DOUBT AND STUPIDITY AS STEPS TO GOOD RESEARCH

Tuesday, February 1, 2022

COMING UP

- **STS Moments** Start, so Sign up!
  - No "Whig" History of a Technology
- **Three Plausible Topics** *Draft* due in Class on Thursday, *Revision/Final* due on Collab on Friday
- **Scavenger Hunt** presentation is due on Monday at Midnight
- Read Chapters 3 & 4 of *The Craft of Research*

BIZ

- CS folks, how many are taken CS 4991 right now?
- As I understand it, in CS 4991, you will produce both an abstract and a final report.
  - The abstract will be included in your Prospectus at the end of STS 4500
  - The Final Report will be included as your Technical Report, part of the Thesis Portfolio, at the end of STS 4600

TODAY

- Thinking Like a Researcher: The importance of doubt
- Starting to Think about STS Topics

THINKING LIKE A RESEARCHER …

… NOT A STUDENT TAKING A TEST

USE THIS TO THINK ABOUT YOUR STS RESEARCH

DOING RESEARCH REQUIRES STUPIDITY & DOUBT

DISCUSS

- Why does Feynman insist on doubt as the key to good (techno)science? What is the argument?
- What about Schwartz & Feynman's attitudes would you like to emulate?
- What are the limits to this insistence on doubt and stupidity?
- What do these ideas presume about how science works?

SCHWARTZ NOTES THAT ALL RESEARCH HAS TO START FROM THE ADMISSION THAT WE DON'T KNOW THE ANSWER

FEYNMAN CLAIMS THAT THE LAWS OF PHYSICS ARE (REALLY GOOD) "GUESSES." THAT "ALL SCIENTIFIC KNOWLEDGE IS UNCERTAIN."

WHAT ARE THE CONDITIONS NECESSARY FOR FEYNMAN'S STATEMENT TO BE WORKABLE?

DOING RESEARCH ALSO REQUIRES REFLEXIVITY

YOU HAVE TO ASK: WHAT ASSUMPTIONS ARE YOU MAKING THAT MIGHT MISLEAD YOU?

AN EXAMPLE

Automated Inference on Criminality using Face Images

Xiaolin Wu
Shanghai Jiao Tong University

Xi Zhang
Shanghai Jiao Tong University

"We study, for the first time, automated inference on criminality based solely on still face images."

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"We study, for the first time, automated inference on criminality based solely on still face images."

This is ~~bullshit~~ nonsense

WHY IS IT NONSENSE?

PUT DIFFERENTLY, WHY WAS THIS LACKING IN RIGOR?

WHAT ARE THE INVALID ASSUMPTIONS UNDERGIRDING THIS RESEARCH?

(a) Three samples in criminal ID photo set S_c.

(b) Three samples in non-criminal ID photo set S_n

Figure 1. Sample ID photos in our data set.

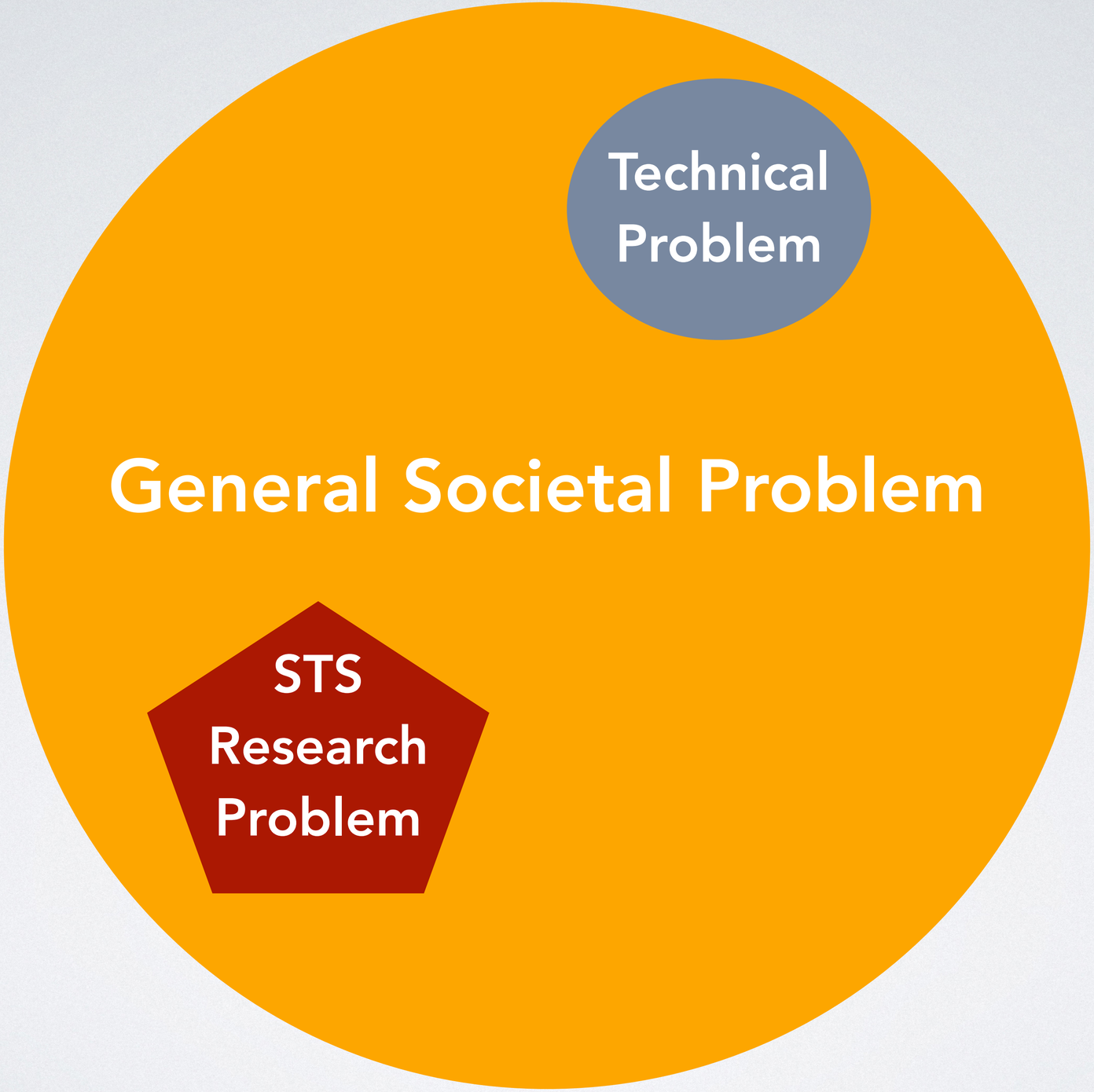
AS ALWAYS WITH ML/AI, CONSIDER THE TRAINING DATA

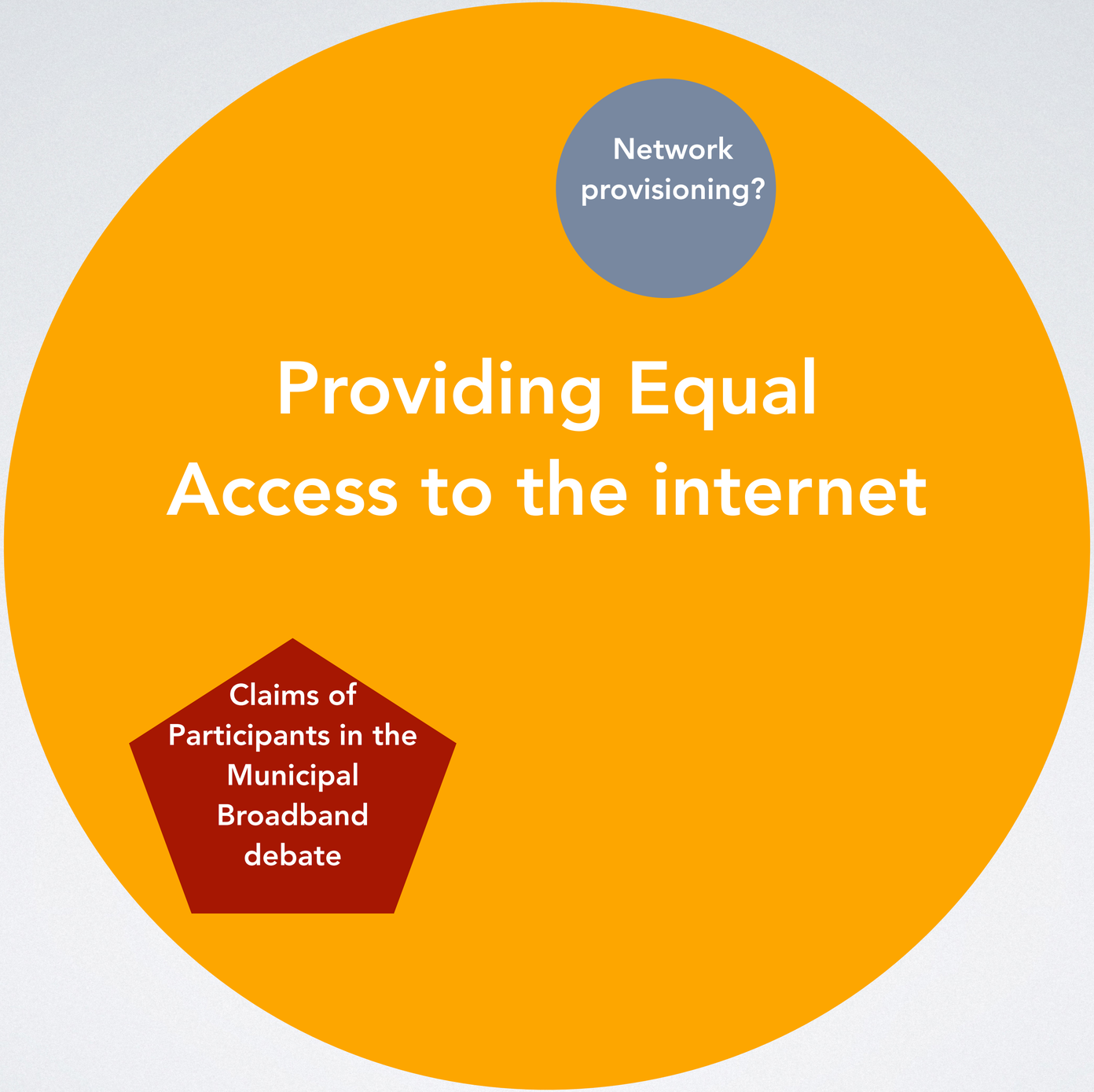
THINKING ABOUT SOCIAL SCIENCE

IF IT CAN’T BE QUANTIFIED, IS IT JUST OPINION?

HOW SHOULD WE THINK ABOUT RIGOR IN SOCIAL SCIENCE?

CHOOSING A TOPIC


Technical Problem
General Societal Problem
STS Research Problem


Network provisioning?
Providing Equal Access to the internet
Claims of Participants in the Municipal Broadband debate

Reducing Fuel Usage and Increasing Safety of Long-Haul Trucking

Algorithms maximizing "drafting" of autonomous trucks

Teamsters Union Resistance to Change in Previous Technology

Interest

Broad Topic

Focused Topic

Question

THE IDEA HERE IS THAT THE FORMATION (AND MAINTENANCE) OF SOCIOTECHNICAL SYSTEMS OFTEN INVOLVES SOME CONTROVERSY OR STRUGGLE BETWEEN DIFFERENT STAKEHOLDER GROUPS, AND INVESTIGATING THAT CONTROVERSY/STRUGGLE WILL HELP US UNDERSTAND IMPORTANT ASPECTS OF THAT SOCIOTECHNICAL SYSTEM, OR SOCIOTECHNICAL SYSTEMS IN GENERAL

OPTION 1: START FROM YOUR INTERESTS

WHAT ARE YOU EXCITED ABOUT?

Could be more focused on a particular sociotechnical system (technology) OR
Could focus on some social issue or debate in social science/STS

OPTION 1A: WORKING FROM THE "MAP" SEE IF THERE IS SOME RELATIONSHIP BETWEEN YOUR INTEREST AND YOUR TECHNICAL TOPIC

OPTION 1B: DIFFERENT METAPHOR--TREAT YOUR INTEREST AS A GENERAL "TOPIC" AND SEE IF YOU CAN COME UP WITH MORE FOCUSED TOPICS

OPTION 2: START FROM YOUR TECHNICAL TOPIC

OPTION 2A: EXAMINE THE "AGENDAS" OF STAKEHOLDER GROUPS

WHO: IDENTIFY THE GROUPS* INVOLVED IN A PARTICULAR CONTROVERSY OR SOCIOTECHNICAL SYSTEM

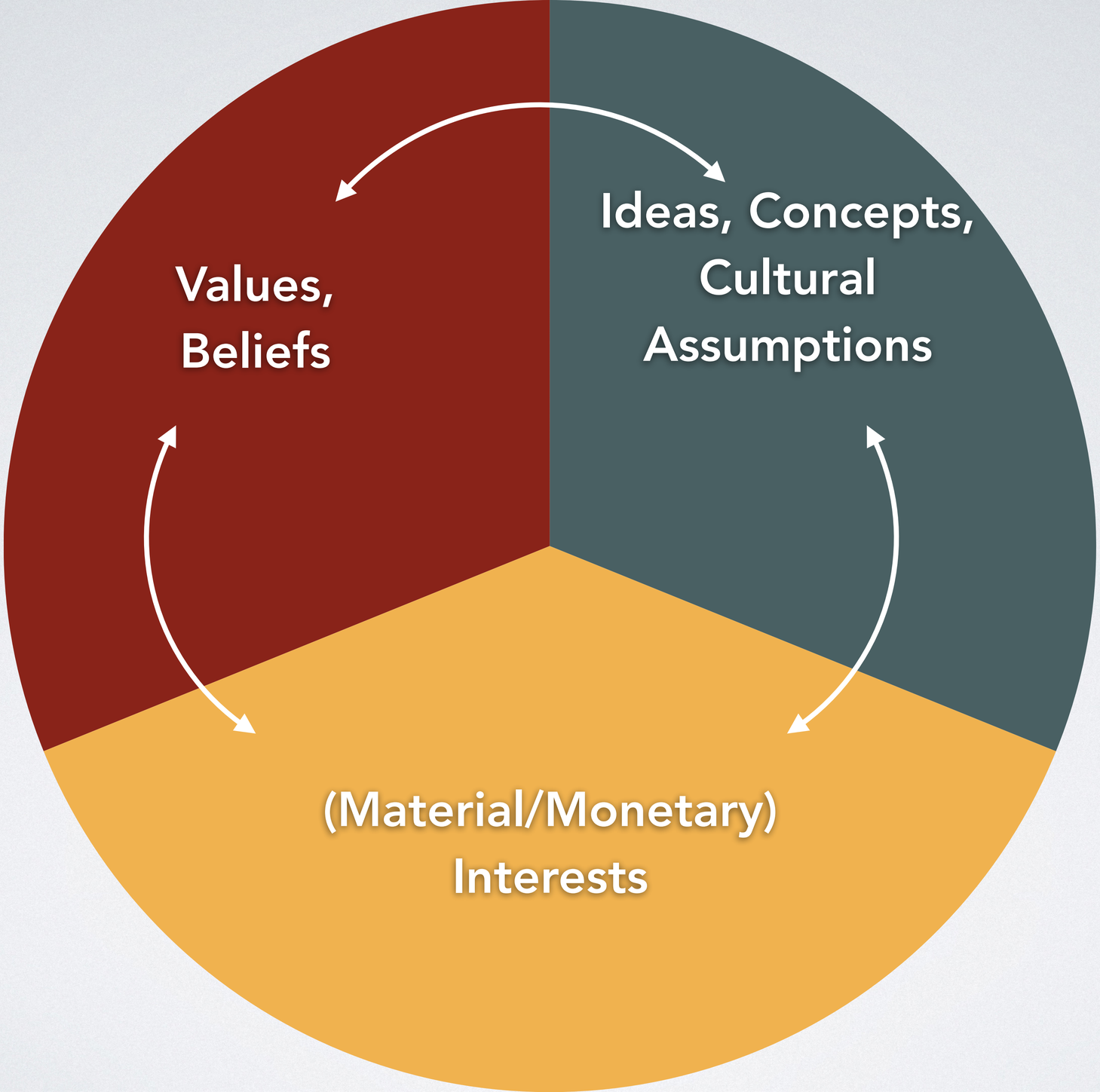
NOTE THAT THESE GROUPS MAY NOT HAVE EXISTED BEFORE THE CONTROVERSY

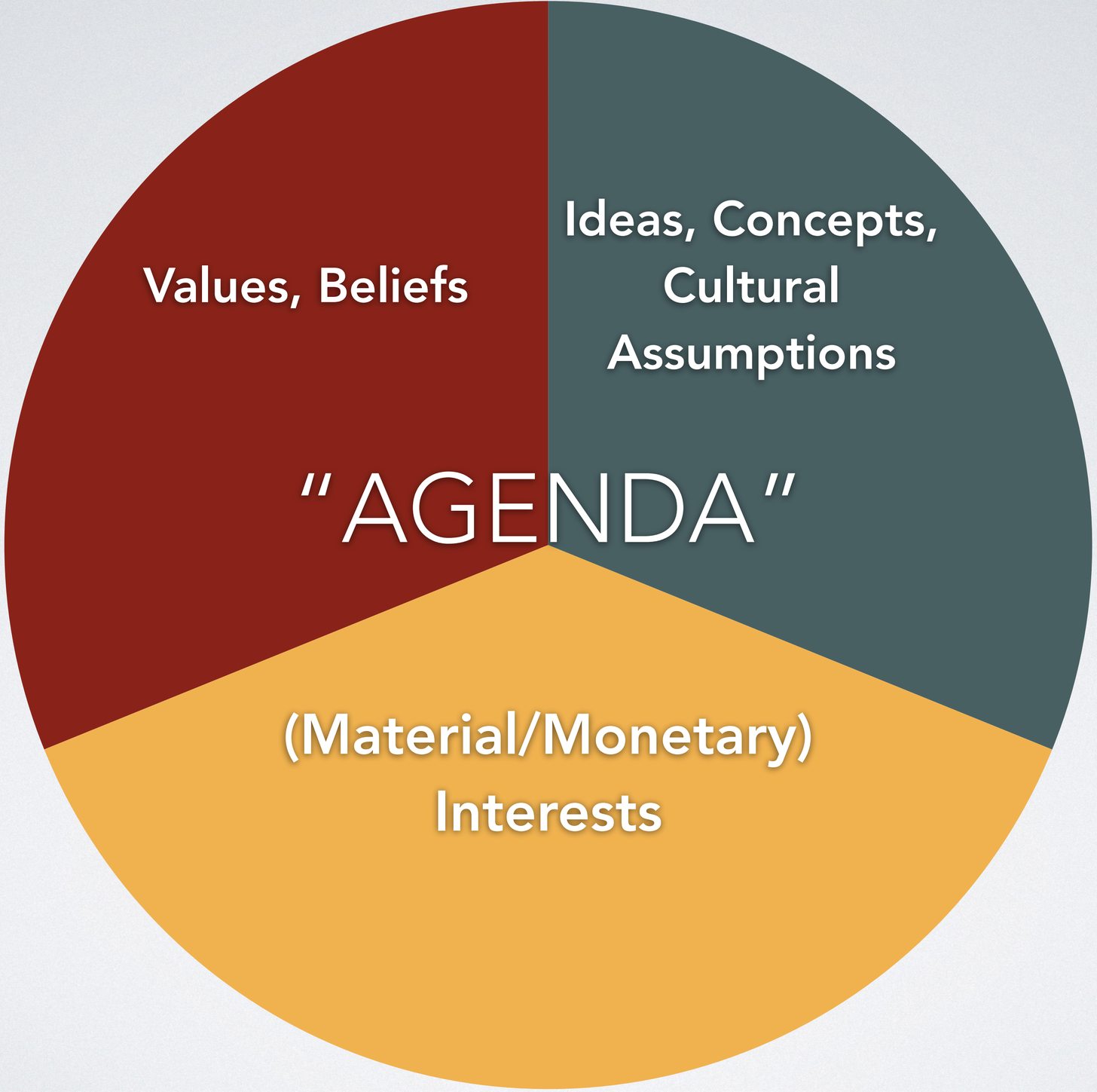
WHAT: WHAT ARE THE (MATERIAL/ SOCIAL) INTERESTS OF THE GROUPS IN THIS SITUATION?

WHY?

MORAL REASONS: WHAT VALUES OR BELIEFS UNDERLIE A GROUP'S PARTICIPATION?

CULTURAL REASONS: WHAT IDEAS, VALUES, NORMS, OR UNCONSCIOUS ASSUMPTIONS SHAPE THE GROUP'S PARTICIPATION?


Values,
Beliefs
Ideas, Concepts,
Cultural
Assumptions
(Material/Monetary)
Interests


Values, Beliefs
Ideas, Concepts, Cultural Assumptions
"AGENDA"
(Material/Monetary) Interests

THE GOAL IS NOT TO SIMPLY LIST THE GROUPS AND THEIR AGENDAS

Understanding them allows you to explore some aspects of the controversy.
What did the different groups do to pursue their agendas?
What key social or cultural forces led to the controversy's closure?

OPTION 2B: ELLUL'S 76 QUESTIONS

(On Collab)

OPTION 2C: PFAFFENBERGER'S SUGGESTIONS (FROM THE OLD UNDERGRADUATE THESIS MANUAL)

CHAPTER 13 CHOOSING A TOPIC FOR YOUR STS RESEARCH PAPER

As you consider your STS Research Paper topic, bear in mind that you can choose whether to link it closely with your technical research project. If you choose an STS Research Paper topic that focuses on a social or ethical issue or controversy closely connected with the topic of your technical project, you will be able to experience the topic from both the technical and STS points of view. Still, some students may prefer to investigate an STS topic that is only loosely connected to their technical research topic, or not closely connected. This chapter explains the considerations that should go into your decision, so please read it carefully.

IN YOUR GROUP

- Choose one of these approaches.
- You will finish with three different **“topics”** in the language of Booth et al.
- The next step will be to **focus** the topics (possibly several times/ iterations), and then you will come up with a research **question** that addresses the focussed topic