

Revising for organization within a section

Key points:

- A paragraph is a unit of thought or a logical step in an argument
- If you're not sure that your writing is organized into paragraphs, try reverse outlining:
 - Summarize each paragraph
 - If a summary requires more than one clause, it should be broken up
 - Compare summaries
 - If two summaries are the same, the paragraphs should be combined
 - Can combine pieces of paragraphs with pieces from others with same message
 - Rearrange material into unified paragraphs
 - Decide sentence order by relationships among sentences
 - Re-order paragraphs
 - Put related paragraphs together
 - Each builds logically on the previous one
- Revise for reader ease after reorganizing

Paragraph= unit or step

Everyone has been taught what a paragraph is: a unit of thought. You probably know that paragraphs should be unified (all about one thing), but writing unified paragraphs may still pose a challenge because usually thought doesn't occur in paragraphs. A logically arranged set of sentences doesn't appear in your head at once; you have to take the disordered bits of information and argument and arrange them into that. Planning the organization of a paper before drafting (see previous lesson) can help with this, but may not ensure that each logical step gets its own paragraph. You might stray from the plan as different ideas occur to you, or you might change your plan as you write, or the plan may not have separated the parts into distinct paragraphs. In any case, having a peer read your draft will help to identify where the organization could be improved. Try reading this example (written by editors of leading medical journals and altered to illustrate the point):

Example version 1: disorganized sentences

¹As CROs and academic medical centers compete head to head for the opportunity to enroll patients in clinical trials, corporate sponsors have been able to dictate the terms of participation in the trial — terms that are not always in the best interests of academic investigators, the study participants, or the advancement of science generally. ²Investigators may have little or no input into trial design, no access to the raw data, and limited participation in data interpretation. ³And, unfortunately, even when an investigator has had substantial input into trial design and data interpretation, the results of the finished trial may be buried rather than published if they are unfavorable to the sponsor's product. ⁴Although we most commonly associate this behavior with pharmaceutical sponsors, research sponsored by governmental

or other agencies may also fall victim to this form of censorship, especially if the results of such studies appear to contradict current policy.⁵ As editors, we strongly oppose contractual agreements that deny investigators the right to examine the data independently or to submit a manuscript for publication without first obtaining the consent of the sponsor.⁶ We believe that a sponsor should have the right to review a manuscript for a defined period (e.g., 30 to 60 days) before publication to allow for the filing of additional patent protection, if required.⁷ Many otherwise respectable and ethical scientists have given up control of publication decisions and accepted restrictions on their contribution to design and interpretation because they know that if they do not, the sponsor will find someone else who will.

⁸The issue of preventing publication of negative results or results of product-induced risk is not theoretical.⁹ There have been a number of recent public examples of such problems, and we suspect that many more go unreported.¹⁰ Arrangements between sponsors and researchers that stipulate the conditions allowing publication of results not only erode the fabric of intellectual inquiry that has fostered so much high-quality clinical research, but also make medical journals party to potential misrepresentation, since the published manuscript may not reveal the extent to which the authors were powerless to control the conduct of a study that bears their names.¹¹ We will routinely require authors to disclose details of their own and the sponsor's role in the study.¹² Many of us will ask the responsible author to sign a statement indicating that he or she accepts full responsibility for the conduct of the trial, had access to the data, and controlled the decision to publish.¹³ When the sponsor employs some of the authors, these authors' contributions and perspective should be reflected in the final paper as are those of the other authors, but the sponsor must impose no impediment, direct or indirect, on the publication of the study's full results, including data perceived to be detrimental to the product.

From Davidoff F et al., "Sponsorship, authorship, and accountability." *N Engl J Med*. 2001 Sep 13;345(11):825-6

How did the passage read? Did it feel like it was moving forward, or did it take steps back or go in circles? How would you go about improving it? One approach to reorganizing a piece of writing is to reverse outline. The first step is to test the unity of the paragraphs by writing a summary of each as briefly as possible:

Paragraph A: corporate sponsors dictate how clinical trials are run and bury unfavorable results, and so do some government agencies; we oppose preventing publication for more than a limited period; participating scientists are not to blame

Paragraph B: preventing publication of unfavorable results is a real, documented problem; we will require investigators to disclose their roles and those of the sponsors and take responsibility for the trial

Compare summaries; re-arrange into new paragraphs

Neither paragraph could be summarized in a single statement, indicating that neither paragraph is unified. How can you take such jumbled groups of sentences and turn them into unified paragraphs? One approach is to compare the summaries of the paragraphs—both of them mention burying unfavorable results, and both mention the editors' opinions on that ("we oppose" and "is a problem"). This suggests that these

might form the basis of new paragraphs, one on how clinical trial sponsors bury unfavorable results, one on how the editors feel about it, and one on what they plan to do to address it. First, we must determine which sentences belong in which paragraph. Here, we'll use a chart; in your own work, you could write in the margins of the draft or add comments in Word—whatever approach works for you.

Example analysis: sort sentences by content

	<i>Key words or phrases</i>	<i>Appropriate paragraph</i>
1	corporate sponsors, dictate terms	Sponsors bury results
2	Investigators may have little or no input	Sponsors bury results
3	results of the finished trial may be buried	Sponsors bury results
4	research sponsored by government, censorship	Sponsors bury results
5	editors, oppose contractual agreements, deny...right	Editors' opinions
6	We believe, sponsor should... right to review	Editors' opinions
7	scientists have given up control...accepted restrictions	Sponsors bury results
8	preventing publication, not theoretical	Sponsors bury results
9	have been...public examples	Sponsors bury results
10	erode... intellectual inquiry, medical journals .. potential misrepresentation	Editors' opinions
11	We will routinely require	Editors' plan
12	will ask the responsible author	Editors' plan
13	sponsor must impose no impediment... on publication	Editors' plan

Rearrange into unified paragraphs

Now we know which sentences belong in which paragraphs—the next step is to determine in which order the sentences should appear. To do this, we'll consider what purpose each sentence might serve within the paragraph and how those purposes relate to one another. In this analysis, we've already grouped sentences according to the new paragraphs:

Example analysis: identify sentences' purposes

	<i>Clues</i>	<i>Purpose</i>
1	As CROs and academic medical centers compete	Introduces topic—reason for overall problem
2	Investigators...little input into trial design, no access to data, and limited... (series)	Gives details about overall problem
3	even when investigator has input, the results may be buried	Narrows problem down to burying results
4	governmental agencies may <u>also</u> ...this form of <u>censorship</u>	Broadening problem of burying results
7	<u>scientists</u> have given up control...because	Explains overall problem—reason
8/9	preventing publication...number of recent public examples	Evidence for burying results
5	we strongly <u>oppose</u> arrangements	States editors' position
10	<u>Arrangements</u> ... erode fabric of intellectual inquiry	Gives reason for position

	<i>Clues</i>	<i>Purpose</i>
6	sponsor should review a manuscript for 30 to 60 days to file for patent protection	Limits and reason for stopping publication
11	We will require authors to disclose their own and the sponsor's role	Editors' approach to overall problem
12	Many of us will ask the responsible author to sign...full responsibility for trial	More strict approach of some editors
13	When the sponsor employs some of the	Requirements in specific case

Using analysis to order sentences

Based on this analysis, we see that most sentences are already in a reasonable order. For example, sentence 1 gives context for the problem, which works well as an introduction, and sentence 2 describes the problem further, which makes sense as a follow-up to help the reader better grasp the topic of the editorial. Some sentences could have multiple logical positions within a paragraph. For example, sentence 4 and sentences 8/9 both must come after sentence 3, but which should come first is unclear since they don't have much relationship to one another—they serve independent functions within the burying results story. In the revision below, I've left them in the order in which they first appeared, but you might find another order more effective.

The only sentence that is clearly out of place is sentence 7: it concerns the overall problem of sponsor control of clinical trials, so it should be grouped with the other sentences on that—1 and 2. We've already explained how these sentence fit at the beginning, so sentence 7 should follow them.

Finally, the ideal position of sentence 6 is difficult to determine. Its purpose doesn't really relate to any of the other sentences', but it seems to belong in the opinion paragraph ("we believe"). For now, we'll tack it onto the end of the paragraph since it has less to do with the first paragraph than the editors' position on burying results than the other two sentences. If we were to continue revising to get a final draft, we would need to change the sentence itself to make clear how it relates to those sentences and why the authors bring up the point (see lesson 13).

→ *After reorganizing, revise to make the sentences relate to one another more clearly*

Example version 2: unified paragraphs, logically ordered sentences

¹As CROs and academic medical centers compete head to head for the opportunity to enroll patients in clinical trials, corporate sponsors have been able to dictate the terms of participation in the trial — terms that are not always in the best interests of academic investigators, the study participants, or the advancement of science generally. ²Investigators may have little or no input into trial design, no access to the raw data, and limited participation in data interpretation. ⁷Many otherwise respectable and ethical scientists have given up control of publication decisions and accepted restrictions on their contribution to design and interpretation because they know that if they do not, the sponsor will find someone else who will. ³And, unfortunately, even when an investigator has had substantial input into trial design and data interpretation, the results of the finished trial may be buried rather than published if they are unfavorable to the sponsor's product. ⁴Although we most commonly associate this

behavior with pharmaceutical sponsors, research sponsored by governmental or other agencies may also fall victim to this form of censorship, especially if the results of such studies appear to contradict current policy.⁸ The issue of preventing publication of negative results or results of product-induced risk is not theoretical.⁹ There have been a number of recent public examples of such problems, and we suspect that many more go unreported.

⁵As editors, we strongly oppose contractual agreements that deny investigators the right to examine the data independently or to submit a manuscript for publication without first obtaining the consent of the sponsor.¹⁰ Arrangements between sponsors and researchers that stipulate the conditions allowing publication of results not only erode the fabric of intellectual inquiry that has fostered so much high-quality clinical research, but also make medical journals party to potential misrepresentation, since the published manuscript may not reveal the extent to which the authors were powerless to control the conduct of a study that bears their names.⁶ We believe that a sponsor should have the right to review a manuscript for a defined period (e.g., 30 to 60 days) before publication to allow for the filing of additional patent protection, if required.

¹¹We will routinely require authors to disclose details of their own and the sponsor's role in the study.¹² Many of us will ask the responsible author to sign a statement indicating that he or she accepts full responsibility for the conduct of the trial, had access to the data, and controlled the decision to publish.¹³ When the sponsor employs some of the authors, these authors' contributions and perspective should be reflected in the final paper as are those of the other authors, but the sponsor must impose no impediment, direct or indirect, on the publication of the study's full results, including data perceived to be detrimental to the product.

Additional considerations in your own writing

This process likely seems unnecessarily long and laborious to move three out of thirteen sentences, whose place within the argument you may have guessed earlier than our revision. However, this scrambled example gave us a set of sentences with defined purposes, allowing us to focus on the principles of organization rather than spend our efforts trying to read the authors' minds. Applying these steps to your own writing, which wouldn't have been written so that one particular organization makes the most sense, will likely involve more deliberation and judgment. For one, identifying the topics of the new paragraphs may require more effort, since you may not have had a few specific points in mind as you wrote (especially if you're a get-it-all-out-at-once writer). To do this, it will help to think about the aim of the section or document as a whole and determine how your sentences relate to that.

→ *Organizing unplanned writing requires more work than the example*

→ *Use judgment and think about how the sentences relate to the whole*

The later steps may differ in other ways from our example. As you decide which sentences belong in which paragraph, you may discover that some sentences don't really serve any of the paragraphs, or that you need to write new ones to support a point you hadn't realized was so important as you were drafting. Further, it may be harder to decide which order of sentences is best since the wording in each sentence will likely differ more, which will lead you to think of more potential purposes for each sentence within the paragraph and thus more potential relationships. You may need to

try multiple arrangements of sentences to see which works best to you. Since the relationships among your sentences may be looser, you may need to do more re-writing of the sentences themselves after you re-order them (as with sentence 6) to strengthen the connections.

→ *May need a lot of change (even deleting or adding material)*

Re-order paragraphs

The next step in reverse outlining is to order the paragraphs by their relatedness and where they fit in the logical progression. In the previous example, the paragraphs are already in a logical order: how trial sponsors control the conditions of clinical trials and bury unfavorable results, why this is a problem, and what will be done about it.

Therefore, we'll consider another example with more paragraphs (already summarized) to determine how to arrange them. These summaries (again scrambled) are from another editorial in the *New England Journal*, on the relationship between academic medicine and the pharmaceutical and biotech industries:

Example 2: paragraphs in illogical order

- 1 Though researchers insist that they can maintain objectivity despite financial ties to industry, the influence of collaboration may be too subtle to notice
- 2 Defenders of the status quo claim that financial ties to industry are necessary to facilitate technology transfer
- 3 The technology transfer claim is exaggerated; researchers usually test an already-developed technology
- 4 Academic institutions' restrictions on researchers' financial ties are quite relaxed
- 5 Academic institutions must seek funds from industry because government funding is insufficient
- 6 Researchers with financial ties to companies are more likely to report results favorable to their products
- 7 Increasing restrictions on financial ties at all institutions would end the concern about losing faculty to other schools
- 8 Institutions' relationships with industry are growing
- 9 Ties between academic medicine and industry lead to an overemphasis on drugs and devices in medical education
- 10 Ties between academic medicine and industry might lead researchers to choose research projects likely to receive industry funding

To determine which paragraphs should be grouped together, ask which of these paragraph summaries are most related. You can mark these relationships by highlighting with the same color or by drawing lines to connect them. Try grouping them yourself before looking at the analysis below.

→ *Group paragraphs whose ideas are similar*

The most comprehensive approach to determining relationships among paragraphs is to consider the type of statement each summary makes: 1, 6, 9, and 10 argue against ties between academic medicine and industry; 2 and 5 argue for them; 3 counter-argues one of these; 4 and 8 describe ties to industry; and 7 says how they should be changed.

Though 3 and 7 are in their own groups, each corresponds to another group, so this classification suggests how each of the paragraphs is related to others.

These sets of relationships help to suggest positions for the paragraphs, but don't indicate which should come first. We have to use our own reasoning to determine what seems like a starting point and what paragraphs seem to follow from others.

Descriptions seem to work better as introductions to an argument, suggesting that 4 and 8 may belong at the beginning. The pro arguments could precede or follow the anti arguments, depending on which seems to better emphasize the author's position.

Within the anti arguments, 1 and 6 seem most closely related, as they concern the influence of financial ties on researchers' conclusions. Since 9 concerns education rather than research, it should lie outside the group of 1, 6, and 10. The suggestion for change works well as a conclusion, so we arrive at the following organization:

4, 8, 2, 3, 5, 1, 6, 10, 9, 7