The Little Book on Research Writing

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Introduction:

- Barbara Minto's Pyramid Principle: analytical writing can be structured as a logical dialog between the reader and the writer, and the reader prefers being allowed to descend from the high level to the details. p. 2.
- Writing a paper should have three layers, like the foundations of a building. p. 3.
    - Planning an argument.
    - Building an outline to support the argument.
    - Drafting paragraphs. Do so in a way that allows for the reader to learn as they read.
- At a minimum writing should allow readers to comprehend as they read. p. 9.
- A descending structure is appropriate when the reader must process complex details in a limited amount of time. p. 24.
- Miller 1956: the human brain encodes information in lists of 7 items (±2). Group ideas into hierarchies to keep such a structure. p. 20.
- Descending structure allows more types of readers to learn from your writing. p. 28.

Layer 1: Articulate the argument.

- The challenge is to take stock of all these details and distill them into a single accurate claim about what the paper brings to the literature. What you did, how you did it, why you did it, why it matters, how it compares to what others have found… p. 32.
- **RAP** is the paper's main argument distilled from its key details. p. 34.
- **R:** the research question. Think of R as a version of the research question that the reader might be able to articulate, the answer to which lies in your paper. Allow the reader to recognize your paper as relevant to their interests. p. 35.
    - Keep a lot of versions of R from the start from the start of the project. Get feedback on each. Think about who the primary and secondary readers of the paper are. p. 36.
- **A:** The answer. While R links your argument to reader's concerns, A anchors it to what the paper actually delivers. Think of the main findings and summarize them. When A is articulated, you should be able to see that it is the higher-level idea that takes readers down to the detail of the findings. The task is to extract the main message from detailed findings. p. 36.
- **P:** Positioning statement. Allow readers to see a space in the literature that R and A occupy. The literature represents our collective effort at finding out things worth knowing. p. 41.
    - Allow readers to make inferences about (1) the current state of knowledge, (2) a worthwhile direction in which it could be advanced, (3) how R helps to move in that direction.
    - Consider the expectations that you will form about R, and about the scope of A.
    - P makes space for R, while R is answered by A. As a result, P should idly lead readers to A.

- Try different RAPs. Different combinations will appeal to different audiences. p. 48.

Layer 2: Build an outline.

- Write headings with key takeaways following them. Takeaways should be less than 4 sentences for sections, and less than 2 sentences per section. A reader who skims section headings and their takeaways should know where the main questions they have after seeing the argument will be answered. p. 61.
- Takeaway from the introduction is a paper's RAP. You can try different orders for the three letters. Most people order it with RPA. p. 65.
- We have been brought up to write headings to organize our own thoughts, but this need not be the most meaningful structure for readers. p. 67.
- Headings should help readers get answers to their own basic questions: what do you do in this paper? They should navigate any reader; only after this is secure turn to expert readers and think through questions they might expect to be answered. p. 71.
- Key words are not key words if they are not used consistently. Write subheadings by adding some specifics to key words. p. 76.
- Ask readers what order they expect their questions to be answered in; first consider any reader, then the experts. p. 81.
- Having reader-driven headings leads to a more efficient research process and yields a stronger final draft that will be better able to anticipate the types of evidence readers will expect. p. 82.
- With a good outline, uninformed readers will be able to make inferences about the paper, like (1) identifying the main argument, (2) being able to summarize how it is supported, (3) where they can find answers to their own questions. p. 85.
- Outlines made of bullet points are not RAP outlines. They suffer from the problem that readers and writers have different amounts of prior knowledge. p. 88.
- Takeaways should include: (1) the main message of the heading, (2) the link to the overall story the paper tells (use key words to link sections and develop the story), (3) prepare readers to absorb the details that will follow, (4) provoke follow questions that will be answered in the section. p. 89.
- RAP outline is a useful device for collecting feedback while you are still working on the research. p. 96.

Layer 3: Draft paragraphs

- The dialog sparked by the takeaways (readers' questions and writer's answers) should tour both all the way to the end of the section. At the end of a section we may find a more detailed version of an idea we encountered at a higher level in the takeaway. p. 102.
- Paragraphs should answer the question provoked by the takeaway or a main question sparked by the prior paragraph. p. 104.

- Introductions should have two parts. Part 1 should provoke curiosity; help the reader learn about the context of the paper. Part 2 should help readers get ready for the main business of the paper. In the transition the discussion will change from what other papers do to what your paper does. p. 108.
- Many papers ask for much mor curiosity than is granted by the paper. For example, too often they include grand contextual statements that only vaguely hint at the importance of the paper. p. 110.
- Use P to write the first part of the introduction. First identify the skeleton points being made and decide what other information readers will need on their way to asking R. In effect, insert reader's most logical questions into P. p. 113.
- Part 1 of the intro should take up as much brain space as an impatient reader will give you before wanting to get down to the main business of the paper. p. 116.
- Part 2 should help readers visualize what will come and provoke the right follow up questions. Consider a bridge paragraph between the two parts. p. 119.
- Part 2 should follow RAP. Pick up ideas from the section takeaways ad use these to write up paragraphs in the intro. p. 126.
- One way to check that your paragraphs form a storyline is to take the first sentence of every paragraph, put them in a separate document, and see if others can follow the logic. p. 128.
- One example: the first sentence of each paragraph should carry forward at least one phrase from the previous first sentence. Linguistic links help readers recognize logical links between paragraphs. p. 129.
- You have a good intro when Part 1 makes readers curious and when Part 2 tells a storyline that readers can recognize and prepares them for the body of the paper. p. 130.
- Paragraphs are units of the argument designed to help readers see how their argument is advanced by a chunk of details. p. 134.
- Working within the RAP outline, draft paragraphs by following the takeaways or other paragraphs that appear in Part 2 of the introduction. p. 137.
- The first sentence of each paragraph should offer the paragraph's RAP-relevant main message while provoking follow-up questions that will be answered in its body. Then write the rest of the paragraph to offer the first sentence coherent support. p. 137.
- The first sentence of each paragraph should convey an idea, not detail. It should help readers link the main message with the overall argument. p. 139.
- 3 properties to each first sentence: p. 141.
    - It includes the main message.
    - It can be recognized as being linked to the overall story.
    - It should provoke follow-up questions.
- If it proves difficult to hint at a key idea at the beginning which is detailed in the paragraph, perhaps you should consider whether the right group of details have been chunked into that single paragraph. p. 153.
- Remind yourself of why you are writing the paragraph: what question of the reader have you set out to answer? p. 153.

- Do not use interchangeable terms to refer to the same identity, this applies across a paragraph and across the whole paper. p. 157.
- RAP paragraphs should have 5-6 sentences. If there are more, it is likely an idea has been buried inside which readers will likely miss. In the end, however, structure is more important than length. p. 158.
- Because we tend to write to refine our thoughts, key ideas usually (and unfortunately) end up at the bottom of paragraphs. p. 160.

Conclusion:

- RAP helps researchers produce drafts that allow readers with different degrees of prior knowledge to learn as they read: RAP should go through a paper like its spine. It is what links part into a whole. p. 167.
- RAP also pushes researchers to articulate ideas that would save readers a lot of time and effort if only they were visible in a draft. Too often when you ask researchers questions about their work, you often learn other things about a paper. You hear sentences that were never in the draft but that would have been very valuable to the reader. p. 169.
- The exercise of turning a seeming detail into a RAP-relevant point for the reader often requires the writer to think hard about why or how the detail matters. p. 169.
- Many people delay writing until the results are in. That is like trying to ride a bicycle one wheel at a time. Writing and research go together! p. 173.