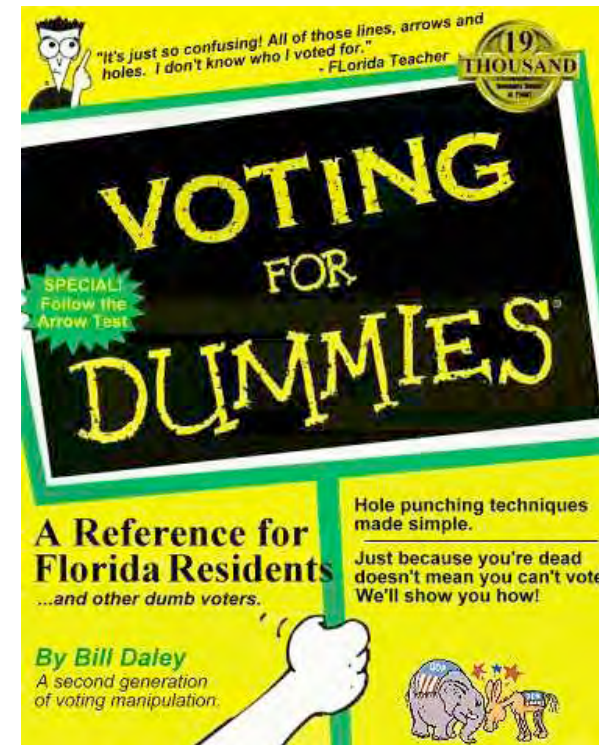
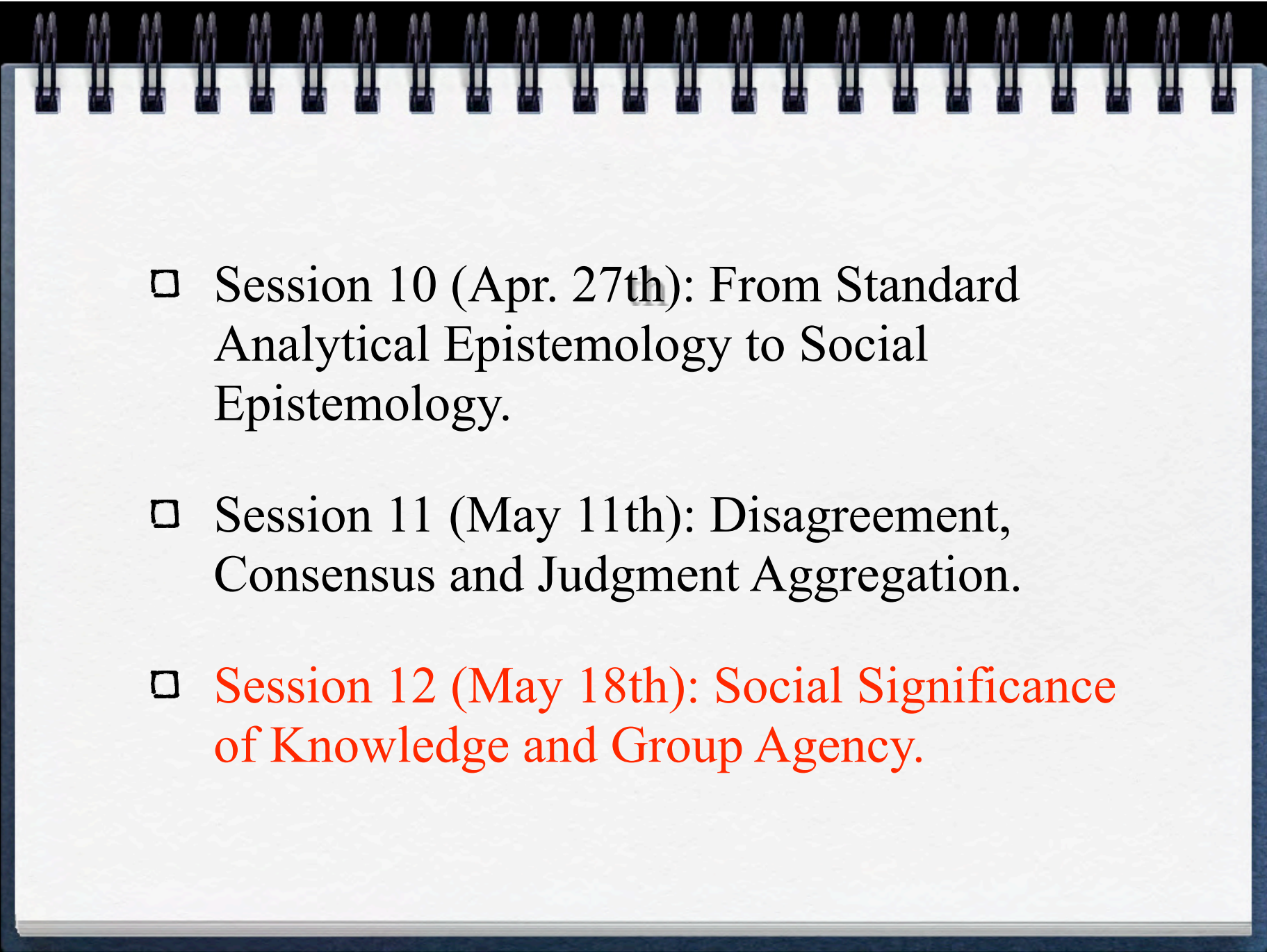


RECAP FROM LECTURE 2

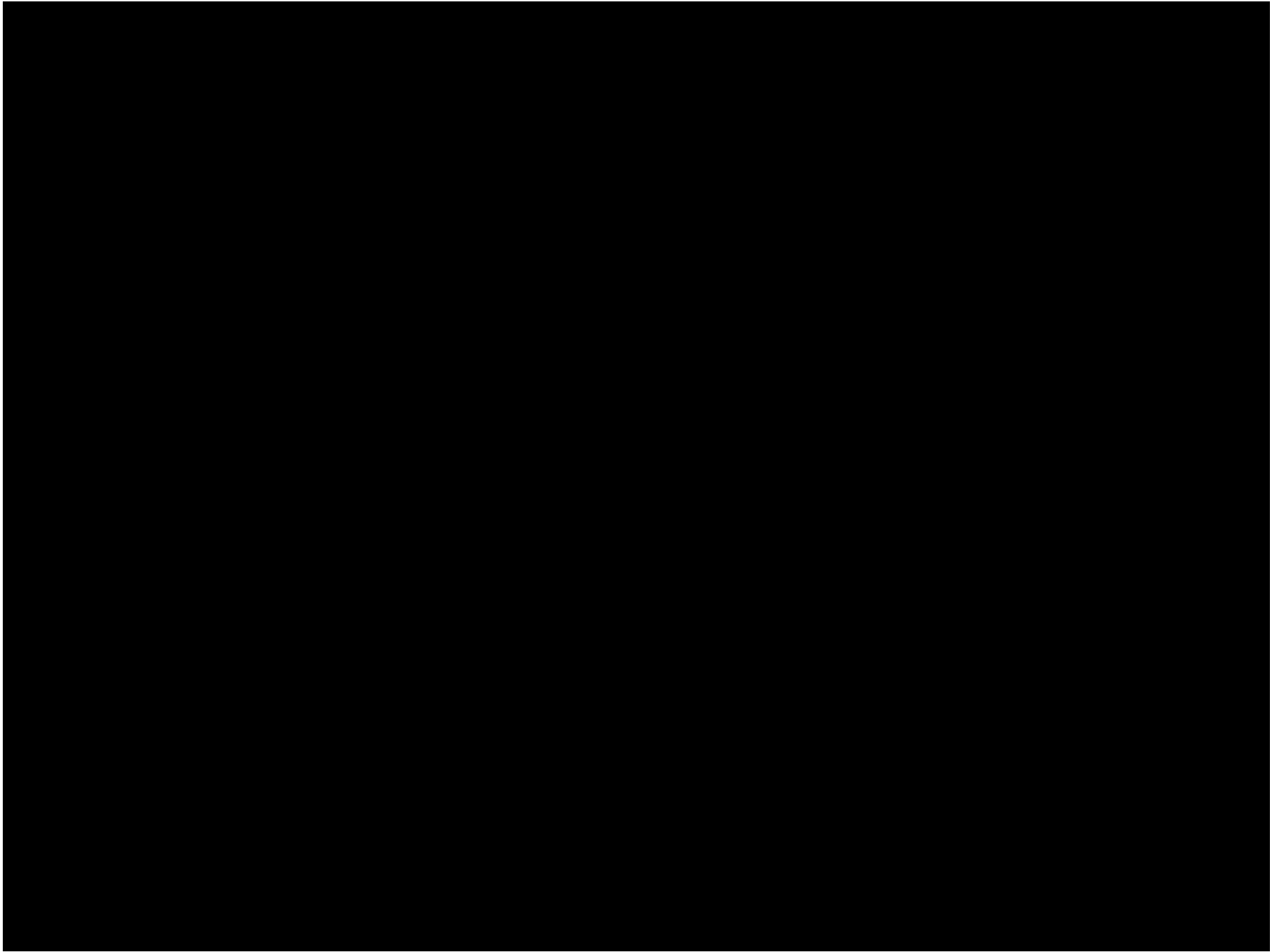
- Minimal conditions to be imposed on group-epistemic-agents: truth functional consistency and problems for non-homogeneous groups : disagreement.
- Disagreement, the individual perspective and the group perspective.
- *What*-problems and *how*-problems concerning disagreement.
- Aggregation functions.
- Scope of the first aggregation functions: Kenneth Arrow and preference aggregation.
- Development of the aggregation literature.
- Limits and potentialities of aggregation functions: impossibility and possibility theorems.



Retrieved from: <http://www.cs.uccs.edu/~cdash/downloads/voting.jpg> on May 11, 2009.

- 
- A spiral-bound notebook with a white page and a dark blue cover. The spiral binding is visible at the top. The page contains three bullet points.
- Session 10 (Apr. 27th): From Standard Analytical Epistemology to Social Epistemology.
 - Session 11 (May 11th): Disagreement, Consensus and Judgment Aggregation.
 - Session 12 (May 18th): Social Significance of Knowledge and Group Agency.

- The advantages of aggregation, group performance, democracies and deliberation.
- “Groups With Minds on Their Own” (P. Pettit) - Can groups be agents?
- A pragmatic view: SE and the society.
- Summary of the three lectures.



LECTURE 3

Social Significance of Knowledge and Group Agency.



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GROUPS OR INDIVIDUALS?

The advantages and disadvantages of aggregation

- ✓ What are the advantages of social epistemology over standard (individualistic) epistemology?
- ✓ **NOTA BENE:** The goal here is strictly epistemological. In general, group-actions can serve several purposes (democratic ideal, reconciliation, disagreement solving, etc.) but what we are interested in here is epistemology. The rest is for *decision-theory*.
- ✓ What kind of epistemology? Recall the distinction made by Goldman: Consensus Consequentialism, Pragmatism, Veritism, Proceduralism.
- ✓ Here we take the goal to be truth. However, things may change if we change the epistemic goal.

- ✓ What about truth? Are groups better than individuals?

- ✓ Preliminary question: How can we answer the question?

“Are groups better than individuals?”

- ✓ First observation: the question is ambiguous.
- ✓ Reformulations:
 - ★ Are groups more likely to track the truth than individuals?
 - ★ Are groups more likely than individuals to use the best epistemic practices?
 - ★ Is reliance on a group a better-than-individuals epistemic practice in itself? (Suppose you are in a town you are not familiar with, looking for the train station. Should you: 1) ask the first random passer-by; 2) ask a group of people; 3) ask at the information desk.)

✓ Second observation: there are two standard ways of answering the question:

✓ MODEL-THEORETIC APPROACH

Different Models for representing the problems, the result (the answer to the question) follows from the assumptions used.

Notably, a well known answer is the one given by the Marquis De Condorcet in the XVIII century.

✓ EMPIRICAL APPROACH

Empirical research has been and is being conducted on the problem. The answer to the question is not mathematical, rather empirical with all the related consequences. Notably, the RAND corporation and medical research has conducted extensive research on the problem.

THE MODEL THEORETIC APPROACH

The Condorcet Jury Theorem

✓ “if the object of voting is to determine the “best” decision for society but voters sometimes make mistakes in their judgments, then the majority alternative (if it exists) is statistically most likely to be the best choice.” H.P.Young, *Condorcet’s Theory of Voting* (1988) *American Political Science Review*, 82:4. ***[the statement is not entirely correct, see the article].

✓ Main assumption: voters are independent.

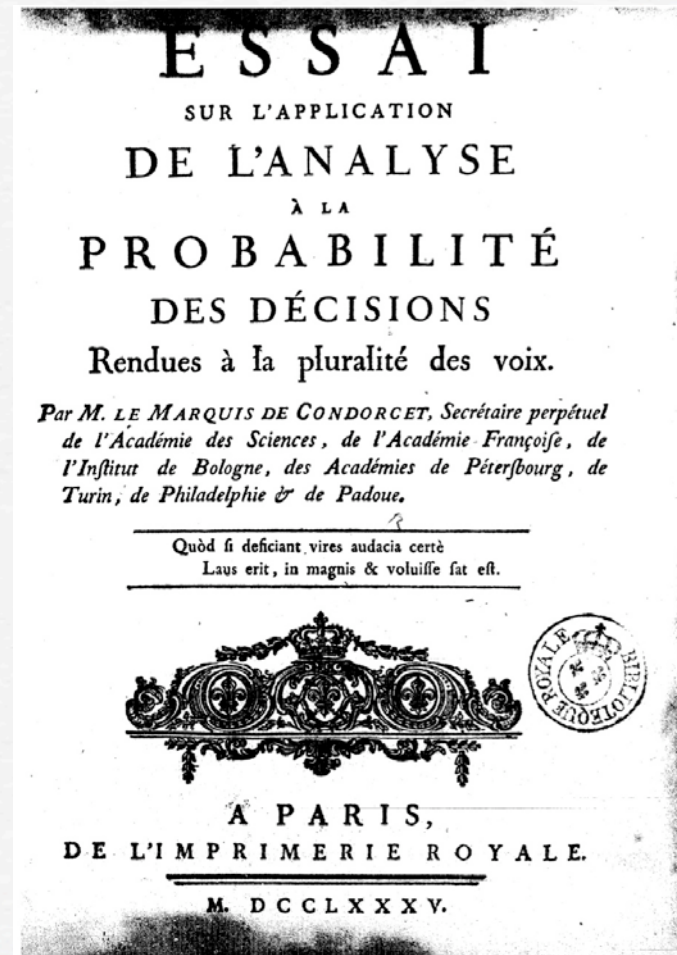
✓ Results:

★ IF the competence of an individual voter is $> 1/2$ THEN, as the number of voters tends to infinity, the probability of the group to make the right choice is equal to 1.

★ IF the competence of an individual voter is $< 1/2$ THEN, as the number of voters tends to infinity, the probability of the group to make the right choice is equal to 0.

✓ If i -competence $> 1/2$ then g -competence = 1 (for $|\text{group}| = \infty$).

✓ COMPETENCE: $P(\text{vote } X \mid X \text{ is the right choice})$.



THE EMPIRICAL APPROACH - I

✓ How do we test (a.k.a. run experiments) the hypothesis that groups perform better than individuals?

✓ STEPS:

★ Take a situation where one need to judge on a very precise issue: “life expectancy of a patient at ER admission”. (NOTA BENE: normally the judgment is not so general, it is restricted, for instance, to “ER admissions with diagnosed liver failure” or “ER admissions with Traumatic Brain Injury”, etc.)

★ Have a group of doctors and/or paramedics to give their individual estimate.

★ Run regression analyses by comparing individual estimates with different types of average taken among the individual estimates. (check Goldman’s: similar problem on page 81 of *Knowledge in a Social World*).

✓ PROBLEMS:

★ The methodology suffers from the same shortcomings that the model-theoretical approach suffers from.

★ In particular, most of the common problems we are faced with don’t come in such a definite way - cfr. slide from the previous lecture on the “model-to-world” problem.

THE EMPIRICAL APPROACH - II

LECTURE 2 - SLIDE 8

THE LITERATURE ON AGGREGATION - I Beginnings

- ✓ The problem of aggregation was first brought up in its mathematical formulation by Kenneth Arrow (an economist) in the 1950s: Arrow's impossibility theorem.
- ✓ There are several proofs of the theorem and of related theorems, and different proofs sometimes use different conditions.
- ✓ Desiderata for an aggregation function and their mathematical formulation: the *model to world* problem.

EXAMPLES:

✓ UNIVERSAL DOMAIN:

Condition 1: The social welfare function is defined for every admissible pair of individual orderings, R_1, R_2 .

✓ PARETO CONDITION:

Condition 2: If an alternative social state x rises or does not fall in the ordering of each individual without any other change in those orderings and if x was preferred to another alternative y before the change in individual orderings, then x is still preferred to y .

Excerpts from: Arrow, K.J., *A Difficulty in the Concept of Social Welfare*, *Journal of Political Economy* 58(4) (August, 1950), pp. 328-346.

see: Olaf Helmer and Nicholas Rescher (1960) *On the Epistemology of the Inexact Sciences*, RAND project # R-353

✓ QUESTION: Why don't we just change the real life settings, the way we solve problems in such a way that they can be handled with models?

★ Doing so would be very resource consuming (time, training of personnel, etc.). Compute the ratio: costs/potential benefits.

✓ If we can have better predictions then we can expect (costs/benefits) > 0.

★ Models don't guarantee better predictions: problem of externalities.

THE EMPIRICAL APPROACH - III

- ✓ The RAND project on structured group decision making:
 - ✓ Gather groups of experts and present them with a very down-to-earth problem (nonetheless a problem with a clear-cut answer, not “Is there a life after death?”).
 - ✓ Groups of experts deliberate and come to a solution of the problem by following a series of prescriptions (a script) developed by the researchers.
 - ✓ The control variable can be individual answers to the same problem or groups that use unstructured deliberation (free discussion).
- ✓ RESULTS: Non so clear-cut as with the previous two methods. Nonetheless, in a large number of cases, clear differences between groups and individuals, supporting the initial thesis: group performance > individual performance.

THE ANSWER

Individuals or groups?

- ✓ From a model theoretical perspective the answer tends to be that groups perform better, on truth-tracking than individuals. This, given certain restrictions and assumptions.
- ✓ The literature has developed vastly on the several theorems and results that can be obtained by using different assumptions.
- ✓ From an empirical point of view the results also seem to indicate that groups track the truth better than individuals, however, the model-to-world problem arises.
- ✓ Moreover, we have completely ignored a vast amount of sociological and psychological literature that tends to give contrasting or opposite answer.
 - ★ Psychology: research on the shortcomings of group-decision-making (psychological biases).
 - ★ Sociology/Philosophy: (1 example) Michel Foucault and the relation between power and knowledge

✓ MODEL-THEORETIC APPROACH

groups (*assumptions) > individuals

✓ EMPIRICAL APPROACH

?
...it depends...



GROUPS AS AGENTS

the status of group agents

- ✓ We have seen in the previous lecture that a first requirement for something to be a belief/opinion-entertaining agents, is to meet some minimal requirements of internal consistency. Problem of aggregation.
- ✓ In the previous slides we have seen that for such agent to be a “good” epistemic agent, it need to be able to track the truth, in other words, to produce knowledge. Ideally, moreover, a group agent would be a better truth-tracker than an individual, if we want to make sense of social epistemology not just as a derivative of standard analytical epistemology.
- ✓ In this section we look at some “ontological” features of group agents.
 - ★ In particular, the relevant question will be, what is the relation between groups and the correspondent collections of individuals? Problem of the relation between a set and its parts: philosophy of language, metaphysics, logic. E.G.:
 - ★ The mind-body problem.
 - ★ Theseus’ ship paradox. (** NOT the same problem!).



Philip Pettit's and Christian List's theory of corporate agents.

The two main tenets

✓ FUNCTIONALISM

“Functionalism in the philosophy of mind is the doctrine that what makes something a mental state of a particular type does not depend on its internal constitution, but rather on the way it functions, or the role it plays, in the system of which it is a part.”

REFERENCE: <http://plato.stanford.edu/entries/functionalism/>

✓ SUPERVENIENCE

“A set of properties *A* supervenes upon another set *B* just in case no two things can differ with respect to *A*-properties without also differing with respect to their *B*-properties. In slogan form, “there cannot be an *A*-difference without a *B*-difference”.”

REFERENCE: <http://plato.stanford.edu/entries/supervenience/>



FUNCTIONALISM

- ✓ PROBLEM: How do we define an object?
 - ★ E.g.: what is a knife?
 - ★ Fact: there used to be knives made of stone (Neolithic Age), there are metal knives, there are laser knives (laser surgery, heavy industry).
 - ★ Option 1: define 'knife' as "any metal single-bladed tool of relatively small dimensions", the definition rules out several things that in common language would probably classify as knives.
 - ★ Option 2: define 'knife' as "object for precision cutting of tissues by means of incision opposite to the cutting surface" ('precision cutting' somehow rules out swords, 'by means of...' somehow rules out scissors, etc.)
-
- ✓ When defining a group as an agent we don't look at its physical structure, its composition but at the function it performs and the role it has in a certain environment.



SUPERVENIENCE

- ✓ Take the set $O = \{o_1, o_2, o_3, o_4, \dots, o_{1,000,000}\}$. Suppose we replace $o_{20,000}$ with $o_{20,000}^*$:
Are $O = \{o_1, o_2, o_3, o_4, \dots, o_{20,000}, \dots, o_{1,000,000}\}$ and $O^* = \{o_1, o_2, o_3, o_4, \dots, o_{20,000}^*, \dots, o_{1,000,000}\}$ two different sets?
- ✓ Logically: yes! Two sets are identical IFF all the elements contained in one are also contained in the other. (Cfr. Leibniz's *Principle of Indiscernibles*.)
- ✓ In practice, applying the principle in ordinal language gives rise to paradoxes. Heraclitus' principle of change: *you-at-time-t* are different from *you-at-time-t+ε*, for however small ϵ is ($\epsilon \neq 0$).
- ✓ How do we define most of the common objects?
- ✓ Other paradoxes: philosophy of mind.

- ✓ Supervenience (for groups) asserts that: "The attitudes and actions of a group agent supervene on the contributions of its members." Christian List and Philip Pettit, (2009) *Group Agency*, in press.

- ✓ Alternative accounts:
 - ★ Emergentism
 - ★ Eliminativism

HOW STUDYING SOCIAL EPISTEMOLOGY TELLS US
SOMETHING ABOUT THE SOCIETY WE LIVE IN?



4 CASE STUDIES





WIKIPEDIA
The Free Encyclopedia

Imagine a world in which every single person on the planet is given free access to the sum of all human knowledge.

— Jimmy Wales, Founder of Wikipedia

from: <http://wikimediafoundation.org/wiki/Donate> retrieved on April 26, 2009

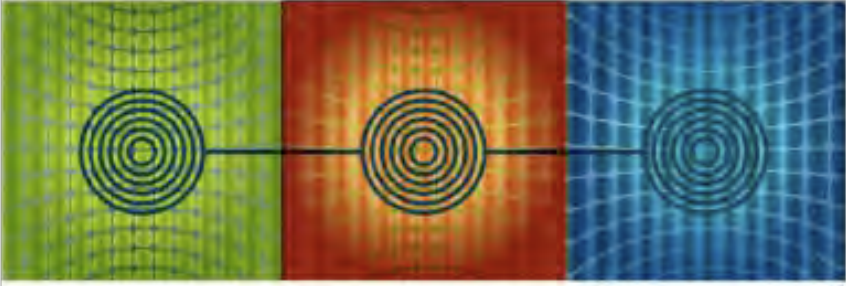
Knowledge and Information

- ✓ Issues related to the several types of controls over the available knowledge ⇨ Classic Sociology
- ✓ Knowledge \neq Information
- ✓ ...in particular: Knowledge = (information + “something extra”) [“something extra” = (truth + reliability + ?)]
- ✓ How can we account for the “something extra” in the social context.

Collective Knowledge and Performance

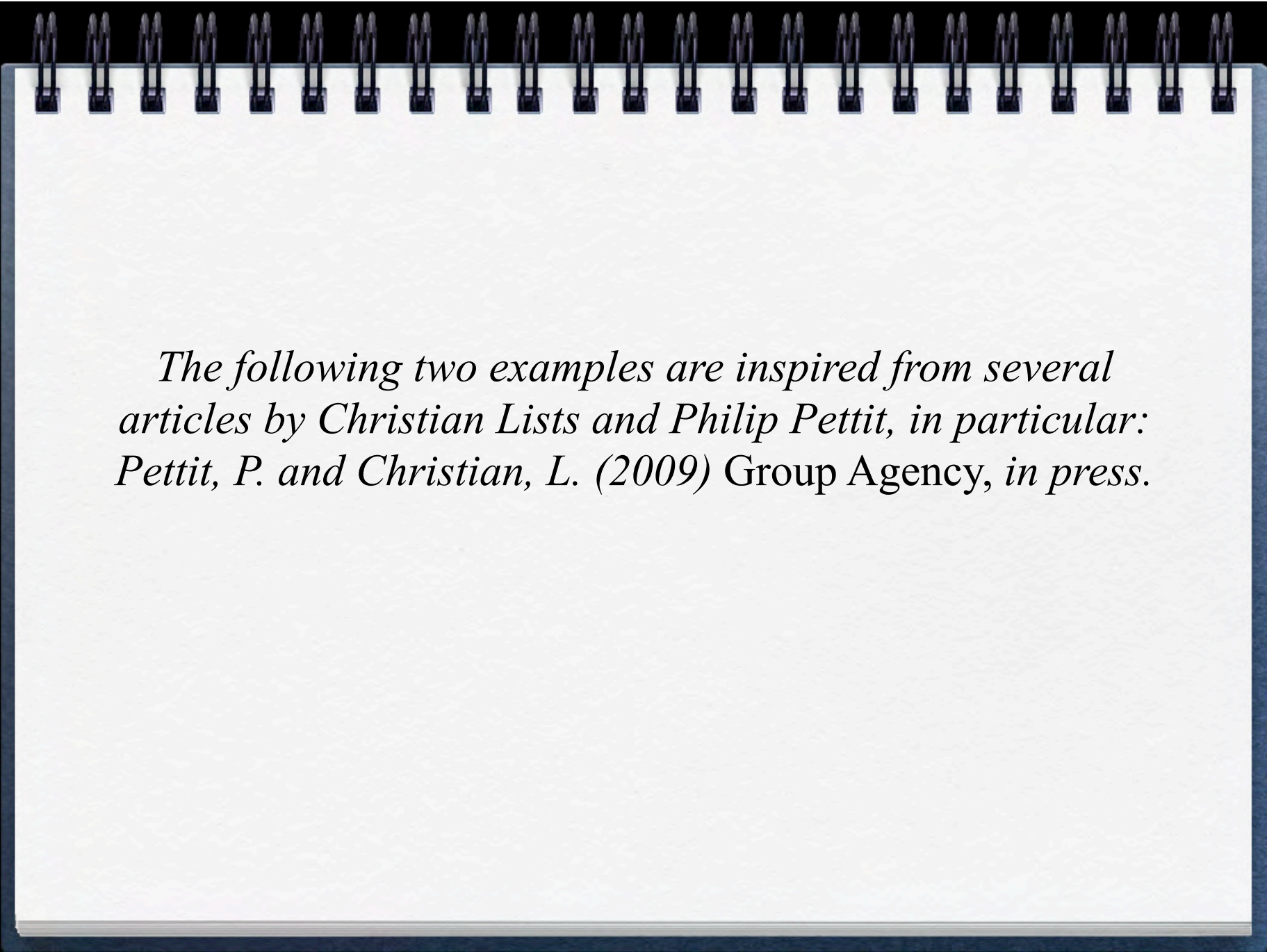
- ✓ Is knowledge more reliable if obtained by individuals or by groups?
- ✓ Conflicting intuitions: groups are for several aspects better than individuals

Massachusetts Institute of Technology



How can people and computers be connected so that—collectively—they act more intelligently than any individuals, groups, or computers have ever done before?

from: <http://cci.mit.edu/> retrieved on April 26, 2009



The following two examples are inspired from several articles by Christian Lists and Philip Pettit, in particular: Pettit, P. and Christian, L. (2009) Group Agency, in press.

PICTURE

“The F.B.I. didn’t know what it did know.”

- In a group knowledge can be present but not in a suitable way for the group to be able to take action.
- What are the most suitable structures for group knowledge?

Mr. Berger said of the bureau. "We've learned since 9/11 that not only did we not know what we didn't know, but the F.B.I. didn't know what it did know."

PHILIP SHENON - The
New York Times April 6,
2004

Anonymity and Objectivity

- ❑ In its mission statement The Economist regards itself a collective body.
- ❑ Is this a suitable arrangement?
- ❑ Cons.: the journal exposes itself to a great deal of risk as to what is being stated. That is, since the articles are anonymous the entire journal is responsible for what goes out. The chief editor cannot “put the blame” on the single journalists.
- ❑ Pros.: The risk that the journal takes seems to be a guarantee that what goes out is accurate and reliable information. (CASE: The Economist against Berlusconi) “If the stakes are high, I am careful about what I say”: this principle holds for all that presidential candidates in the USA utter during their campaign.

“Objectivity

The Economist is different from other publications because it has no by-lines. It is written anonymously because it is a paper whose collective voice and personality matter more than the identities of individual journalists. This ensures a continuity of tradition and consistency of view which few other publications can match.”

http://www.economistgroup.com/what_we_do/editorial_philosophy.html



RECAP ON UNIT 3 - I



- We have refreshed some of the features of Standard Analytical Epistemology (SAE) and in particular the JTB account and the tripartition of epistemology as a goal-oriented activity that, via specific methods/tools, seeks to build up a stock of knowledge.
- We have highlighted the changes occurring in the passage from SAE to Social Epistemology (SE), in particular, the changes affecting the subject of the propositional attitude “know that_”.
- There are different conceptions of SE (consensualism, utilitarianism, proceduralism) but we focused on Alvin Goldman’s *Veristic Social Epistemology*, we surveyed its features as well as its method.
- We laid down some minimal conditions for a group to be a carrier of knowledge and we presented some problems linked with the process of aggregation from individual attitudes (beliefs, “knowns”, etc.) to group attitudes. One of the first and minimal problems with aggregation is the presence of dissensus/disagreement.
- To the problem of disagreement the literature is essentially divided in *what-to* arguments and *how-to* arguments. (What to do in case of disagreement and how to proceed in order to solve disagreement.)

RECAP ON UNIT 3 - II



- We briefly surveyed the problem of aggregation as it was first presented by Kenneth Arrow and as it has since developed. In particular we saw an example of an aggregation function that does not admit of the Universal Domain condition. We saw the significance of impossibility and possibility theorems, what they purport to show and how they could be interpreted.
- We introduced the problem of truth in social epistemology in particular we presented the advantages (but possible disadvantages too) that we can gain from “going social”: SAE to SE.
- We saw the two main approaches to the problem of truth-tracking in SE: the model-theoretic approach and the empirical approach. We concluded that despite the many signs that groups outperform individuals the question “are groups better truth-trackers than individuals?” does not have a clear-cut answer.
- We introduced briefly Christian List’s and Philip Pettit’s theory of Group Agency and in particular the two main tenets that characterize it: Functionalism and Supervenience.
- We illustrated some examples taken from the contemporary social environment in order to motivate the research on social epistemology; we saw that a better understanding of the mechanism involved in the process of group knowledge acquisition is important for pragmatic purposes and not just as a theoretical exercise.

if you have any questions:

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send an email first.)

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good luck on the final!