

## **STRUCTURING A CONVENTIONAL EMPIRICAL SOCIAL SCIENCE ARTICLE**

There are an infinite number of ways of structuring an empirical social science research article. If everyone used a different structure, however, the dissemination of ideas and findings would be very inefficient. Under that scenario, to understand the article, readers would confront two tasks—figuring out the structure of the article (location of the hypotheses, methods, etc.), and (only) then trying to understand and assess the arguments made. Therefore, over the years, an ideal typical or stereotypical structure has emerged (it changes, but very slowly) in the social sciences. Actually all disciplines have such ideal types and for the same reason: efficiency of transfer of knowledge. In fact, if you think about it, rules of grammar and norms of good writing serve this same purpose—allowing readers to anticipate that sentences follow conventional rules of grammar, and that the sentences are organized in a logical way. For example, the idea of having a topic sentence at the beginning of each paragraph, a concluding sentence at the end, and a segue into the next paragraph, means the reader knows to expect this, which makes understanding a paragraph much easier. Another useful convention that has become essential is the use of headings and subheadings. Not only are they required, but the kinds of headings for empirical papers are pretty much pre-determined, as we will see below. This has not always been the case—most of the articles published in the first issue of the *American Journal of Sociology* had no headings or subheadings at all. But over time, conventions about headings emerged. The headings and subheadings make papers much easier to read, and when they follow pre-determined conventions of order and content, really make the transmission of ideas efficient. Below is the ideal-typical structure of a quantitative empirical paper with brief descriptions of content.

### **I. INTRODUCTION**

- A. Start with a cliché, a statement of fact, or a claim (e.g., a provocative sociological insight).
- B. Set up the article
  1. State the thesis of the article and argue why it is important (especially sociologically important). Get the broad issues out but in brief form.
  2. Provide support for why the thesis is important (literature has ignored; methods are poor; data are bad; no theory). If you can't support the argument, quit now!
  3. Briefly discuss how your paper will get at the thesis; perhaps at the end of the introduction, you can describe the sections to come (some will list the key findings here; I prefer not to).

### **II. THEORETICAL BACKGROUND**

- A. The purpose of this section is to present the sociological theory or framework motivating the empirical analysis.
  1. Start with the broad theoretical issues and narrow as you go.
  2. You will begin with abstract ideas and end up with concrete testable hypotheses (ideally).
- B. Broad theoretical issues.
  1. If it is a formal theory, identify general assumptions, propositions, concepts, etc.
  2. If it is an informal theory, talk it through, beginning with the abstract, and ending with something pretty concrete (e.g., testable hypotheses).
- C. Discuss competing theories or explanations.
  1. Sometimes you have explicit theories pitted against each other: Wilson vs. Massey or broken windows vs. collective efficacy
  2. At other times, you're testing a theory against an implicit alternative or putting together a group of hypotheses from different but compatible theories or perspectives.
  3. At still other times you are trying to identify and test the causal mechanisms that might underlie or account for an empirical relationship found in the literature (e.g., why does age affect crime?)

4. At still other times, you're replicating an empirical finding in the literature, or "discovering" a new regularity, or extending a finding to a different domain.
  5. Tip: try to specify competing hypotheses; if they are each important, then you have an important result regardless of the outcome!
- D. Discuss how you will examine the theory or theories – discuss major propositions that may imply testable hypotheses.
- E. End with a segue into the next section

### III. MODELS AND HYPOTHESES

- A. Describe a model of the social process (use a figure, graph, or great words).
1. Describe the concepts, which have been identified above.
  2. Discuss assumptions of the model (exogeneity, causal order, etc.)
- B. Describe and perhaps enumerate hypotheses that you will test (make sure they are set up by the theoretical discussion and presentation of concepts and models)

### IV. DATA AND METHODS

#### A. Sample

1. Population sampled (why is it appropriate?)
2. Sampling method (random, stratified, cluster) and size (problem of selection bias)
3. Response rate, problem of selection bias, problem of non-response.

#### B. Measures of Key Concepts

1. Here you discuss measures of the theoretical concepts developed above (hint: develop the theoretical concepts with an eye toward your measures).
2. Discuss validity, reliability (alpha coefficients, measurement models, etc.)

#### C. Statistical Methods

1. Describe the problems that require certain statistical methods, for example:
  - Binary outcome calls for a logit model
  - All categorical data calls for a log-linear model
  - Multi-level (nested data) calls for an HLM model
  - Panel data with inadequate controls call for a fixed-effects model
  - Panel data on events with exact timing and censoring calls for an event history model
  - Endogeneity problem calls for an instrumental variable model, etc.
2. Describe the statistical method and estimation procedure.
3. Describe any other issues: e.g., use multiple imputation for missing values, robust standard errors because of heteroskedasticity, etc.

### V. RESULTS

- A. Easiest way: follow the hypotheses enumerated above!
- B. Be very careful to create tables that convey the thesis of the paper.
1. For example, descriptive tables on distributions of variables; tables showing regression coefficients should have the independent and dependent variables clear.
  2. Read articles in the top journals (*ASR*, *AJS*) and copy their style!
- C. Be sure to keep substantive issues in mind as you present results – remind the reader why this coefficient is important.
- D. Prioritize the results in importance – you may want to present them in inverse order (to create anticipation!), but be clear in your mind (and the reader's) which findings are most important.
- E. Summarize the key results if they're complicated or numerous.

## VI. SUMMARY AND CONCLUSIONS

- A. Reiterate key findings and their theoretical implications.
  - 1. Refer back to your theoretical section: it should set up this discussion precisely.
  - 2. If it doesn't, you need to revise! The connection must be direct and obvious.
- B. Mention caveats – there always are some (endogeneity, small sample, imperfect measures, etc.)
- C. Raise broader theoretical/substantive/policy issues.
  - 1. Here, you can pontificate a bit.
  - 2. Reviewers and editors are less concerned with this – talk about future directions, larger indirect theoretical issues that are implicated but you couldn't test, etc.
- D. End on a positive note.
  - 1. Try to reiterate the key findings and contribution of the paper.
  - 2. Some people will just read the abstract and flip to the end.

By adhering to this structure when writing an empirical paper, you will maximize the chances of getting published in a top journal. Reviewers will be able to read your paper quickly (and therefore, happily) and without misunderstandings. Editors will quickly recognize that your paper has the professional look of those of the top researchers in the discipline. Of course, as with any ideal type or blanket rule, there will be times when it makes sense to depart from the rule. There is a cost associated with departing from the ideal type—the cost of reducing the efficiency of transmitting information to the reader, and thereby increasing the risks of misunderstanding. Therefore, any departure from the stereotypical model should be made only when the returns from the departure clearly outweigh this cost.

## ADDITIONAL TIPS AND SUGGESTIONS

### Find Good Models

The best way to write in the style that gets published is to read articles in the journals to which you aspire and emulate the writing style, structure, tables, figures, etc. This will vary by discipline, obviously—compare psychology to sociology—but also within subfields of sociology. When considering a publication outlet, I always read through the journal to see what kinds of papers they publish and how they are written. You want to mimic success. For virtually every creative task, the novice begins by imitation, mimicking the work of reputable others. Fiction writers learn some basics about writing stories, but then read the works of famous authors, and try to imitate those authors first before eventually developing their own voice. Musicians learn the basics of music theory as well as the techniques for playing an instrument, then typically imitate the playing of others, again before developing their own sense of style. And so it goes in sociology. Not only do sociologists learn the practice of sociological research by imitating the styles of others and building on others' theoretical ideas and empirical findings, but they also imitate the writing styles and organization of successful sociologists. As you are reading sociological works relevant to your project or paper, take note of the styles of research and the styles of writing and presenting arguments and research results. Try to imitate the structure of top sociologists in your sub-area. Take time to find out who the top people are by your own reading—for example, how are specific authors and works discussed in literature reviews?—and talk to faculty about who they consider to be the top figures in an area. In reading their papers, ask yourself why the author chose the structure and organization that she did. Compare that with other papers, particularly those published in third tier journals. Because your paper will not have the identical slant of other good models, it will likely not have the identical structure of others. You will want to apply some best practices you find in the literature to your own case, and modify it to fit your specific paper.

### **More Suggestions on Structure**

Another way to think of the structure of an empirical social science article follows from my freshman English class (which I hated). The structure, according to the textbook, should look like an hourglass: start very broadly with some pretty broad sociological idea upon which your paper is based, then narrow as you go—linking that idea to the study you are presenting. Then, as you proceed through the models, hypotheses, data, and results section, you are being very narrow, very linear, and very tight. But in the conclusions or discussion section, you may broaden again—present the concrete results, discuss some caveats, and then return to the larger sociological idea you began with and speculate about future research developing those big ideas. I once was dealing with an *ASR* editor over a revise and resubmit and he said something that struck me. The reviewers didn't like the way I had posed a theoretical interpretation of my results in a theoretical section, and he suggested moving the interpretation to the discussion, where "you can say almost anything you want." In a way, that is true. The science is contained in the theory, models, data, methods, and results sections. At least for sociology papers, the introduction and the conclusions often go beyond the data and raise more provocative implications. This doesn't hold in all other disciplines.

Here is another point, which may seem obvious, but is important enough to mention. When writing a paper, do not write it up in the chronological order in which the research was conducted. Sometimes this makes sense, as when you followed the normal science model and developed a theory, operationalized its concepts, and specified hypotheses, then collected data, and finally tested the hypotheses. Often research does not follow that nice chronology. But you still want to write up the paper using the headings and subheadings above, even if your research activities did not follow these headings as steps in time.

### **Sell Your Paper to the Reader: Highlight the Two or Three Innovations that will Catch Their Eye**

We have all seen how the news these days often is reduced to a couple of sound bites—seen CNN Headline News—rather than full stories. But the use of sound bites has an important function: they force one to reduce the story to essentials and convey that essence to the audience quickly and efficiently. In academic papers, titles serve as a sound bite, and abstracts as well. If sound bites capture the essence of a paper, then it follows that the author would do well to organize the paper around those sound bites. Here I mean the one or two or three innovative or distinctive features of your paper that captures the paper's contribution in a sound bite. These innovations can vary from a new dataset, a new method, a novel theoretical argument, to a synthesis or integration of previous work. A helpful hint would be to identify those key innovations and play them up! You need to tell the world (and reviewers) that you've done something new and innovative. My former advisor called this, "sending a few flags up the flagpole" (he served in the army during WWII). For example, Quillian had a very innovative method in his article, of looking at population flows over time, rather than mere transition rates, and he emphasized this nicely in the article, showing how it could yield more accurate results and (second sound bite) allow him to adjudicate between W.J. Wilson and Massey and Denton. In an early paper, I emphasized using a measurement model to test differential association theory, showing how it would overcome potential bias, and would make the theory testable, undermining a key criticism of the theory. Mario Small emphasized that he was using the concept cohort replacement in an ethnographic framework, something not seen before. He also showed why structural variables derived from social disorganization and underclass theory could not explain the neighborhood changes he had observed, which set up a puzzle that he would solve. Ideally, at some point in doing your analysis or writing your paper, you will realize that you have, say, three key innovations that makes your paper a contribution to the literature. Identify these innovations, prioritize them, and then think about organizing the presentation around those points. That is, you will review the literature with the purpose of demonstrating that these three innovations have not been done before and will improve our state of knowledge. Then return to these points in the conclusions. That will make for a tight paper that is well sold.

## **Literature Reviews: A Necessary Evil**

It is imperative that you convey to the reader the research literature in which our study is embedded. This allows the reader to judge the importance of the larger literature to which you are addressing—e.g., that line of research is dumb, outdated, and been shown to be wrong! It also allows the reader to judge the significance of your research within the literature. But literature reviews can be terribly boring to read, following a clichéd pattern of “Smith found this, Jones found that, and Suzuki found another thing.” Here’s a suggestion: After writing out a summary of the literature for yourself in this boring way, try to select out one or more themes that relate the literature to your project. For example, try to use the two or three innovations of your paper to organize your literature review, so that you are not just mindlessly reviewing a litany of previous studies, but rather are reviewing them to make an argument in your favor: they lack these two or three innovations, which would have made their studies even better.

## **Read your Draft Section-by-Section *Backwards***

Here is a *great tip* that is often hard to implement in practice: when you are finished with your draft, read it backwards, section by section. You should notice that every section is set up by an earlier section, so that all sections are directly and linearly linked. That is, the conclusions should follow directly from the results; the results should follow directly from the hypotheses and statistical models; the hypotheses should follow directly from the theoretical (or substantive) discussion; the theoretical section should follow directly from the introduction. If there are any stray paragraphs or sentences that are superfluous in this linear determination, cut them out of the text and either include them as a footnote or save them in a file for future use. Following this strategy will yield a very tight, impressive scientific article. You should get in the habit of *editing your papers*; they can *always* be improved by making them more concise, improving the structure of sentences, providing better segues, etc. Try not to fall madly in love with certain sentences or paragraphs. The separation can be painful! I fell in love with a bunch of sentences in a paper and could not bear to part with them, even though the editors demanded a 25% reduction in the paper’s length. The editors ended up doing the cutting, which was very painful—they used a hatchet!

## **Some Final Remarks**

Finally, if you sometimes get intimidated by the monumental task at hand (for example, writing up an M.A. thesis, a Ph.D. dissertation, or a paper to be submitted for publication) or feel like you have to have something brilliant and final to say before committing it to writing, remember that making a contribution to the literature is a life-long process that doesn’t end until you quit, retire, or die, whichever comes first. The thesis might look foreboding now, but five years from now, you’ll look back and think, “What was the big deal?” Same with the dissertation. (At a more micro-level, if you are having trouble with the first sentence or paragraph of the paper, either leave it blank and come back to it—it will likely have to change anyway—or just start with a replaceable cliché: “Over twenty years have passed since...” “One of the most important sociological questions concerns...” And again, look at models from good authors of articles similar to yours.) Sometimes it is useful to disavow all connection to a particular paper once it is completed. Everything is a work in progress; your next paper can always improve on your current one. But it’s best to get the current one out now and published, and then worry about the next one. Do the best you can, learn from it, and move on and do even better! This advice is particularly important when you are an assistant professor on the tenure track. Remember, publish or perish!

One last useful mantra: *writing is fun!* Repeat this over and over again, particularly in the throes of writer’s block. Try to write as often as you can. Write notes to yourself, emails and text messages to friends and family, précis for your seminars. All the while, try to improve your writing—make it a little clearer; find that word that fits perfectly. Try to identify yourself as a writer and take pride in your writing. All academics are writers. Conversely, try *not* to define writing as a chore, a necessary evil, or something to be avoided at all

costs until you are forced to put something down on paper. If you define a situation as aversive, it will be aversive in its consequences. Putting off writing will make it much more difficult when you are finally forced into it. Writing well will get you noticed, and more importantly, get you published.