Degrees of Ignorance: From the Individual to the Collective

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Ignorance

A gradable concept

- In ordinary langage: Brogaard (2016)
- "Shouldn't we say that anyone whatever will admit at least this: some people are wiser than others, some **more ignorant**?"" (Plato, *Theaetetus*, 171d)
- Anyway, I consider here the metaphysical / revised concept.

Yet, generally a binary concept in the literature

- E.g.: Someone ignores that autism is not caused by a vaccine, someone else doesn't ignore that the professor is absent today.
- E.g., Peels *vs* Le Morvan debate:
  ignorance is a lack of knowledge, or a lack of true belief
  — a binary concept anyway.
  (several papers in *Philosophia*, 2010-2012)

My question

- Can the concept of ignorance be analyzed in a gradable way?
- ... from the individual to the collective?
- ... for whatever definition of ignorance one may have?

Degrees of Ignorance: From the Individual to the Collective

1. Existing proposals and their limits
2. Degrees of individual ignorance
3. Degrees of collective ignorance, with Majority Judgment
4. Conclusion

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Preliminaries: types and varieties of ignorance

Three types

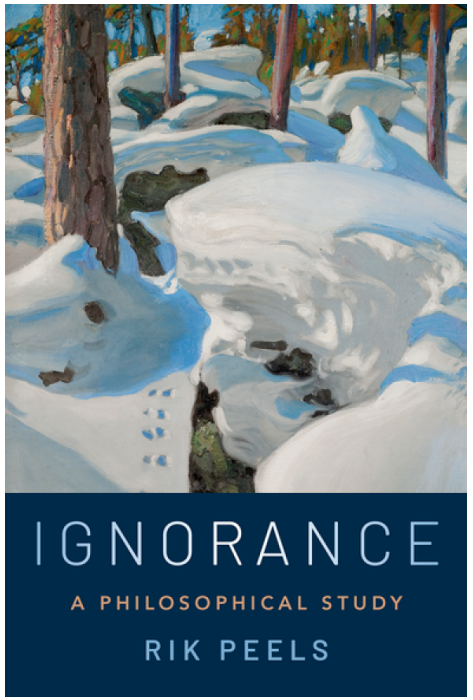
"the well-known distinction between **propositional**, **objectual**, and **procedural** knowledge transfers to ignorance. There is propositional ignorance – ignorance of certain facts or truths — objectual ignorance — ignorance of certain entities — and procedural ignorance — ignorance of how to do something. " (Peels and Lagewaard (2025), p. 145)

Six varieties of propositional ignorance (Peels 2023)

- to believe in a **false** proposition,
- to **suspend** one's judgment,
- to be **undecided** (because distracted),
- **not** to have **considered** a proposition,
- to ignore **deeply** (not believe or disbelieve, and would not believe the proposition if was to consider it),
- to ignore **completely** (to ignore deeply and not even grasp)

Gradability of ignorance in the literature

- **Few** philosophical works consider the **gradability** of ignorance (Nottelmann 2016, Woods 2021, Schwenkenbecher 2022).
- Most **relevant works** for my question:
  - Peels (2023)
  - Peels & Lagewaard (2025).



Gradability at the individual level

- "**Propositional ignorance comes in degrees** because one can be ignorant of more or fewer propositions, because one can be ignorant of more or fewer core propositions as opposed to peripheral propositions, because one variety of ignorance renders one more ignorant than another, and, arguably, because one's degree of disbelief may vary. (Peels 2023, 114)

Gradability of ignorance in the literature

Gradability at the collective level

- Peels and Lagewaard focus on **structured groups**, not mere collectives.

- "**The Dynamic Account of Group Ignorance**
  A group G is ignorant of some true proposition p iff:
  (i) a **significant part** of G's operative members is individually ignorant of p, and
  (ii) this individual ignorance is the result of a **group dynamic**, such as group agency, collective epistemic virtues or vices, external manipulation, lack of time, interest, concepts, resources, or information, or a combination of these." (P & L 2025, 155)

- A **binary** concept, which is then rendered **gradable** (degrees at the indiv. level, (i), and (ii)).

Limits of Peels & Lagewaard's account

- Individual: **no precise or formal scale**.
- Collective: **only** for **structured** groups.
  What, say, about the ignorance of French professors of philosophy?
- Collective: the authors acknowledge that
  "*how [collective] ignorance is supposed to come in degrees* **needs** *to be spelled out in* **much greater detail**" (p. 157)

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My proposal for individual degrees

- A: an agent.
- X: what the ignorance of A is about.
- E.g. the expert (A) ignores that there is some causal link between a chemical and a disease (X).

Hypothesis: Scale of ignorance

- There exists a finite set of **degrees** (or grades) $\{d_1, \ldots, d_g\}$ $(g > 1)$ which constitutes an **ordinal scale** S with a total order.
- One of these degrees, d_X, is attributed to A about X.
- A is then said to **ignore** X **to the degree** d_X.

Example

- **Scale**: {Very High, High, Medium, Low, Very Low}
- p: "The SARS-CoV-2 virus can be transmitted through aerosols"
- This scientist's ignorance of p was **High** in Spring 2020, and then **Very Low** in Fall 2021.

Relation with existing accounts

Compatible with Peels (2023)

- ✔ **Some varieties** of ignorance (not all) can be placed on such an **ordinal scale**.
  E.g.: complete ignorance $>$ deep ignorance

- ✔ **Within a variety**, ignorance can come with degrees.
  E.g.: ignoring more central propositions.

Advantages of my individual account

Three ways my proposal is general

- Can be applied to **all types** of ignorance:
  propositional, objectual, procedural.
- Does **not** assume a **specific definition** of ignorance.
  Compatible with Peels as well as with Le Morvan.
- Does **not** need to take a stand on the **varieties**/forms of ignorance
  (4?, 6?...).

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Collective ignorance — Preliminaries

Hypothesis: Scale of ignorance

$\exists$ **ordinal scale** S with **degrees** (or grades) $\{d_1, \ldots, d_g\}$

Complementary hypotheses

- All n agents use the **same** scale to attribute a degree of ignorance to k propositions
- The grades of the scale form a **common language** among n agents,

Aim

Find an **aggregation** function and/or a **ranking** function

Methodology

- **Axiomatic** approach: state epistemically desirable properties.
- **Reinterpret** work in social choice theory by Balinski and Laraki (2007, 2010, 2020).

Which epistemic axioms?

- **Axiome 1 (Grades)** – The aggregation function takes as input the grades (or degrees) given to the propositions. Not a ranking.
  Natural given the hypothesis Scale of ignorance.

- **Axiom 2 (Unrestricted domain)** – Grades may be assigned from the scale without restriction.
  No a priori constraint on grades, it is possible to use the full scale

- **Axiom 3 (Anonymity)** – Permuting the index of the agents does not change the outcome.
  There is nothing special with being agent #1.

- **Axiom 4 (Neutrality)** – Permuting the index of the propositions does not change the outcome.
  There is nothing special with being proposition #1.

Which epistemic axioms? (cont'd)

- **Axiom 5 (Monotonicity)** – If $p \succeq q$, and one of p's grades is increased, then $p \succ q$. Better epistemic evaluations should matter.
- **Axiom 6 (Completeness)** – For any pair (p, q), either $p \succeq q$ or $p \preceq q$. A ranking has to be delivered for any two propositions.
- **Axiom 7 (Transitivity)** – If $p \succeq q$ and $q \succeq r$, then $p \succeq r$.
  It may be violated with rankings as inputs (Condorcet paradox).
- **Axiom 8 (Independence of Irrelevant Alternatives)** –
  If $p \succeq q$, this remains true if other propositions are added or removed.

Otherwise: a weird story

During a treasure hunt, an adult judges that the kids are **more ignorant** of clue X than of clue Y.
Suddenly he thinks: "But what about clue W?".
He thinks again and concludes: kids are more ignorant of Y than of X.

Theorem (Balinski & Laraki 2020)

There exist an **infinity** of aggregation functions which satisfy Axioms 1–8.

Example: "point-summing methods"

- Each grade is associated with a **number**.
- Numbers received by a proposition are **summed up** (or averaged).
  (e.g. approval voting, Likert scales)

Drawbacks

- **No meaning**, **no justification** for the numbers. Could be re-scaled.
- Large sensitivity to **errors**
  (equivalent to: large sensitivity to manipulation or strategic voting).

The solution: Majority Judgment

Theorem (Balinski & Laraki 2007, 2020)

The only aggregation function which satisfies the above-mentioned axioms, plus an error-minimization axiom, is Majority Judgment.

Introducing Majority Judgment

- Each proposition receives an ignorance degree (or grade) from each agent. (cf. hyp. Scale of ignorance)

- For each proposition, **received degrees are ranked** by decreasing order.

  p: **Very High**, **Very High**, **High**, Medium, **Low**

- The middle (median) grade is the **majority grade**

  p: **Very High**, **Very High**, **High**, Medium, **Low**

  "a **majority** *of voters think [the option] deserves* **at least** *this grade and another majority thinks it deserves* **at most** *this grade."* (Balinski Laraki 2012)

- Propositions are **ranked** according to their majority grade.

  1: **High**, **High**, **High**, Medium, **Low**

  2: **Very High**, **High**, Medium, Medium, Medium

MJ – What if majority grades are the same?

- One compares **grades just around the one in the middle**.

  p: **Very High**, [**High**], **Medium**, [**Medium**], **Low**

  q: **Very High**, [**High**], **Medium**, [**Medium**], **Medium**

- If they are **the same**, one compares the grades which are **still farther** from the middle.

  p: [**Very High**], **High**, **Medium**, **Medium**, [**Low**]

  q: [**Very High**], **High**, **Medium**, **Medium**, [**Medium**]

An option is ranked **above**:

- Either if it has **higher** grades

  p: **Very High**, [**Very High**], **Medium**, [**Medium**], **Medium**

  q: **Very High**, [**High**], **Medium**, [**Medium**], **Low**

  $\Rightarrow p \succ q.$

- Or if its grades are **closer**

  p: **Very High**, [**Very High**], **High**, [**Low**], **Low**

  q: **Very High**, [**High**], **High**, [**Medium**], **Medium**

  $\Rightarrow q \succ p.$

Noticeable properties of Majority Judgment

- A **collective degree** of ignorance is attributed to each proposition (aggregation function).
- Propositions can be **ranked** according to their ignorance (ranking function).
- Note the methodology: each agent grades each proposition.
  - Neither "**Which** proposition is the one A ignores **the most**?"
  - nor "**How** are propositions **ranked** for ignorance?"
- Asking for grades provides richer information.

Refinements

- One may give a **distribution of grades** instead of just one (Laraki and Varloot, 2022).
  E.g.: 80 % **High** and 20 % **Low**.

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Completing Peels & Lagewaard

Peels & Lagewaard (2025, p. 157)

"*how [collective] ignorance is supposed to come in degrees* **needs** *to be spelled out in* **much greater detail**"

My proposal has offered such details,
both at the **individual** & **collective** levels:

- define a **common ordinal scale**,
- **each** agent grades **each** proposition,
- aggregate with **Majority Judgment**,

My proposal also extends their account to **non-structured** groups,
and is also **compatible** with a view of ignorance as a lack of true *belief*.

A mirror of a collective view of **knowledge** I have advocated elsewhere:

Boyer-Kassem, T. (2025) "Majority Judgment for Collective Beliefs and Science", manuscript, `https://philpapers.org/rec/BOYMJF`

Practical recommendations

- Experts should communicate their degree of ignorance.
- Committees should use Majority Judgment.

Future research paths

- A logic of the degrees of ignorance (e.g. for P and $\neg P$)
- Judgment aggregation for related propositions

Slides & papers:
https://thomasboyerkassem.yolasite.com/