



How to write a technical paper

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April 2009

Introduction

Some people can churn out papers with no effort at all, but for some writers the process is more painful than pulling out fingernails. And there is another interesting correlation: papers that are written swiftly are much more readable. How come these large differences?

Some people enjoy writing more than others, and alas, some may have more talent. However, writing is learnable, and it's a useful skill to have. When you follow a process, and apply some discipline, *everybody* can learn to write effective papers.

In particular for technical subjects, it helps to write well because the distance you need to bridge to reach less astute readers provides an additional challenge. Try to find examples or metaphors that people *can* relate to when your topic is obscure for the majority of your readership.

How to do it

Think about your "meta message" or "premise" first. What do you want your readers to remember after they have read your paper? It needs to be something you have an opinion about, preferably something that you feel passionate about. The stronger your feelings, the better. If you couldn't care less about a given topic, you probably can't write about it either. At least not effectively.

Then, think of (about) three "points" you want to make in support of your premise. How many points you use depends in part on the length of the paper you are developing, and could be *any* number. I happen to like three, and usually prefer to add more examples rather than more points.

For each "point" find the following three things: a *metaphor, image or story*, a *statistic* (which can also be an expert opinion, some

outside objective news facts, etc.), and an *example* which illustrates the relevance of this “point” in practice.

The body of the paper is made up of your points. Each one is illustrated by metaphors, supported by statistics and made relevant by examples. Finally, you write your conclusion, which simply summarizes what you have written so far. This goes quickest and easiest when you’ve finished the “body” of your paper which now has a clear structure to it. And when you apply this process, the structure *will* be easy to discern.

Last of all, you write the introduction. Because you have your body, and know what the premise of the paper is, it will be much easier to answer the question every reader has on his mind when he starts out: “What is this paper about, and why should I care?” The purpose of your introduction is to announce what you will write about, and whet the reader’s appetite.

Along the way, think of a “catchy” title, and keep *adding* new versions of your working title to the concept as you are progressing. It’s OK to be a bit provocative or contrarian. Pick the most descriptive, attention grabbing title you have come up with.

Metaphors, images or stories

A metaphor, image or story serves to illustrate your point in terms of “experiences” the reader is already familiar with. People learn by relating new impressions to experiences they are familiar with. So metaphors, images and stories serve to convey the point you are making.

I once illustrated the cover of my rapport with a picture of a plastic bucket with cleaning materials. We had corrected erroneous entries in a database, and from then on the project lived on under the name “project clean up.” I had never used that term, but it fit the project (and picture) quite well.

An image or story serves the same purpose. When I was six, my dad took me skating, which I had mastered by then. However, I couldn’t brake yet. No matter how many times he explained I should twist my skates sideways, somehow I couldn’t “pull the trigger.” Then all of a sudden I was heading towards a tree by the lake, had no time to think, and boom! I was standing still, trembling, puzzled by what had just happened. There are some experiences you need to feel, and no

amount of explaining will get you there. This was one of them. Your image or story should appeal to some feeling readers are familiar with.

Statistics

Statistics serve to put "meat" on the bones, and also to enhance credibility. They tie your premise to an existing nomothetic network, a body of evidence accrued by third parties. A nice feature about numbers is that they have an objective, truthful aura to them. By all means include the source if it is well known and respected.

Another reason to throw in some numbers is to provide a reference against which you want to make your points. Many data warehouse projects fail? A percentage for the failure rate, and associated costs will give the reader a sense of urgency. It also provides background information to set the stage for your premise.

I use "statistics" in a very broad, figurative sense. If Jack Welch says shareholder value is a dumb principle to run companies by, that's a "statistic", too. He is one of the most successful CEO's in history, so his "opinion" serves as an outside, objective data point.

Language and wording

Written text really should not be all that different from spoken words. These days only the notary still uses incomprehensible language. Write as if you are having a conversation with your reader, and try to keep your sentences short and simple. Just like when you talk.

Do *not* edit while you you're writing. Instead, refrain from judgment and put your paper away for a day or two. Usually, by the time you pick it up again, it is much better than you thought. In this way you minimize the amount of editing you need to do. And remember, your objective is not the Nobel prize in literature. You want to write an effective paper. It is probably not going to change the course of Western civilization, at least not all that much J