.

[M1 <STR>] Feeling like crying is a common response to music. Recent work suggests two forms of aesthetic crying: an awe-inspired, positive kind and a distressed, sad kind. Besides their emotional tone, what differentiates these experiences?

[M2 <PTR>] The present research examined the context and subjective musical content of aesthetic crying.

[M3 <DTM>] A sample of 961 adults described the emotional tone, musical features, and social and environmental contexts of a feeling like crying experience.

[M4 <STF>] Awe experiences more often involved religious or classical music that was complex and beautiful, and people were often with others and hearing the music live. Sad experiences more often involved popular genres (e.g., Pop, Soul or R&B, Country) that

were cold and unpleasant, and people often noted that the music reminded them of someone or that they already felt like crying before listening to the music.

[M5 <DTR>] The distinctions between these two kinds of experiences suggest that current theories of aesthetic crying could be fruitfully expanded.

A14 –*Empirical Studies of the Arts*, Vol. 37(1), 2019

Which nonvocal musical instrument sounds like the human voice? An empirical investigation.

[M1 <STR>] Nonvocal musical instruments like the oboe, cello, and violin, have been described as resembling the human voice. However, much of the evidence is based on historical reports and hearsay.

[M2 <PTR>] + [M3 <DTM>] In this study, 174 participants rated instruments according to how much they sounded like the human voice.

[M4 <STF>] Analysis revealed that no nonvocal instrument was rated as being voicelike, with moderate mean ratings for the clarinet, oboe, violin, and cello. The violin was rated as statistically more voicelike than the trumpet. Voicelikeness was statistically higher for the instrument which the individual played or an instrument which the individual valued.

Monophonic instruments such as the clarinet were also rated as overall more voicelike than those which typically could sound several parts at the same time such as the piano.

[M5 <DTR>] Referring to an instrument as voicelike may be better thought of as a defacto for the instrument's (and player's) expressive capabilities.

A15 –*Empirical Studies of the Arts*, Vol. 34(1), 2016

The effect of color on automaticity of aesthetic judgments.

[M2 <PTR>] The cognitive processing mode used to process color while making aesthetic judgments was examined.

[M3 <DTM>] In two experiments, participants rated artistic photographs for preference. Half the participants performed a concurrent memory preload task while rating the photographs to index whether automatic or controlled modes of processing was engaged.

[M4 <STF>] Overall, the results showed that preload had little effect on the pattern of ratings for color, black and white, and false color versions of the photographs.

[M5 <DTR>] The results suggest that color processing during the judgment task was automatic and required few cognitive resources. Furthermore, the results indicate that the dual-mode processing framework can be a useful theoretical tool for examining the cognitive processes that underlie aesthetic experience.

D1 –*International Journal of Design*, Vol. 13(1), 2019

Practice-centered design of an anesthesia medication template to reduce medication handling errors in the operating room.

[M2 <PTR>] This case study examines the design process of the Anesthesia Medication Template (AMT), a low cost, standardized layout template for the staging and identification of syringes on top of the anesthesia cart in the hospital operating room.

[M3 <DTM>] The project was conducted in a participatory design framework as co-design between physicians and designers. Led by anesthesiologists and immersed in the work setting as practice-centered design, design development addresses individual, environmental and organizational aspects of the hospital as high-stakes work setting. The layout of the AMT was developed based on observational studies and a cognitive analysis of medication management workflows, conducted by medical practitioners. The physical design and product development of the template reflects best practices in Interaction Design, Visual Communication Design and Industrial Design. The design was incrementally refined using a series of iterative prototypes that were evaluated with expert practitioners in simulation studies and in the work setting. The final design of the template was implemented and monitored in a long-term study.

[M4 <STF>] Four years of data since the introduction of the AMT document significant improvements in medication handling safety

[M5 <DTR>] and the AMT has been adapted for use at other medical centers across the United States.

D2 –*International Journal of Design*, Vol. 10(2), 2016

Design for behavior change as a driver for sustainable innovation: Challenges and opportunities for implementation in the private and public sectors.

[M1 <STR>] Over the last decade, design for behaviour change has become increasingly recognised as a strategy for enabling social change. Despite this, we are far from understanding its implementation, especially through the private and public sectors.

[M3 <DTM>] This study has surveyed private and public sector stakeholders with regard to their current knowledge of, and approach to, design for behaviour change.

[M2 <PTR>] The aim was to identify the challenges for professional stakeholders in understanding, accessing and implementing design for behaviour change.

[M3 <DTM>] Underpinned by a literature review of design for behaviour change theories and approaches, an online survey and two focus groups with private and public sector stakeholders were conducted with particular focus on small and medium size enterprises (SMEs).

[M4 <STF>] The results identified that there is a significant disconnect between available theoretical knowledge of design for behaviour change and its practical implementation. Reasons for this include a lack of awareness and common language, of evidence based examples, and of evaluation methods and inter-sector collaborations.

[M5 <DTR>] In response, a set of recommendations has been developed to propose ways forward for the wider understanding and application of design for behaviour change.

D3 –*International Journal of Design*, Vol. 12(2), 2018

Designing objects with meaningful associations.

[M1 <STR>] Objects often become cherished for their ties to beliefs, experiences, memories, people, places or values that are significant to their owner. These ties can reflect

the ways in which we as humans use objects to characterise, communicate and develop our sense of self.

[M2 <PTR>] This paper outlines our approach to applying product attachment theory to design practices.

[M3 <DTM>] We created six artefacts that were inspired by interviews conducted with three individuals who discussed details of their life stories. We then evaluated the associations that came to mind for our participants when interacting with these newly designed artefacts to determine whether these links brought meaning to them.

[M5 <DTR >] Our findings highlight the potential of design to bring emotional value to products by embodying significant aspects of a person's self-identity. To do so, designers must consider both the importance and authenticity of the associations formed between an object and an individual.

D4 –*International Journal of Design*, Vol. 12(3), 2018

Memory probes: Exploring retrospective user experience through traces of use on cherished objects.

[M1 <STR>] Our daily interactions with objects can not only leave traces of use on the objects but also leave memories in our minds. These human traces on objects are potential cues that can trigger our autobiographical memories and connect us to social networks.

[M2 <PTR>] The first aim of this paper is to demonstrate what might be a suitable method of inquiry into the way materials can enrich dialogues about remembered experiences derived from human traces left on cherished possessions. The second aim is to investigate how the accumulation of human traces on objects influences people's remembering and usage.

[M3 <DTM>] The design of our research artifacts, Memory Probes, was situated in relation to three spectra of paired values: (1) the familiarity and strangeness of tool use, (2) the definiteness and ambiguity of data capture, and (3) the objective and subjective reality of interpretation.

[M4 <STF>] Our field study revealed a transactive nature between traces of interaction with possessions and memories in the owners' minds. It also informed us of how gradual

and curiosity-driven understanding could become a methodological nuance when we are empathetically engaged in a collaborative way of knowing with other participants.

[M5 <DTR>] To conclude, several implications for designing products that can participate in our everyday reminiscing and meaning-making are proposed.

D5 –*International Journal of Design*, Vol. 10(1), 2016

The Goldilocks Conundrum: The “just right” conditions for design to achieve impact in public and third sector projects.

[M1 <STR>] What are the most important conditions necessary for a design-led approach to innovation or transformation to flourish in an organization?

[M2 <PTR>] This paper introduces and discusses three ‘just right’ conditions for design to achieve the desired impact in the context of public and third sector projects, where *third sector* refers to a broad range of community and volunteer groups. The paper draws on a six-month Arts and Humanities Research Council (AHRC) funded project, aimed at identifying and mapping the impact and value of design in public and third sector organizations.

[M3 <DTM>] Our research insights are derived from six case studies that were co-created with the project participants of service innovation projects. The case studies were selected based on three criteria: 1) an acknowledged value that design-led approaches have brought to the project; 2) access to a triangulated base of stakeholders: service users, service commissioners and service designers; 3) projects that cover a range of sectors from healthcare, mental well-being, youth services and social care across England, Scotland and Australia.

[M4 <STF>] In total eighteen conditions were identified and

[M3 <DTM>] the ten most important conditions were selected and ranked by the research participants through a workshop validation session. We further clustered these into three overarching themes: *community building*, *capacity*, and *leadership* based on the authors’ previous experiences with public service innovation projects.

[M5 <DTR>] This research suggests that *community building* is valued above *leadership* and *capacity* as the most important condition for design to have the greatest impact in innovation and transformation projects.

D6 –*International Journal of Design*, Vol. 11(2), 2017

How design education can use generative play to innovate for social change: A case study on the design of South African children’s health education toolkits.

[M1 <STR>] There’s been a paradigm shift in design from focusing on aesthetic worth to focusing more on the interplay of form and function to assume social responsibility and to pursue social change through innovation. As a result, the discipline needs models for how to educate responsible designers who see design not only as a commercial enterprise but more importantly as a catalyst for social change, and are able to innovate visual technologies that address social problems that are wicked by nature, and are far more complex and interdisciplinary than merely problem-solving how to aestheticize a client’s content.

[M2 <PTR>] This paper introduces such a model called generative play that integrates psychology, game theory, and economics with design. Specifically, generative play takes root at the intersection of activity theory, generative research, flow, play, and generative justice. It offers an interdisciplinary methodology that addresses wicked problems in health through social innovation and instills cognizance of social responsibility in design students.

[M3 <DTM>] In a case study of the wicked problem of children’s health education in South Africa, 40 fourth-year design students used generative play; and, through an analysis of their logbook entries and design outcomes,

[M4 <STF>] we found that generative play does engender cognizance of social responsibility and pleasure and does facilitate social innovation.

D7 –*Design Studies*, Vol. 52, 2017

Interactive design galleries: A general approach to interacting with design alternatives.

[M1 <STR>] Designers work by exploring alternatives. While extant parametric modelers theoretically define alternatives, their interfaces generally provide access to designs serially.

[M2 <PTR>] Our goal is to change this near-universal feature of parametric interfaces to support exploration using multiple alternatives.

[M3 <DTM>] We built a prototype gallery system on a web browser that supports saving alternatives from three graph-based parametric modeling tools. Users can retrieve alternatives from the gallery, share them with others, and combine them to generate more alternatives. We evaluated this system qualitatively in a workshop with ten expert designers working on their own design problems.

[M4 <STF>] We learnt that users prefer the gallery to their accustomed workarounds.

[M5 <DTR>] The study produced several directions for new user interface designs.

D8 –*Design Studies*, Vol. 50, 2017

Prototype for X (PFX): A holistic framework for structuring prototyping methods to support engineering design.

[M1 <STR>] While scholars have studied benefits and drawbacks of prototype development, few have attempted to create a holistic framework to structure prototyping and combine insights from across technical domains.

[M3 <DTM>] An extensive literature review of prototyping research and study of novice designers' mental models of prototyping is used

[M2 <PTR>] to develop and validate a set of specifications for a holistic and structured prototyping framework. This work then introduces a novel framework to help structure prototyping, Prototype for X (PFX), as an alternative to traditional prototyping approaches in engineering design.

[M5 <DTR>] Early results highlight the potential impact PFX can have on the design process and on the final design product compared to those achieved through ‘prototyping in the wild’. Future research directions are also discussed.

D9 –*Design Studies*, Vol. 42, 2016

The effects of representation on idea generation and design fixation: A study comparing sketches and function trees.

[M1 <STR>] Representations in engineering design can be hand sketches, photographs, CAD, functional models, physical models, or text. Using representations allows engineers to gain a clearer picture of how a design works.

[M2 <PTR>] We present an experiment that compares the influence of representations on fixation and creativity.

[M3 <DTM>] This experiment presents designers with an example solution represented as a function tree and a sketch, we compare how these different external representations influence design fixation as they complete a design task.

[M4 <STF>] Results show that function trees do not cause fixation to ideas compared to a control group, and that function trees reduce fixation when compared to sketches.

[M5 <DTR>] Results from this experiment show that function tree representations offer advantages for reducing fixation during idea generation.

D10 –*Design Studies*, Vol. 64, 2019

Constructing shared professional vision in design work: The role of visual objects and their material mediation.

[M1 <STR>] The design process requires coordination between professions that have different ways of seeing.

[M3 <DTM>] Using ethnographic data from a building project,

[M2 <PTR>] this paper explores how architects and engineers mobilize visual objects to coordinate their professional visions around a design issue.

[M4 <STF>] The findings articulate the visual practices whereby design professionals move from a *fragmented* towards a *shared professional vision*. In this move, they cease looking at the design issue from within their disciplinary perspective, and begin taking

inspiration from each other's. They further adjust the emergent shared professional vision, by iteratively narrowing and broadening its focus.

[M5 <DTR>] The paper contributes to the practice perspective in design studies, explaining how different ways of seeing are coordinated through practical engagement with visual objects.

D11 – *Design Studies*, Vol. 53, 2017

Investigating the effects of client imagery on the ideation process of graphic design.

[M1 <STR>] Prior work has examined how images supplied by design clients influence the output of graphic design ideation, however, little is known about the effect upon the ideation process itself.

[M2 <PTR>] This article reports on an empirical study conducted with graphic design students engaged in design ideation.

[M3 <DTM>] Findings are based on think-aloud protocol data, as well as participants' subjective ratings of their ideation process using factors based on the principle of design flow.

[M4 <STF>] Results show some statistically significant effects on the design process of the participants, particularly increases in their reported anxiety and sense of involvement in the task. In addition, some correlations are identified between design output resulting from exposure to client provided images, and the process of designing those outputs.

D12 – *Design Studies*, Vol. 62, 2019

Accelerating product prototyping through hybrid methods: Coupling 3D printing and LEGO.

[M2 <PTR>] This paper introduces Hybrid Prototyping as a way to couple different prototyping methods; combining their complementary affordances and mitigating their limitations. To characterise and investigate this approach,

[M3 <DTM>] a simulation-based study was conducted into the coupling of low-cost 3D printing and LEGO®.

[M2 <PTR>] Key benefits hypothesised are reduced fabrication time and increased reconfigurability.

[M3 <DTM>] Six primitive 3D shapes are simulated using a continuum of hypothetical brick sizes.

[M4 <STF>] Results show a reduction in fabrication time of 45% and a reconfigurability of 57% at the optimum.

[M3 <DTM>] A case study

[M5 <DTR>] highlights the compounded improvements over 3D printing for an iterative prototyping process. These findings mean that increases in prototyping iterations can be made due to reduced time and material costs, accelerating the product development process.

D13 –*Design Studies*, Vol. 61, 2019

Crowdsourcing inspiration: Using crowd generated inspirational stimuli to support designer ideation.

[M1 <STR>] Inspirational stimuli, such as analogies, are a prominent mechanism used to support designers. However, generating relevant inspirational stimuli remains challenging.

[M2 <PTR>] This work explores the potential of using an untrained crowd workforce to generate stimuli for trained designers.

[M3 <DTM>] Crowd workers developed solutions for twelve open-ended design problems from the literature. Solutions were text-mined to extract words along a frequency domain, which, along with computationally derived semantic distances, partitioned stimuli into closer or further distance categories for each problem. The utility of these stimuli was tested in a human subjects experiment ($N = 96$).

[M5 <DTR>] Results indicate crowdsourcing holds potential to gather impactful inspirational stimuli for open-ended design problems.

[M4 <STF>] Near stimuli improve the feasibility and usefulness of designs solutions, while distant stimuli improved their uniqueness.

D14 –*Design Studies*, Vol. 57, 2018

Rendering multi-dimensional problem space as an unfolding collaborative inquiry process.

[M2 <PTR>] This study investigates a group working together in an authentic work setting as they collaboratively render a problem space.

[M3 <DTM>] We employed an existing data set of a group designing for an European automaker. We used a collaborative inquiry paradigm as a lens for investigation. We analysed the dimensions of the problem space the group renders and the collaborative inquiry practices used. The group rendered a multi-dimensional problem space integrating user experience and organizational considerations for realizing user-centred products.

[M4 <STF>] We observed collaborative inquiry practices as four modes of evoking ways of knowing and two modes of building coherence.

[M5 <DTR>] This study offers a new perspective on design as collaborative inquiry – a social process of building coherence to co-construct valid knowledge.

D15 –*Design Studies*, Vol. 46, 2016

Evidence-based design heuristics for idea generation.

[M1 <STR>] How do product designers create multiple concepts to consider?

[M2 <PTR>] To address this question,

[M3 <DTM>] we combine evidence from four empirical studies of design process and outcomes, including award-winning products, multiple concepts for a project by an experienced industrial designer, and concept sets from 48 industrial and engineering designers for a single design problem. This compilation of over 3450 design process outcomes is analyzed

[M2 <PTR>] to extract concept variations evident across design problems and solutions.

[M4 <STF>] The resulting set of patterns, in the form of 77 Design Heuristics, catalog how designers appear to introduce intentional variation into conceptual product designs.

[M5 <DTR>] These heuristics provide ‘cognitive shortcuts’ that can help designers generate more, and more varied, candidate concepts to consider in the early phases of design.