

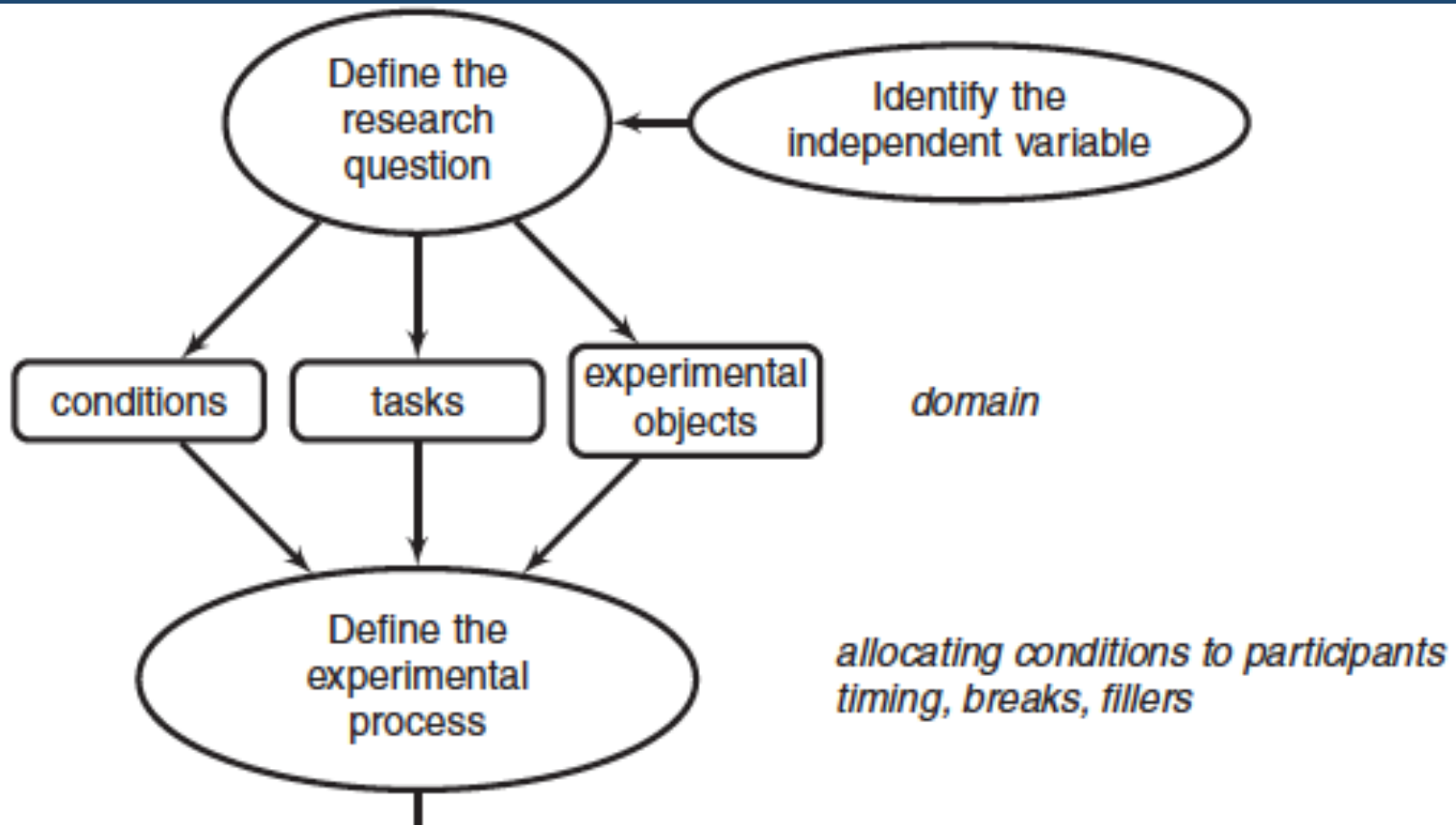
CS 498 KA

Experimental HCI & Interactive Technologies

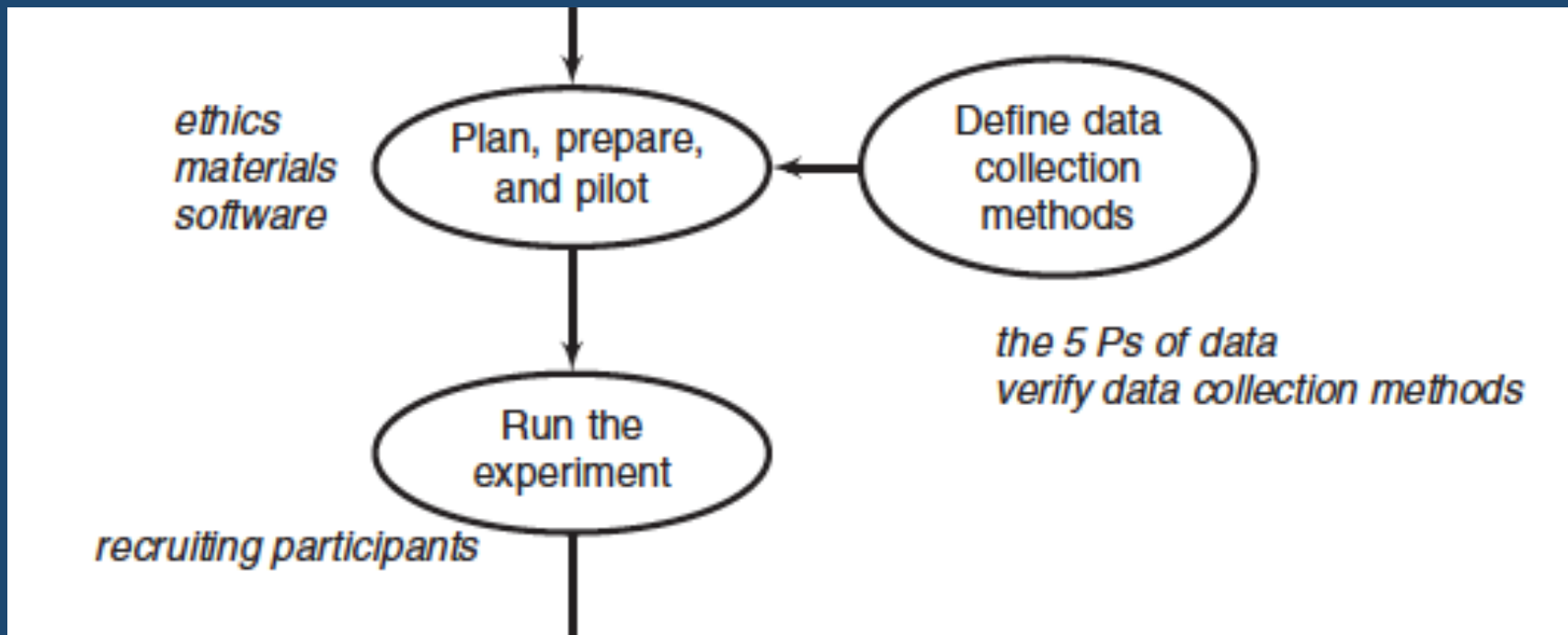
Text Chapter 8

Six principles for conducting experiments

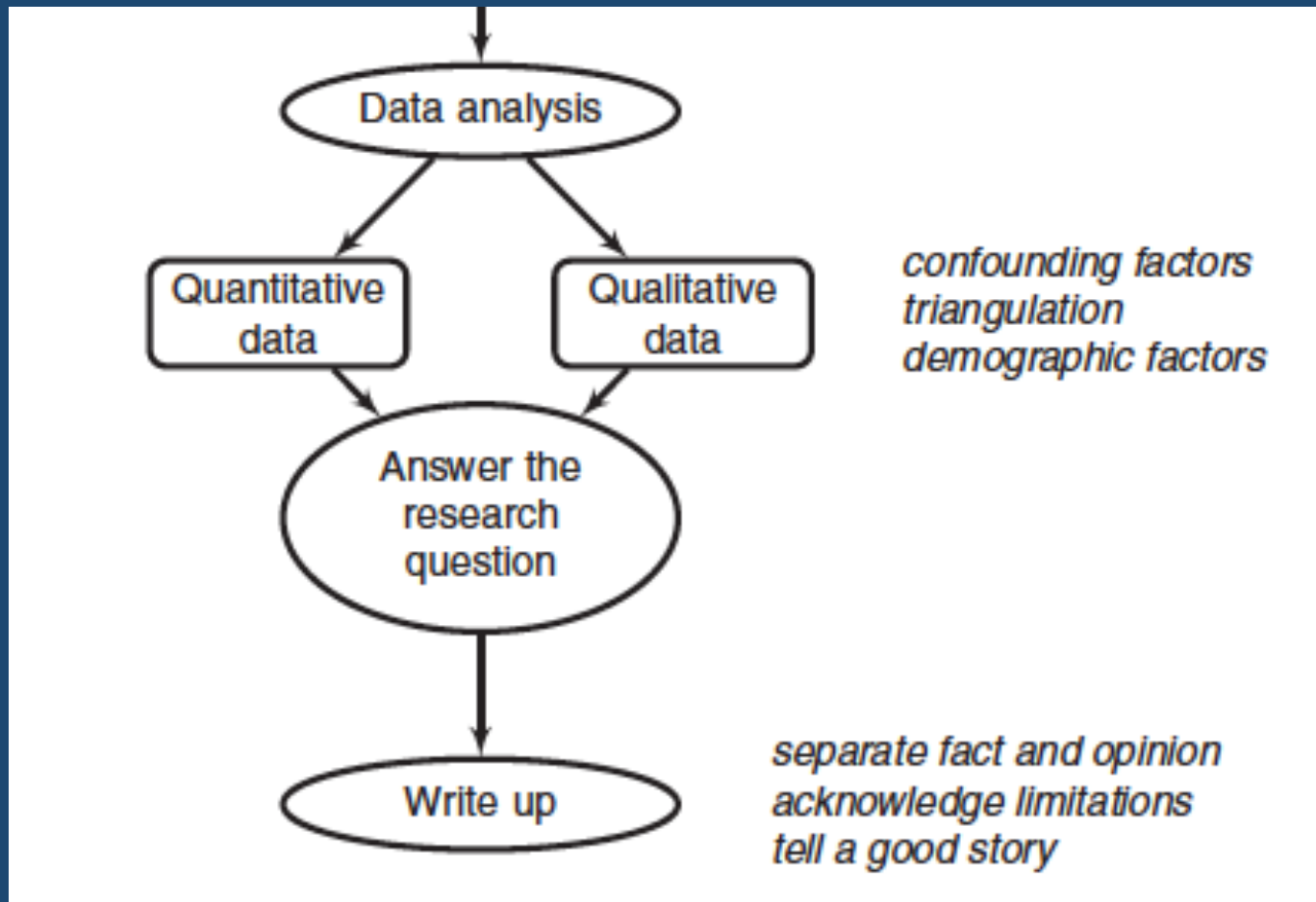
Text Chapter 8: Six Principles for Conducting Experiments



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Principle 1: Define a clear research question and answer it. Doing so will provide a useful focus throughout the process and will ensure that a good “story” can be told at the end. Many decisions need to be made, and making them within the context of a clearly phrased research question will make them easier to decide on and justify.

Principle 2: Plan, prepare, and pilot. Participant time is a scarce resource: insufficient preparation will simply result in wasting the participants’ time. You cannot do too much preparation!

Principle 3: Only collect, analyse, and present data that are meaningful to the research question. Experimenter time is also a scarce resource. Like Principle 1, this principle ensures that your efforts are focussed, that you are not sidetracked into addressing interesting (but irrelevant) issues, and that your own time is not wasted.

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Principle 4: Apply the planned analysis method on fabricated data before running the experiment. Collecting data that are not sufficient for answering your research question wastes your time and the participants' time. Identify the form of data required for answering the research question *before you start the experiment*.

Principle 5: Collect and use both quantitative and qualitative data. The temptation is to focus on the numbers, whereas “softer” data are often much more revealing. Qualitative data are also useful when the numbers do not tell you what you wanted to hear.

Principle 6: Acknowledge the limitations of the experiment. Doing so is not only honest, but ensures that you do not overstate the conclusions. It also helps preempt the criticisms of reviewers.

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“Much of the specific and detailed advice given may seem to the first-time experimenter to be a set of hard-and-fast, inflexible, constraining and unnecessary rules: experience will help in identifying when these rules can reasonably be bent or broken while still conducting a reliable and valid experiment.

HCI experimentation of the form described here has been criticized for being too [cf. Hudson & Mankoff] narrow, with an inappropriate focus on small, discrete research questions rather than on a broader picture.

Because small questions can be addressed in a controlled manner and larger ones cannot, broader questions cannot be easily answered using this method.”

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”I take the view that every experimental result is a useful small step:

I have been chipping away at the marble block that is the useful design of graph layout algorithms for many years now, taking off small chips one at a time and getting closer to general conclusions with every use of the chisel.”

END