

MNF990 Theory of Science and Ethics

# The Prince's Guide to Orchestrating Research: A Brief Introduction\*

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All states, all powers, all principalities, that hold or aspire to hold rule over men, that are supported by money or by the threat of force, will at some point in our postmodern era find themselves dealing with the art of science. The approach a principality choose in these dealings is of the utmost importance, and the consequences of a misstep can be of catastrophic proportions; even to the point that the principality in question may lose its reign entirely.

However, science can also be an excellent tool for advancing your Machiavelian agenda. You can use research to boost the reputation of your products, win influence with policy makers, and even convince entire populations of your ideas. Many people are naturally well disposed towards science, which is why it is essential for an ambitious prince to know how to wield it properly. We here give a short overview of some of the common techniques in the field, which we hope will be of use to both researchers and stakeholders alike.

## Why use research?

Years ago, people used to believe that the church was telling the truth. That is why for centuries, principalities were extraordinarily interested in it. The church was immensely useful to the princes of those times, since the bishop could say something like “pay your taxes or go to hell,” and then people would pay their taxes without much further ado. So a clever prince would always make an effort to befriend the bishop.

In today's postmodern era, though, the church is not a widely recognized source for truth anymore. Most people simply don't trust the bishop, and the bishop hardly talks about hell anymore anyways. Instead, people nowadays believe in science. For example, a scientist can say something like “hell will come to earth if we continue emitting  $CO_2$  to the atmosphere,” and it will sound at least as scary as the bishop.

In fact, research shows<sup>1</sup> that many ideas originating in science are now being held by large fractions of the population. For instance, scientists have

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\*Homage to Machiavelli's “The Prince” [12]

<sup>1</sup>The phrase “research shows” has rapidly been replacing “God says” as the easiest way to win an argument. Then your opponent can't refute what you're saying next without appearing like a hypocrit.

successfully convinced half the American population that climate change is a serious problem primarily caused by human activity [1], 65% of the population has been convinced that humans evolved over time [7] and a whopping ‘everyone but cranks’ believes that smoking is harmful to your health<sup>2</sup>.

TV-shows like “Penn and Teller: Bullshit” and “Folkeopplysningen” are the new churches. Penn Jillette and Andreas Wahl are the new bishops. You should make an effort to befriend them.

### **Formulating the hypothesis**

In order to conduct research favourable for your agenda, formulating the hypothesis is perhaps the most important step to pay attention to. First, you need to clearly decide what message you want a reader of the abstract to take home. Is the purpose of your study to promote a certain product, or political decision? Ensure that you ask a question whose answer will be suggestive towards your desired end goal.

A neat trick is to make an unfalsifiable hypothesis, such that regardless of what experiments you do, it will end up confirming your theory. This technique was successfully employed by Sigmund Freud, the founding father of psychoanalysis. For example, Freud claimed as a central tenet of psychoanalytical theory that children subconsciously had sexual desires towards their parent of the opposite sex (the Oedipus complex) [6, 2]. Since it is impossible to disprove the claim due to the clever use of the word “subconsciously,” every experiment Freud did confirmed his hypothesis.

Unfortunately, Karl Popper pointed out this weakness in his 1963 book *Conjectures and Refutations* [13]. However, if an adversary attempts to undermine your unfalsifiable hypothesis by referring to Popper, you can always argue that his theory of scientific practice is itself unfalsifiable.

### **Choice of model and method**

After you have decided on your hypothesis, the next step is to find a method which confirms it. The physical set up of the experiment is important; your best bet is always to produce raw data which reveal the desired outcome (in the best case, you get to skip the upcoming section on handling uncertainties entirely). For instance, pesticide producer Bayer Cropscience had a study done on the effect of pesticides on bees in response to unfavourable accusations that the bees were being poisoned. One beehive was placed in a field where the pesticide was used, and a control hive was placed in a field where the pesticides were not used. Since the two fields were only a few hundred meters apart [16], the researchers effectively made sure both set of bees were equally exposed to the pesticide. The study of course concluded convincingly that there was “no differences in bee mortality, worker longevity, or brood development occurred between control and treatment groups throughout the study” [3].

In a few cases, you will have a hard time proving your hypothesis with commonly accepted methods. Then you might need to go back and phrase your hypothesis in a slightly different way and see if that helps. If it still fails, you can do a brute-force search for every possible correlation in your entire dataset, and make hypothesis a posteriori for the findings which supports your agenda.

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<sup>2</sup>Folklore

If the dataset has enough parameters, there must be at least a few which, if only by noise in the data, are in your favour. It works even better if your data set is small. This method is highly effective for finding interesting results, and some estimates<sup>3</sup> states that as much as 90%<sup>4</sup> of all medical research is factually incorrect due in part to this method of investigation [5, 10].

For a prince, though, factually incorrectness should be of no concern.

### Handling uncertainties

In almost all fields of research<sup>5</sup>, there are uncertainties that we must handle appropriately. In many cases<sup>6</sup> uncertainties are bad PR, and can make lesser men question our results. In these cases, it is imperial that uncertainties are properly concealed, preferably hidden in an appendix nobody will ever read carefully. You may simply ignore the uncertainties altogether in the abstract and press release.

This method has been actively used by advocates for reducing  $CO_2$  emissions, albeit with only moderate success. This is perhaps because the method has the unfortunate possibility of backfiring if someone hostile examine the report closely. The last thing you want is a respected expert clouding your conclusions with uncertainties.

In order to avoid such misfortunate events, you could make a questionnaire which you send to all the experts in the field. Phrase the questions carefully such that only your most outspoken critics will disagree with you, and present the results grouping neutral and favourable responses in the same category. You can then use the findings to claim that the majority of experts agree with your conclusions, and that your critics are a tiny group of cranks. If you can give the impression they are sponsored by squalid special interest groups, it is even more effective.

More embarrassing than high uncertainties, though, is if your conclusions and results themselves are subject to change and criticism. In these events, you can instead play the uncertainties to your advantage, for instance like what was done in the NAS and Intergovernmental Panel on Climate Change (IPCC) Assessment Reports from 1979 to 2013. When the various models and more research challenged the conclusions of earlier reports, the IPCC did not change the numbers they reported in their summary, but rather changed the probability that the numbers were correct [17, 15]. In this way they cleverly avoided losing face, and appeared outwards as robust and conclusive.

### Advice for stakeholders

So far, we have been discussing measures which are available to the researcher. However, as a stakeholder you may sometimes come across researchers who have taken the ethics course MNF990. Such a researcher may be hesitant to apply the aforementioned techniques in their research. If that is the case, it might be necessary to apply some gentle pressure in order to motivate the research team to produce correct results.

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<sup>3</sup>Always use plural of “estimates” even if you only know one number.

<sup>4</sup>Always use the most outrageous number you can find when possible.

<sup>5</sup>Arguably with the exception of unwieldy fields like pure mathematics, theoretical computer science, philosophy etc.

<sup>6</sup>The phrase “in many cases” is useful when you are unable to properly quantify your claim

The most effective way of persuading a researcher to do his job with a proper bias, is through funding. First off, it is often a good idea to announce that you are funding a project publicly, to attract a wide array of applicants. Make the applicants write a proposal for why they should receive your money; this will force the researchers to emphasise with your agenda, or at least pretend to do so. This exercise might be valuable to the researcher when he later will write papers as well.

Secondly, ensure that the funding period is not too long. In order to better his chances of receiving renewed funding in the next round, the researcher will thus have a good incentive to draw favourable conclusions and employ the tools in this guide as necessary. Maintaining that most researchers are employed in temporary positions is essential.

Finally, make sure to maintain a good relationship with the researcher by making a positive appearance at his institution, sponsor social incentives, give crash courses, free food, be open for collaboration and possibly give access to raw data as your relationship has progressed to the point when the researcher can be trusted.<sup>7</sup> It is straight-forward to conceal this effort as ‘social responsibility’ or something similar. If done properly, you might even spontaneously self-convince and enjoy for a brief moment the peculiar sensation of contributing selflessly to societal advancement.

## **Fabrication**

When you are at the point that you provide a research team with raw data, you have a unique possibility to influence the results of the research. You can for instance pre-analyse the data, and provide the research team with a subset of the data which reveals the desired results. If even stronger measures are necessary, you can make up the raw data from scratch entirely, like social psychologist Diederik Stapel did successfully for many years<sup>8</sup> [11].

In the example of Diederik Stapel the researcher is fabricating the data, which may be more of a risk than constructing the data yourself. When Stapel was caught, though, he reminded us of just how important it is to keep a steady high pressure on the researcher [14]:

*“I did not withstand the pressure to score, to publish, the pressure to get better in time. I wanted too much, too fast. In a system where there are few checks and balances, where people work alone, I took the wrong turn. I want to emphasize that the mistakes that I made were not born out of selfish ends.”*

If you suspect that an external research team still is not going to produce favourable results, it might also be worth considering conducting (at least parts of) the research study in-house. In order to increase your study’s credibility, you may afterwards approach a well-respected professor who will publish your results in his own name for a fee and low-effort publishing points [9]. This has

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<sup>7</sup>You do not want your raw data to become publicly available (at least not if you have applied some techniques from the section on fabrication), so always make sure you make a contract which protects the data from ever being shared.

<sup>8</sup>Stapel’s reputation is not one you wish to share, so great precaution must be taken to ensure you will not get caught in this endeavour.

proven to be an effective strategy for the pharmaceutical industry, where up to<sup>9</sup> 75% of all industry-initiated random trial research papers are ghost-written [18].

In fact, the pharmaceutical industry has understood this strategy so well that there is an entire subindustry dedicated to medical writing, including companies such as DesignWrite and Parthenon. These particular companies were hired to write manuscripts on the hormone replacement therapy drug Totelle developed by Wyeth pharmaceutical company (later acquired by Pfizer). In a rare moment of carelessness, however, it was revealed to the public that the three companies were conspiring to find a suitable author for the already written paper [4]. Don't be like those companies. Don't reveal what you are doing.

### A last resort

We have now discussed a wide array of techniques which can be helpful tools in directing your research efforts efficiently with respect to your goals. From formulating the hypothesis to presenting the results, within the scientific methods as well as the funding mechanisms, there are plenty of opportunities to influence research. Sometimes, however, competing schools of research with interests at odds with your own are challenging your results. If such wicked views are gaining a foothold in the field, remember that they too might have read this guide.

Do a thorough investigation of their research, and look for uncertainties they have not accounted for. There are often so many sources of uncertainty that they surely hasn't accounted for all of them. And if you additionally can accuse your adversaries of having self-interests and suggest they are being paid by some barbarous industry, you will have made good progress towards discrediting their work. After all, the perception one has of the advocate is at least as important as the merits of his arguments.

A final advice; smile. People trust princes who smile [8].

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<sup>9</sup>Subject to the definition of what constitutes ghostwriting

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