Structuring an academic 'argument' within a journal paper

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Introduction

Although every piece of academic writing is unique, they all aim to persuade the reader of one main idea or of the integrity of a central finding. This central claim is often referred to as the argument. This resource will focus on the most common structure of research arguments in the social sciences and business, and on the steps in the story line, or the means by which a thread that carries the argument from the beginning to the end of a journal article is developed.

The key elements of an argument include the:

1. statement of the problem
2. literature review
3. The precise focus of the research stated in the form of an hypothesis, question, aim, or objective
4. method and methodology
5. results/evidence
6. discussion and conclusion.

The amount of writing used to accomplish each step will differ widely between journal papers. Because of the short length of journal articles the first three or four elements are often, but not always, provided in the introduction, leaving the bulk of the paper free to describe and discuss the results or to present evidence to support the argument.

1. The 'problem'

Like other academic writing, journal papers open with an unresolved problem or paradox, or an explanation of something important that we need to know. This is done in order to get the reader's attention, establish the significance of the research, and signal the literature/s that the research will contribute to. In some papers, this is accomplished in a few sentences or paragraphs. In others it may take several pages.

Common introductory strategies that establish a relationship with the reader:

- a quotation (appropriate to the main focus of the paper and explained in text);
- a concession (recognise an opinion/approach different to your own);
- a paradox;
- a short anecdote or narrative;
- an interesting fact or statistic;
- a question or several questions (that you will proceed to answer);
- relevant background material;
- an analogy;
- an important definition (examine its complexities).

Whichever approach is adopted, the problem should be explained in a way that relates to the concerns of the people writing in the field, and or to issues of broader importance. Examples are provided in the journal paper summaries provided below.

2. The 'gap' in the literature'

The statement of the problem is followed by a statement of the 'gap' in the field/s of literature that the research aims to address. The 'gap' could refer to an unresolved question, a paradox, a missing piece of information, a theoretical inconsistency or to some other weakness within existing understandings of the phenomenon under study. Writing about the gap in the literature is often referred to as the 'literature review' although 'literature review' is also used to refer more generally to writing that critically engages with the ideas of others. When we

talk about the literature review in this resource we are referring specifically to that part of the journal article whose task is to outline the 'gap' in the literature that defines the significance of the research.

The statement of the gap is important because it:

- introduces and explains findings and theories that support the research;
- draws together the main conclusions of literature relevant to the topic;
- highlights unresolved issues or questions within the literature;
- establishes the originality or 'significance' of the research.

3. Hypothesis, question, aim, objective

Classically, the literature review is followed by a statement of the precise focus of the research. This can take many forms including an hypothesis, a question or, more commonly, a statement of the aims or objectives of the research. In order to avoid repetition and to keep the focus precise, it is important to use only one of these forms. Since research aims to produce knowledge, as opposed to directly changing the world in some material way (with the possible exception of action research), the statement of the research objectives should use the language of knowledge production. For instance, research can provide insights, information, and knowledge, it can investigate, compare, examine and explore. It cannot, in itself, change policy, improve people's lives, or produce any other physical outcome in the world. For this reason, research objectives are usually confined to claims about the kind of knowledge that will be produced. Claims about outcomes that cannot be promised are avoided.

In some journal articles, particularly in the humanities, there is not statement of aims or objective. Instead the paper directly states the argument in the introduction, usually following the statement about the gap in the literature. The sentence opener 'I argue ...' or 'it will be argued' is often used to signal that the statement that follows is the main point of the paper. For this reason, using the phrase 'I argue ...' to introduce ideas that are not central to the article should be avoided because they can mislead the reader as to the main point of the paper.

4. Method and methodology

The method and methodology explains how you will answer the question, or how you arrived at your conclusions. A concise statement of the method and methodology is usually provided in the introduction, and/or the abstract. This statement should explain what you did to achieve the research aims, or reach your conclusions, and why this approach was appropriate for your research. You are aiming for a statement that carries the critical information with as few words as possible.

The first step in summarising the research design, whether in the introduction or within a research design section, is to say why you did what you did. This is accomplished by reminding the reader of the objective of the research and then following with a description of the methods. This description should include the method (survey, experiment, textual analysis), where the research was conducted (geographical or institutional context), with whom (sample population), how many research participants were involved (number), and any other information the reader needs to understand the core elements of the research design.

Once you have described the method, the next task is to explain what you expect your data will show or reveal. What kind of knowledge do you expect your research design to produce? This is often referred to as the research methodology or the 'theoretical framework' of the thesis. The methodology explains the assumptions that underpin the study design. These assumptions can range from highly philosophical or theoretical to more practical elements of the design. You are effectively telling your reader how you wish them to read your findings. Within what methodological or theoretical frame or set of limits do you wish your findings to be read?

Methodology sentence stems

- (my method) analyses ... in order to ...
- (my method) looks at how ... and suggests ...
- (my method) looks at ... and their influence on ...
- (my method) describes ... and their involvement in ...
- (my method) looks at the process by which ...

- (my method) critiques ... and describes how ...
- (my data) was analysed to test the hypothesis that ...
- (my data) was analysed to determine whether a relationship exists between ...

How much to write:

- When the method, methodology or model is simple, well known or uncontroversial do not add extensive detail. Consider covering the method within the introduction of the paper, and adding any further detail to the section on the results and discussion.
- When the method, methodology or model is less straightforward, requires more detail to explain, or is more open to question, consider dedicating a separate section to a discussion of method and methodology.
- When the method, methodology or model is unique, highly detailed, or your study design is likely to raise significant questions in the reader's mind that could affect how they view your findings and the integrity of your evidence, provide enough descriptive information and explanation to justify and clarify your research design and its underpinning rationale. Always provide references and be as concise as possible.

Sections that describe the study design include information about:

- the population or sample
- sample size, how samples were selected
- the location of the sample
- materials, experimental processes used
- how the data was collected, summarised, analysed
- surveys, questionnaires and tests used
- computer programs (including version or release number, non-default options, how used to analyse data, and references)
- mathematical models
- equations and non-standard statistical tests
- definitions of indicators, how derived variables were calculated
- relevant theory.

If you do choose to incorporate a separate methods section, do not include results, unless they were obtained to shape some aspect of the method, and are more relevant to the methods section than to the results section.

Example study design introduction including objective, method and methodology
In order to assess the impact of management control systems and strategy upon performance in not-for-profit organizations (links from question), the study compared the perceptions of not-for-profit senior executives with performance indicators from their organizations. Senior executives were targeted because they can provide critical information about the overall strategic philosophy of the organization, and they play an instrumental role in defining and building its strategic plan (provides methodological rationale for choice of sample population). From a sample of 400 not-for-profit executives located cross all industry sectors from all states of Australia, one hundred and thirty surveys were collected, and 30 semi-structured interviews were conducted (provides description of method including sample size, survey size, interview type, and number of interviews conducted). Statistical survey results were compared with interview themes in order to illuminate the relationship between management approach and performance outcomes (provides methodological rationale).

Research design writing tip
Avoid writing about methods or methodology in a general way. Always link the discussion to your own study.

Point of view
When writing up the research design, use the point of view of the study, 'the study design comprises ... ', 'the sample population was drawn from …') or, less commonly, the researcher, 'When sensitive issues arose, I ... '.

Tense
Use past tense verb to report methods because these were conducted in the past (for example: 'interviews were conducted', 'surveys were distributed').
Use present tense verb to describe how data are presented in the chapter because this information is still true ('The results show that …').

5. Results/evidence

The next step in the story line is the provision of the results or discussion of the evidence to answer the question or support the argument stated in the introduction. Here you are telling the reader what you found. Evidence might be organised around elements of the method, central themes, theories, ideas, case studies, historical periods, policies, fields of literature, context, geographical area or other grouping. The important thing is that the discussion is clearly tied to the question or argument of the thesis.

Once you have determined how you will divide up the evidence, some general principles apply to the results writing process.

- Report only results or evidence pertinent to the research question or argument.
- Provide a statement of the main result/s or argument in the introduction to the results section, then follow with the data.
- Name the themes or topics covered within the results section in the introduction.
- Report results or evidence in order of importance or persuasiveness (most important first), or chronologically (for staged experiments), or in order of question asked (for survey research).
- Report all results or evidence pertinent to the question or argument (not just those that support the hypothesis).
- Present complex data within figures or tables. If it can be explained just as well in the text, do not provide a figure or table.
- Provide precise measurements.

Write the result or main point first and then follow with the data
One way to ensure you are summarising, synthesising and interpreting data, rather than simply reporting it, is to provide the result first followed with a description of the data that supports it. This will avoid a results section that reads like a long list of figures and tables, quotes from research subjects or descriptions of statistical outcomes with little story line to explain the data or draw out its significance for the central research question.

Explain how a result is significant
Instead of stating that a result is significant, explain the significance of the result. For example: instead of saying 'Results for the distance travelled were highly significant', try 'While the average distance travelled is five kilometres, the sample population travelled on average 10 kilometres further. This can be explained by ...'

Figures, tables and graphs:

- are necessary only when they provide information that expands upon, or cannot be explained in the text;
- should contain sufficient information to enable them to stand alone;
- are always discussed in the text;
- use titles to describe core content, (name of variables, type of analysis);
- are clearly and consistently labelled and numbered;
- list one column of data per heading;
- are uncluttered.

Refer to figures and tables in the flow of the discussion.
Avoid using a figure or table title as a topic sentence. Instead, cite tables and figures in brackets after relevant results statements. For example instead of saying 'A summary of grocery retail transaction data is presented in Fig. 2', try 'Grocery retail transaction data showed that … (refer Figure 2)'.

6. Discussion and conclusion

The final step in the story line is to provide the answer to the question, or to summarise the argument and the main evidence used to support it. This is followed by a discussion of the significance of the research and the implications that arise from the research.

The goal of the conclusion is to highlight the importance of the argument, to draw together the discussion into a final point, and to leave a lasting impression on the reader. In the same way that the paper opens with a statement of a problem that is of broad concern, it should close with commentary that highlights the take home message. The aim in the conclusion is to make this message as clear and accessible as possible.

Some papers have separate discussion and conclusion sections. The difference between the discussion and conclusion is one of inference. The discussion section discusses actual results. Conclusions are more speculative in tone, exploring the possible implications of the results. In many qualitative papers, results or findings are difficult to disentangle from the discussion and are combined within the main body of the article.

The significance of the research and the proposals flowing from the research might be discussed in relation to one or more of the following:

- the community in the 'real world';
- policy development (government, organisational);
- professional practice (as an academic or other profession - teacher, engineer, manager etc);
- contribution to academic debates;
- social or political action and research.

Link the introduction and conclusion
Try reading the introduction and the conclusion one after another. They should flow. If you have used examples, metaphors or other illustration to highlight the problem or significance of the research, you might return to the same device in the conclusion.

Synthesise don't repeat
You can avoid repeating information that has already been provided by drawing the findings together into an overall point that has not been made yet. The sum may be a more powerful conveyor of meaning than the parts.

Go out with a bang
Use the last paragraph or sentence of the paper to provide closure to its overall questions. Pay attention to this paragraph and sentence; draft with care.

A note on 'recommendations'
Conclusions offer solutions to issues and suggest courses of action flowing from the research. However, the aim of research is primarily to produce knowledge, not law, policy or a set of recommendations. We cannot ultimately control how our ideas are interpreted or implemented in the world. By maintaining a scholarly tone and exploring the possible implications of your ideas in broad terms, you can avoid dating your research unnecessarily, or limiting the reader's imagination to a specific set of outcomes.

Summary

- Use the beginning and ending of the introduction, middle sections, and conclusion to provide critical information.
- Foreground the conceptual steps in the story line.
- Foreground the central point of the paper.
- Keep the focus on the research story at all times. Do not write about standardised procedures or tangential information.
- Never describe literature, methods or theory in a general way, always relate these discussions to your research.

- Do not report twists and turns in the research process, or what you have learned in the research process. The research paper addresses a question, or persuades the reader of a main idea.

Exercise

In order to exemplify the structure of a well written academic paper, summaries of the main steps in the story line of a selection of three well written journal papers have been reproduced below. In the original papers, each step is located either in the introduction of the paper, or in the first or last paragraph of the results and discussion sections of the paper.

A useful exercise to ensure that the steps in your argument link together as tightly as they do in these example papers, is to produce a similar summary of the main steps in the story line of your own paper. By pulling out the main information in a skeleton version of your paper, you and your supervisor will find it easier to see if the main links in the story line hold together logically. Once you have written the key information in each step within the skeleton version of the paper, you can then go through the longer version of the paper and make sure this information is provided in the introduction of the paper, in the first paragraph of the results section, and in the last paragraph in the conclusion section.

Marketing example

Larson, JS., Bradlow, ET. and Fader, PS. (2005), 'An exploratory look at supermarket shopping paths', International Journal of Research in Marketing, 22:395-414.

Statement of the problem (first paragraph introduction)
Most marketers have a well-established schema for shopper travel behaviour within a supermarket - the typical customer is assumed to travel up and down the aisles of the store, stopping at various category locations, deliberating about their consideration set, choosing the best (utility maximising) option, and then continuing in a similar manner until the path is complete. Despite the common presumption of this scenario, little research has been undertaken to understand actual travel patterns within a supermarket. How do shoppers really travel through the store? Do they go through every aisle, or do they skip from one area to another in a more direct manner? Do they spend much of their time moving around the outer ring of the store (a.k.a. the "racetrack"), or do they spend most of their time in certain store sections?

Literature review and objective (separate paragraph introduction)
The goal of this research is to undertake exploratory analyses, useful for data summarization, inference, and intuition about shopper travel path data. Specifically, we want to identify typical in-store supermarket travel behaviours that will help us understand how shoppers move through a supermarket. Similar research ideas, summarizing large sets of 'behavioural' curves have been explored using principle components analysis methods (Bradlow, 2002; Jones and Rice, 1992); however, our goal here is not to explain the maximal variation across customers with principle curves, but instead to cluster respondents into 'types' of shoppers and describe the prototypical path of a general cluster.

Method and methodology (separate paragraph introduction)
A rich new data source now allows us to examine behavioural questions. Sorensen Associates affixed RFID (radio frequency identification) tags to the bottom of every grocery cart in an actual supermarket in the western US. These tags emit a signal every 5 seconds that is received by receptors installed at various locations throughout the store. The arrival latencies of the signals at the receptor locations are used to triangulate the position of the grocery cart.

Results/evidence (introduction of main body)
For shopping trips under 10min, there exist two distinguishing patterns. Most shoppers choose the 'default' start path along the racetrack to the right of the office storage area between the aisles and the produce. A significant proportion of short paths breaks the default pattern. ... We will see from the results of the longer groups that shoppers not faced with such self-imposed time constraints are more likely to follow the default path up the right hand side of the store. ...

Discussion/Conclusion (last paragraph)
There is an extremely low occurrence of the pattern commonly thought to dominate store travel - weaving up and down all aisles. Most shoppers tend only to travel select aisles, and rarely in the systematic up and down pattern

most tend to consider the dominant travel pattern. ... Whereas previous folklore perpetuated the myth that the perimeter of the store was visited incidental to successive aisle traverses, we now know that it often serves as the main thoroughfare, effectively a 'home base' from which shoppers take quick trips into the aisles. ... This simple observation has important implications for the placement of key products, the use of end-cap displays, etc. Products placed at the center of aisles will receive much less 'face time' than those placed toward the ends. Of related interest is a practitioner study that found that placing familiar brands at the end of the aisles served as a 'welcome mat' to those aisles, effectively increasing traffic (Sorensen, 2005). ... A study of the linkage between travel and purchase behaviour seems a logical next step. Linking specific travel patterns to individual purchase decisions may lead to an improved understanding of consumer motivations for purchasing certain items, and can shed light on the complementarity and substitutability of goods in ways that more traditional 'market basket' analysis cannot capture.

Education example

Paton, M 'Is critical analysis foreign to Chinese students?' In Communication skills in university education, Emmanuel Manalo and Glenis Wong-Toi (eds), pp. 1-10.

Statement of the problem (introduction)
In a workshop presented at the 7th Pacific Rim First Year in Higher Education Conference, Kutieleh and Egege (2003) argued that critical thinking is specifically a Western approach to knowledge claims and that the challenge for transition programmes for international Asian students is the incorporation of critical thinking into first-year programmes without taking either an assimilationist or a deficit approach. This follows the arguments of those such as Atkinson (1997) and Fox (1994) that critical thinking is incompatible with Asian cultural attitudes.

Statement of the argument (introduction)
I argue, in contrast, from the perspective of history of science in China, that critical thinking is not the preserve of Western culture and that the comparative lack of "critical" quality in the academic work of East Asian international students in English is due to the difficulties of study in the context of edge-of-knowledge discourse in a second, third or fourth language. Regardless of their cultural background, the majority of typical first-year students need to be inculcated into critical thinking because from the perspective of developmental psychology, even though such students are generally near their peak of fluid intelligence, other cognitive abilities related to critical thinking, such as integrative thinking and reflective judgment are less evident at their stage of development.

Method and methodology (introduction)
The paper draws on critical literature to demonstrate the critical tradition of China and Chinese learners, and outlines various teaching and learning strategies developed to assist the development of critical analysis for students new to academic writing.

Results/evidence (introduction main body)
A cursory glance at the various volumes that make up Needham's Science and civilisation in China (1959, 1962) would indicate that elements of scientific thinking have been a major source of the success of Chinese culture over the millennia (developed in the first part of main body).

Lifespan developmental psychology suggests that it is not only Chinese students but all undergraduate students in their early years of academic study who need to be inculcated into critical thinking and the discourse that this involves in English (developed in the second part of the main body).

If students understand that critical analysis is the basis of academic argument, they then understand through this exercise the macro-structural form that their writing should take if it is not to fall into a mere summary of others' ideas. Exercises that prove useful in examining the structure and nature of academic argument include ... (final part of the main body)

Discussion/Conclusion (last paragraph)
To conclude, if one considers the history of science in China, it would be almost culturally chauvinistic to suggest that critical thinking is specific to Western culture. I argue that critical thinking is evident in all cultures in that it is through such thinking that humanity survives. However, critical thinking as the basis of knowledge as seen in the university context is not necessarily easily come by, especially with young adult students who have a tendency to see knowledge as a fixed commodity to be ingested and then spat out in examinations. This, of course, is exacerbated by the plethora of examples of the lack of critical thinking exhibited by those in power in society

outside (and sometimes inside) the academy. This lack of critical thinking reinforces any reticence on the student's part to be critical, whether it be because of second language difficulties or stage of cognitive development. Thus, if we as academics are to keep the academy as an institution for adding to the knowledge of society through critical thinking, we should not only model the discourse of critical thinking but also inform students as to the reasons for such a discourse.

Human resource management example

Greenberg, D., Ladge, J. and Clair, J.(2009) 'Negotiating pregnancy at work: Public and private conflicts' Negotiation and Conflict Management Research, Vol. 2, No. 1, pp. 42-56.

Statement of the problem (introduction)
Modern organisations offer an increasing number of family-friendly policies intended to support employees needs (cf. Kossek & Ozeki, 1998; Osterman, 1995). Even though these policies are well-intended, most organizations are still tightly wedded to the traditional ideal worker model, which assumes organizational members commit the majority of their physical and psychological time to their work. This steadfast tradition of the ideal worker has meant that, in today's organisations, well-intended policies rarely provide support for work-life balance and caretaking because of the stigma associated with those who take advantage of them (Kelly & Kalev, 2006). While there are many points in working women's careers when they may be challenged to assimilate into the ideal worker norm, this experience is particularly pronounced when a woman is pregnant. During pregnancy, the maternal body and its suggestions of pregnancy, babies, and breast milk sets mothers apart from the norms of the ideal worker as these norms are grounded in masculine assumptions about work (Gartrell, 2007; Williams, 2000). The inherent contradiction pregnant women face between performing as an ideal worker and an ideal mother is likely to give rise to a wide range of personal and interpersonal conflicts that a pregnant woman will have to negotiate while at work.

Literature review and objective (introduction)
While some research has been done on the negotiations pregnant women face (e.e., Buzzanell & Liu, 2007; Liu & Buzzanell, 2004; Miller, Jablin, Casey, Lamphear-Van Horn, & Ethington, 1996), existing research has primarily focused on the negotiations related to maternity leave. Yet, we would expect that the conflicts pregnant women face in the workplace are likely to extend far beyond maternity leave. In this study we move beyond existing research to investigate the range of intrapersonal and interpersonal conflicts pregnant women negotiate during their pregnancy at work.

Method and methodology (introduction)
Through in-depth interviews with 30 professional women who were pregnant for the first time, we classify the varied issues women negotiate during pregnancy as well as explore why these issues arise and how women respond to them.

Results/evidence (first paragraph main body)
We were surprised to uncover that while women felt their professional identity as an ideal worker was being challenged, they also experienced an affirmation of their personal identity as a pregnant woman as they gained access to a network of working parents. As a result of these mixed messages, women found themselves negotiating conflicts in two distinct spheres. In the public sphere, women were negotiating with various stakeholders in their organisations. These negotiations involved substantive issues related to pregnancy and role along with intangible issues related to identity, professional image, and public/private boundaries. At the same time, we found pregnant women were dealing with internally charged, private negotiations. These negotiations related to women's identity and self-image rather than substantive pregnancy and work role conflicts.

Discussion/Conclusion (last paragraph)
Managers need to recognise that women are not just engaging in formal negotiations over maternity leave, but also are embroiled in intrapersonal negotiations in which they are striking private bargains with themselves about their future identities. Organisations would benefit from providing women with resources to help them make thoughtful decisions about their professional futures. Organisations must also consider that pregnant women have to negotiate intangible aspects of their pregnancies at work, such as the extent to which their private lives become public during their pregnancy. Organisations might consider expanding discussions on sexual harassment and diversity to include the topic of public/private boundaries, since these shifting boundaries can create a hostile workplace for many employees - not just pregnant women.