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# Opérationnaliser l'incertitude morale : définir un cadre d'analyse pour l'esprit critique dans un monde incertain

Brian Jabarian

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**UNIVERSITE PARIS I PANTHÉON SORBONNE**  
**ED de Philosophie (ED 280)**  
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THÈSE

Pour l'obtention du titre de Docteur en Philosophie  
Présenté(e) et soutenu(e) publiquement  
le 22 Septembre 2023 par  
**Brian Jabarian**

**Opérationnaliser l'incertitude morale**  
*Définir un cadre d'analyse pour l'esprit critique dans un  
monde incertain*  
Volume I/II/III

**Sous la co-direction de M. Laurent Jaffro**

Professeur de philosophie morale à l'université Paris 1 Panthéon-Sorbonne

**Sous la co-direction de M. Franz Dietrich**

Directeur de Recherche au CNRS (Centre d'Économie de la Sorbonne et École d'Économie de Paris)

**Membre du Jury (par ordre alphabétique)**

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M. Marc Fleurbaey, Directeur de Recherche CNRS et Professeur titulaire d'une  
chaire à l'École d'Économie de Paris,  
M. Pierre Livet, Professeur Émérite de Philosophie, Université d'Aix-Marseille  
Mme. Katie Steele Professeur de Philosophie, Australian National University

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## Résumé

Ce doctorat en philosophie explore le problème de l'incertitude normative, c'est-à-dire le problème éthique complexe qui consiste à savoir ce que nous devrions faire lorsque nous sommes incertains de ce que nous devrions faire. Nous menons notre thèse dans la tradition oubliée de la philosophie des sciences, celle de l'opérationnalisation. Cette dernière est une approche analytique approfondie qui permet de définir un cadre d'analyse pour conduire des études appliquées d'un concept dont les implications empiriques ne sont, à l'origine, ni prouvées ni claires. Dans notre cas d'évaluation ou de choix éthique, l'opérationnalisation comprend deux dimensions principales : (1) fournir un cadre pour le raisonnement, la comparaison des valeurs des options et la prise de décision par des individus ou des groupes ; (2) fournir des preuves empiriques pour démontrer la pertinence du concept pour la recherche appliquée et les investigations scientifiques ultérieures. Nous divisons notre thèse en deux grandes parties suivant ces dimensions. Dans une introduction préalable, nous discutons l'incertitude normative et ses relations avec d'autres concepts éthiques et méta-éthiques. La première partie fournit un cadre complet pour comparer les valeurs des options, raisonner et prendre des décisions individuelles dans un contexte d'incertitude normative, en fonction des types et de la quantité d'informations dont dispose le décideur. La deuxième partie montre comment nous pouvons utiliser l'éthique et la philosophie du langage dans les méthodes d'enquête et établir l'incertitude normative comme un fait empirique en combinant ces deux disciplines. La conclusion résume les principales contributions de notre thèse.

## Summary

This Ph.D. in philosophy explores the normative uncertainty problem, i.e. the complex ethical problem of what should we do when uncertain about what we should do? We conduct our thesis in the tradition of the long-forgotten philosophy of science tradition of operationalization. The latter is a thorough analytical approach that allows for applied investigations of a concept whose empirical implications are neither proven nor clear. In the case of an ethical evaluation or choice problem, operationalization includes two main dimensions: (1) providing a framework for reasoning, comparing the values of options, and decision-making by individuals or groups; (2) providing empirical evidence to demonstrate the concept's relevance for applied research and further scientific investigations. We divide our thesis into two main parts based on these dimensions. A preceding introduction addresses normative uncertainty and its relations to other ethical and meta-ethical concepts. Part I provides a comprehensive framework for comparing the values of options, reasoning, and making individual decisions under normative uncertainty, depending on the types and amount of information available to the decision-maker. Part II demonstrates how we may employ humanities in survey methods and establish normative uncertainty as an empirical fact by combining both disciplines. The conclusion summarizes our thesis' main contributions.

## **Mots-clés**

Incertitude morale - Pensée critique - Méta-éthique

Opérationnalisation - Économie du bien-être - Théorie de la décision philosophique

Observation morale - Langage d'enquête - Éthique pratique

## **Keywords**

Moral Uncertainty – Critical Thinking – Meta-ethics

Operationalization – Welfare Economics – Philosophical Decision Theory

Moral Observation – Survey Language – Practical Ethics

# Opérationnaliser l'incertitude morale

*Définir un cadre pour l'esprit critique dans un monde incertain*

Brian Jabarian

*Une thèse de doctorat présentée*

à l'Ecole Doctorale de Philosophie

de l'Université de Paris 1 Panthéon-Sorbonne

*Sous la co-direction de*

Professeur Laurent Jaffro

*et*

Professeur Franz Dietrich

En vue de l'obtention du diplôme

de docteur en philosophie

# OPERATIONALIZING MORAL UNCERTAINTY

*A Framework for Critical Thinking In An Uncertain  
World*

Brian Jabarian

A Dissertation

Presented to the Faculty  
of Panthéon-Sorbonne University  
in Candidacy for the Degree  
of Doctor of Philosophy

Recommended for Acceptance

by the Department of  
Philosophy

Advisor: Professor Laurent Jaffro

Co-Advisor: Professor Franz Dietrich

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## **Abstract**

This Ph.D. in philosophy explores the normative uncertainty problem, i.e. the complex ethical problem of what should we do when uncertain about what we should do? We conduct our thesis in the tradition of the long-forgotten philosophy of science tradition of operationalization. The latter is a thorough analytical approach that allows for applied investigations of a concept whose empirical implications are neither proven nor clear.

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This dissertation represents the second phase of my research agenda on moral uncertainty and announces, within the philosophy of economics and ethics, the transition from the philosophy of moral uncertainty to the economics of moral uncertainty. I am eager to delve into a rich economic agenda focusing on thinking styles, phenomenology, scientific methods and technologies, and the production of knowledge and reality. As the Howard and Nancy Marks Principal Researcher at The University of Chicago Booth School of Business, I look forward to exploring these themes further. My approach to economics, shaped by a liberal education and influenced by the Chicago School's style, aims to demonstrate the benefits economists can reap by engaging with socially relevant topics, maintaining an open dialogue with other disciplines, envisioning potential futures for humanity, and applying rigorous economic methodologies to assess their feasibility and policy implications.

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veloped my interest in advanced formal philosophical decision theory thanks to the supervision of Franz Dietrich and his generous time, discussions, and a rich and stimulating collaboration over three papers together.

A significant portion of this dissertation was developed, implemented, and written as a Visiting Student and Research Collaborator at the Princeton School of Public and International Affairs (2018-2020) thanks to the invitation of Marc Fleurbaey, who guided me for the second part of my thesis. Marc was also always available for long and generous discussions and immediately supported my desire not only to use the philosophy of language and ethics but also to focus groups with citizens and interdisciplinary researchers and interviews with policymakers to develop my survey. On this occasion, I thank Edward Freeland and the Princeton Survey Research Center's team for the survey grant and to have helped set up the focus groups with US citizens in the survey lab; to all the research participants in the weekly Princeton Economics and Social Ethics that I co-organized with Marc where we could run multiple focus groups with philosophers, psychologists and economists; to Carol Graham and the Brookings Institute to have welcomed me as a Visiting Ph.D. Researcher at the Global Economy and Development Program, where I could access policymakers from Brookings, World Bank, and IMF for my interviews.

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Several chapters or parts of them became co-authored and/or have been transformed into articles, either published or working papers. Based on the first part of the dissertation, I co-authored the following articles with Franz Dietrich: *Decision Under Normative Uncertainty* (now published in *Economics and Philosophy*. 2022;38(3):372-394. doi:10.1017/S0266267121000201), *Risk Attitude under Normative Uncertainty* (draft accessible upon request); *Axiomatic foundations of normative uncertainty* (draft accessible upon request). Based on the second part, I published “The Moral Costs of Ambiguity Aversion: A Two-Ball Ellsberg Thought Experiment” at PEA Soup upon the invitation of Alex Voorhoeve, Thomas Rowe and David Faraci (PEA Soup P&PA Discussion 2019). Besides, I authored two articles based on the second part, *The Worldview Uncertainty Survey: A Dataset*, and one co-authored with Marc Fleurbaey and Franz Dietrich, *Testing Normative Uncertainty: Value Judgments and Policy Preferences*.

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Cette dissertation représente la deuxième phase de mon agenda de recherche sur l'incertitude morale et annonce, dans la philosophie de l'économie et de l'éthique, la transition de la philosophie de l'incertitude morale vers l'économie de l'incertitude morale. Je suis impatient de me plonger dans un riche programme économique axé sur les styles de pensée, la phénoménologie, les méthodes et technologies scientifiques, ainsi que sur la production de connaissances et de réalité. En tant que chercheur principal Howard et Nancy Marks à la Booth School of Business de l'Université de Chicago, je suis impatient d'explorer ces thèmes plus avant. Mon approche de l'économie, façonnée par une éducation libérale et influencée par le style de l'École de Chicago, vise à démontrer les avantages que les économistes peuvent tirer en s'engageant sur des sujets socialement pertinents, en maintenant un dialogue ouvert avec d'autres disciplines, en envisageant des futurs potentiels pour l'humanité et en appliquant des méthodologies économiques rigoureuses pour évaluer leur faisabilité et leurs implications politiques.

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Plusieurs chapitres ou parties de ceux-ci sont ou ont été transformés en articles, soit publiés dans des journaux, soit publiés en tant que documents de travail en libre accès. Sur la base de la première partie de la thèse, j'ai co-écrit les articles suivants avec Franz Dietrich : Decision Under Normative Uncertainty (maintenant publié dans *Economics and Philosophy*. 2022;38(3):372-394. doi:10.1017/S0266267121000201), Risk Attitude under Normative Uncertainty (brouillon accessible sur demande) ; Axiomatic foundations of normative uncertainty (brouillon accessible sur demande). Sur la base de la deuxième partie, j'ai publié "The Moral Costs of Ambiguity Aversion: A Two-Ball Ellsberg Thought Experiment" à PEA Soup sur invitation d'Alex Voorhoeve, Thomas Rowe et David Faraci (PEA Soup P&PA Discussion 2019). De plus, j'ai écrit deux articles basés sur la deuxième partie : The Worldview Uncertainty

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Death and life are in the power of the tongue;  
and they that indulge it shall eat the fruit thereof.

Ketuvim, 18:21

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*To Mariam,  
my great-great-grand-mother,  
To Jacqueline (born in Aleppo, Syria),  
her grand-daughter and my grand-mother*

*To Arakel,  
my great-grand-father,  
known as "Gaidzag",  
To François (born in Marseille, France),  
his son and my grand-father*

*to Françoise, my mother and the daughter of Jacqueline and François,*

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# **Part I**

## **Introduction Générale**

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## **Abstract**

Dans cette introduction générale, nous présentons l'incertitude normative. Le chapitre 1 met en évidence les conséquences sociales des jugements de valeur et souligne la manière dont la délibération accompagnée d'incertitude normative permet de formuler des jugements de valeur plus justes qu'en l'absence de cette dernière. Le chapitre 2 fournit un examen détaillé de l'incertitude normative, à la lumière de la littérature contemporaine. Le chapitre 3 présente les perspectives particulières que nous adoptons tout au long de cette thèse, ainsi que sa structure.

# Chapter 1

## Les ramifications sociales des jugements de valeur

Dans ce chapitre, nous mettons en évidence les conséquences sociales possibles des jugements de valeur et soulignons la manière dont la délibération accompagnée d'incertitude normative permet de formuler des jugements de valeur plus justes qu'en l'absence de cette dernière. La [section 1.1](#) évoque trois lieux communs à propos des jugements de valeur, qui détournent notre attention de leurs conséquences sociales possibles. La [section 1.2](#) souligne l'importance de la parole à l'ère digitale, qui voit son essence phénoménologique se transformer d'*être transitoire* à celui d'*être permanent*, étant maintenant reproduit à l'écrit de manière continue. La [section 4.3](#), s'appuyant sur la précédente, décrit le processus de délibération ou esprit critique pouvant être mobilisé par les individus pour améliorer la qualité de leurs jugements de valeur et ainsi leurs conséquences sociales possibles. La [section 1.4](#) rappelle l'existence de différents cadres normatifs



définissant ce que devrait être l'esprit critique en contexte éthique; en particulier, cette section décrit le cadre du "voile d'ignorance" et ses limites pratiques. La [section 4.5](#) propose un cadre alternatif répondant aux critiques dont souffre le voile d'ignorance: la délibération en contexte d'incertitude normative.

## 1.1 Trois sophismes sur les jugements de valeur

La permanence de différends moraux, politiques, religieux et esthétiques devrait nous rappeler à quel point il est difficile de formuler un jugement de valeur qui soit juste, i.e., adéquat aux situations à juger et, ainsi, enjoindre les agents à une humilité normative, se traduisant par une attitude d'incertitude normative. Pourtant, trois lieux communs semblent persister et motiver une certaine arrogance normative, i.e., une certitude normative: les répercussions sociales des jugements de valeur sont fréquemment considérées comme virtuelles, comme si les mots restaient vides de sens; les jugements de valeur sont fréquemment formés rapidement, comme s'ils étaient accessibles sans aucun effort; leur expression est fréquemment accompagnée de certitude, comme s'ils portaient sur des questions évidentes. Développons brièvement pourquoi nous devrions nous méfier de ces clichés.

Premièrement, les jugements de valeur peuvent avoir des conséquences sociales indépendamment des positions méta-éthiques<sup>1</sup> sur lesquelles ils sont fondés (Smith (1994)). D'une part, dans une perspective méta-éthique "internaliste", les jugements de valeur motivent les actions individuelles et

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<sup>1</sup>Branche de la philosophie qui étudie le statut des énoncés éthiques.

collectives, que ce soit directement (en soi) ou indirectement (par l'émergence d'une émotion impliquée dans la motivation). Si les végétaliens jugent que manger de la viande est mauvais, il est peu probable qu'ils le fassent. De plus, s'ils s'expriment publiquement, ils peuvent inciter d'autres personnes à s'abstenir de consommer de la viande. D'autre part, d'après la perspective méta-éthique "externaliste", les jugements de valeur génèrent des représentations symboliques de la situation jugée, pouvant favoriser l'émergence d'attitudes individuelles ou collectives favorables ou défavorables à son égard. De manière simplifiée, un jugement de valeur peut, tout simplement, créer une mauvaise publicité. À terme, cette publicité, suffisamment diffusée peut transformer les normes sociales qui régissent les comportements et attitudes admissibles à propos de la-dite situation. Ainsi, en modifiant les normes sociales, c'est le champ des actions et attitudes permises qui s'en trouve modifié (Bicchieri (2005)). En résumé, les jugements de valeur ont des conséquences sociales, en termes de modification de l'environnement social qui nous entoure, soit par le biais des motivations et des actions (perspective internaliste), soit par celui des représentations et des attitudes (perspective externaliste).

Deuxièmement, l'élaboration de jugements de valeur n'est pas sans effort psychologique. Malgré cette complexité, les psychologues ont montré la rapidité avec laquelle les individus formulent les jugements de valeur notamment en raison de biais cognitifs (Kahneman (2011a)). En raison de la complexité de chaque dilemme moral et de leur multiplication dans leur vie quotidienne, les individus peuvent répondre à cette trop grande demande d'attention normative dans notre économie digitale - comme nous le soulignons dans la prochaine section - par des heuristiques pour formuler

toujours plus rapidement des jugements de valeurs. Permettant d'alléger la charge cognitive de l'agent sur-sollicité, ce processus, influencé par des biais cognitifs, ne rend pas justice à la situation à juger, dont la complexité nécessite un plus grand investissement attentionnel et psychologique de la part de l'agent pour pouvoir être jugé de manière adéquate<sup>2</sup>.

Dans de tels cas, les agents s'appuient sur des "principes heuristiques", correspondant à des processus cognitifs simples (Tversky and Kahneman (1974)). Lorsqu'un scénario est difficile à juger, comme dans le domaine de l'éthique (Harman (2014)), les individus sont plus enclins à simplifier leur perception de la situation. Cette simplification se manifeste via un processus de substitution où les individus substituent mentalement les attributs objectifs de la situation par des attributs subjectifs qui leur sont comparables. Ces attributs subjectifs sont issus des expériences antérieures et des valeurs propres aux agents. Parmi la totalité de ces attributs gardés en mémoire, seuls ceux qui leur paraissent familiers à la situation sont mis en action (Kahneman and Frederick (2002)). Ce processus est dénommé "substitution d'attribut" (Kahneman and Frederick (2002)), où ces attributs fonctionnent comme des "événements représentatifs" de la situation<sup>3</sup> de la situation.

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<sup>2</sup>Comme nous le montrons dans notre doctorat en sciences économiques, c'est en fin de compte la société entière qui souffre de cette situation de sollicitation à outrance de l'attention et de sous-investissement cognitif. Situation qui peut être corrigée comme nous le montrons dans notre article en co-auteur avec Elia Satori, en développant une économie de l'esprit critique dans une société digitale, simplement en utilisant les médias comme des "nudges mentaux".

<sup>3</sup>La notion de *représentativité* ici ne fait pas référence au concept statistique – établi par des méthodes statistiques rigoureuses d'échantillonnage des événements – mais plutôt à une évaluation subjective basée sur les histoires personnelles.

Troisièmement, les jugements de valeur portent le plus souvent sur des dilemmes moraux et questions ambivalentes (Kaplan (1972), Haidt (2012)). Les jugements de valeur peuvent être classés selon plusieurs théories de la valeur concurrentes, qui se répartissent en deux grandes catégories méta-éthiques : réaliste et non-réaliste. Ces théories définissent le statut normatif des jugements de valeur et les objets à évaluer, comme l'a déjà laissé préfigurer la distinction entre les positions méta-éthiques internalistes et externalistes. L'interrogation principale porte sur le fait de savoir si l'on peut attribuer un degré de véracité aux jugements de valeur (réalisme) ou si ces derniers ne sont que des manifestations d'attitudes (non-réalisme). Cette interrogation fait échos à la seconde: savoir s'il existe des faits normatifs indépendants de l'agent (réalisme) ou non (non-réalisme).

## **1.2 Une économie des mots pour éviter une économie des maux**

Notre ère numérique assure une reproduction continue et simultanée de la parole, la convertissant ainsi en écrit et ainsi, en fait social. La sphère publique autrefois physique et éphémère est désormais digitale et permanente. Comme l'a postulé W. Benjamin dès le début du XXe siècle (Benjamin (1935)), la parole publique était déjà diffusée à travers les médias de masse (télévision, radio, journaux, cinéma) et conservée de diverses façons (cassettes, CDs, archives papiers). Néanmoins, cette reproductibilité, bien que basée sur des techniques "mécaniques", restait limitée du fait de coûts matériels élevés. La reproduction de la parole, en termes de fréquence ou de lieux d'expression simultanés, était donc restreinte et souvent différée.

L'avènement d'internet et des nouvelles technologies digitales nous a fait passer de la reproductibilité mécanique à la reproductibilité digitale. Cela a drastiquement réduit les coûts de reproduction de la parole publique, permettant un passage d'un temps discret à un temps continu et la multiplication des espaces de (re)diffusion synchroniques et diachroniques. En termes phénoménologiques, l'on peut dire que nous avons assisté à une transformation de la temporalité de la parole. Son flux, à l'ère mécanique, était mesurable dans le temps de manière "discrète" (comme en mathématiques). Avec l'ère digitale, ce flux est mesurable dans le temps de manière "continue". Deux exemples principaux illustrent cette reproductibilité digitale à faible coût. Premièrement, l'accès aux archives est désormais libre et accessible à tous, là où il était auparavant réservé à une poignée d'individus spécialisés et accrédités. Par exemple, une interview d'un ministre dans une édition spécifique d'un journal était confinée à cette édition, archivée dans le sous-sol de l'entreprise de presse. Maintenant digital, cet entretien est accessible à tous, tout le temps, et depuis divers endroits géographiques et espaces numériques (site web du journal, autre site, archive d'internet<sup>4</sup>). Deuxièmement, la révolution digitale a multiplié les sources de (re)production et les plateformes de (re)consommation. Avant cette révolution, un citoyen lambda qui se souvenait vaguement d'une interview spécifique mais qui ne l'avait pas archivé lui-même, avait peu de chances d'obtenir l'autorisation nécessaire du journal en question pour accéder aux archives. Avec internet, et plus particulièrement l'essor des

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<sup>4</sup><https://archive.org/>

réseaux sociaux et des "médias numériques",<sup>5</sup> cet accès aux archives est rendu possible. Désormais, tous ceux qui le souhaitent peuvent accéder *de facto* à un grand nombre d'informations qui étaient auparavant réservées, *de jure*, aux journalistes accrédités.<sup>6</sup>

Avec ce nouvel accès et la maîtrise complète de la chaîne de valeur de l'économie des médias, chacun peut non seulement (re)produire et (re)diffuser ces informations de manière instantanée. L'ère de la rediffusion mécanique a cédé la place à celle de la rediffusion numérique (par exemple, via les "chaînes" Youtube)<sup>7</sup>. A travers la décentralisation du pouvoir médiatique, quasiment toute parole est transcrite, archivée et, qui plus est, facilement mobilisable à tout moment et diffusable à faible coût. Avec l'émergence des techniques de reproduction du contenu et des médias de masse (Benjamin, 1935), la décentralisation du pouvoir médiatique s'est

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<sup>5</sup>Par exemple, les chaînes Youtube, les communautés Slack et Discord, les médias de diffusion d'information instantanée tel que Tik Tok et Snapchat; l'on peut citer également les différentes plateformes de blog tel que Substack, Medium, etc. qui participent à la confusion entre information et propagande, en créant du "storytelling".

<sup>6</sup>Par exemple, via des supports technologiques tels que drones et caméra de poche, mais également, à travers une difficulté des institutions publiques à contrôler l'accès aux sources mêmes de l'information – ainsi voyons-nous apparaître des "créateurs de contenu" s'aventurer sur des territoires en guerre, pratique réservée auparavant aux reporters de guerre.

<sup>7</sup>La révolution que nous vivons avec l'intelligence artificielle consiste à quitter cent ans de progrès technologiques visant à "reproduire" que ce soit comme chez Benjamin, de manière mécanique (ou depuis et jusqu'à présent, de manière digitale) pour entrer dans une ère où les technologies *produisent* du contenu, grâce à des General Purpose Technologies, GPTs. Ainsi après l'ère mécanique puis celle digitale, nous entrons dans l'ère "synthétique" (ou artificielle) où la production de contenu devient synthétique, tout comme leurs reproductions. D'ailleurs, l'arrivée sur ce marché de l'information de nouveaux acteurs humains à l'ère digitale et maintenant de nouveaux acteurs artificiels à l'ère synthétique vient bouleverser le choix des éditions de *quelle* information diffuser. Autrefois pouvant respecter une certaine logique socio-politico-démographique de la société, ce choix n'étant plus confiné aux salles d'éditions des médias, mais disponible à tous, *toute* information peut être diffusée, à la discrétion des créateurs de contenus, humains ou synthétiques, dont l'influence médiatique a dépassé pour la grande majorité d'entre eux, celle des médias traditionnels.

opérée en deux phases. D'abord, la décentralisation est née, en grande partie du fait de la multiplication des entreprises traditionnelles médiatiques.

Ensuite, elle a été portée à son paroxysme avec la révolution des médias sociaux. Ainsi, toute parole peut donc être constamment portée à l'attention des acteurs de la société. Outre les conséquences comportementales et psychologiques que peut induire ce nouveau pouvoir contemporain à faire exister en continu la parole comme un écrit<sup>8</sup>, la parole devient un fait social significatif.

Quelles sont les conséquences sociales des jugements de valeur, où l'ère de la parole mécanique a laissé place à l'ère digitale, qui à son tour a laissé place à l'ère synthétique? Du fait de cette décentralisation des réseaux qui multiplie le nombre de canaux d'information disponibles et la quantité d'informations disponibles au sein de chaque canal, qu'il s'agisse d'informations factuelles ou de jugements de valeurs pour juger ces nouvelles situations. Ces effets de multiplicité (nombre de situations et nombre de perspectives par situation), au-delà de rendre les situations plus complexes à gérer au niveau de la délibération, accroissent nos possibilités d'affecter le monde social qui nous entoure à travers nos jugements de valeur. De la même manière que notre consommation d'information est amplifiée, notre voix, exprimée en publique, dans le monde digital, peut trouver toujours plus d'échos, empruntant plusieurs canaux sans réel coût supplémentaire de transmission (hormis ceux de la publicité et du marketing, nécessaires pour que la parole

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<sup>8</sup>Et dans des cas extrêmes, saturer leur attention, au point où certains auteurs parlent même "d'apocalypse cognitive" (Bronner (2021)).

soit "vue"<sup>9</sup>. Pour mesurer l'importance de la parole comme fait social, on peut par exemple considérer "l'opinion publique", et son rôle dans les votes lors d'élections (Lippmann (1922))<sup>10</sup>.

Ainsi, à l'ère numérique où les paroles se confondent avec actes, il devient urgent d'élargir le cadre d'analyse des conséquences possibles de la parole, au-delà de celles légales, dont un cadre juridique existe déjà. Il s'agit ici de comprendre le phénomène de la parole comme acte dans sa globalité sociétale, ce qui implique de développer un cadre pour une économie et une éthique de la parole. Ce cadre doit être à la fois suffisamment ambitieux pour être considéré comme éthique mais aussi suffisamment pragmatique pour pouvoir être déployé de manière opérationnelle par les individus au quotidien ainsi que par diverses institutions privées et publiques. Ce pragmatisme et cette urgence nous éloignent des théories idéales de la parole à la Rawls (Rawls (1971a)) et nous rapprochent des approches pragmatiques à la Sen (Sen (2009)). Proposer un tel cadre éthique opérationnel est l'objectif global de cette thèse de philosophie<sup>11</sup>. Dans la prochaine section, nous discuterons de l'importance de la délibération dans ce contexte.

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<sup>9</sup>sans même parler des "likes", qui ne sont plus si pertinents depuis ces deux dernières années; voir les services de Twitter Ads, Instagram Ads, etc - sans même évoquer ici le marché noir des "fakes views".

<sup>10</sup>Voir Jabarian B. et Sartori E. "Critical Thinking and Storytelling pour une exploration des conséquences en économie politique du storytelling accompagnant l'opinion publique.

<sup>11</sup>Nous invitons les lecteurs intéressés par la mise en pratique opérationnelle de ce cadre en économie politique à se référer au deuxième chapitre de notre thèse d'économie en co-auteur avec Elia Sartori mentionné précédemment) et en économie de l'environnement au troisième chapitre, en co-auteur avec Marc Fleurbaey "Inequality Aversion and Climate Welfare With Worldview Uncertainty: Theory and Evidence From A Representative US Survey").



## 1.3 Le processus de délibération : émotions et raisonnement

Comme nous l'avons mentionné plus haut, lorsque nous sommes confrontés à une situation qui exige un jugement de valeur, nous réagissons avant tout à travers nos émotions (Greene and Haidt (2002)). Une situation peut nous surprendre, choquer ou plaire, nous répugner ou gagner notre empathie. Ces émotions contiennent des informations nécessaires pour la formation de notre jugement de valeur. Cependant, elles sont insuffisantes en elles-mêmes pour former complètement un jugement de valeur juste et requièrent une délibération afin de compléter cette formation.

Cette délibération s'apparente à un processus mental composé de différentes activités cognitives et émotionnelles, puisant dans différentes sources d'information.

Les premières sources d'information complémentaires aux émotions à la disposition des individus sont les représentations qu'ils se font de leur propre identité, c'est-à-dire à propos de leurs désirs et caractéristiques psychologiques (Tversky et Kahneman (1985), Kahneman and Tversky (2013)) mais également leurs valeurs socio-démographiques, i.e., leurs origines, positions socio-économiques dans la société (Bourdieu (1979), Graham et al. (2009)). En effet, les jugements peuvent indiquer les valeurs socio-démographiques. Ces valeurs sont déterminées par une filiation avec une famille, une religion, un groupe ethnique, une nation, un parti politique ou une profession spécifique. L'âge, le sexe, le revenu, le capital, l'éducation, le lieu de naissance, la localisation et le statut familial correspondent tous à

des valeurs démographiques. Ainsi, selon cette perspective sociologique du jugement de valeur, remettre en question un jugement de valeur reviendrait à questionner les valeurs socio-démographiques. D'autre part, lorsque les individus communiquent leurs jugements de valeur, de nombreux traits psychologiques et attitudes peuvent être révélés. Les jugements de valeur peuvent fournir des informations sur leurs attitudes vis-à-vis du risque, leur confiance en eux-mêmes, leur caractère moral, croyances sur leur futur, désir d'appartenir à un groupe particulier et leur souci de l'image sociale. Ainsi, selon cette perspective psychologique du jugement de valeur, remettre en question son jugement de valeur reviendrait à questionner ses caractéristiques et attitudes psychologiques. Cependant, porter un jugement de valeur basé sur notre "moi sociologique" ou "moi psychologique" équivaut à porter un jugement de valeur généralement "biaisé", résultant d'un raisonnement "motivé" (Kunda (1990)). Les philosophes ont fourni une autre source d'information supplémentaire afin de palier à ces biais : les philosophies morales et politiques elles-mêmes, ainsi qu'un outil cognitif spécial pour traiter ces informations : les expériences de pensée (Thomson (1976), Sorensen (1991), Walsh (2011))<sup>12</sup>. Les expériences consistent en une description simplifiée d'une situation complexe ou une question concernant un dilemme et un ensemble spécifique de connaissance scolastique (par opposition à la doxa sociale) qui doit être utilisé de manière critique afin d'arriver à une réponse satisfaisante à la question (Brown and Fehige

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<sup>12</sup>Même si la philosophie contemporaine analytique a fortement mis l'accent sur ces procédés cognitifs de raisonnement philosophique, l'on peut retrouver ce type d'expérience en philosophie moderne au moins depuis Pascal, avec son fameux exemple « Le parieur » dans le cadre de la théorie de la décision ou bien chez Descartes avec son fameux exemple de « la tour carrée » dans le cadre de la philosophie de la connaissance et de la perception et également chez les philosophes grecs tel que Zénon d'Élée et ses paradoxes.

(2022))<sup>13</sup>. A l'aide de ces expériences de pensée nous sommes en mesure de créer un cadre de pensée critique. Ce cadre se caractérise par une mise à distance de nos représentations de soi sociologiques et psychologiques pour nous permettre d'accéder à ces informations philosophiques de manière moins biaisée. Ce cadre de pensée critique, caractérisé de manière opérationnelle se retrouve au moins depuis le début du XXème siècle dans la philosophie pragmatique de Dewey (Dewey (1910)) et en psychologie cognitive actuelle dans les travaux de Kahneman et Tsversky<sup>14</sup>, notamment avec leur système de pensée divisé en deux modes, l'un rapide et basée sur l'intuition, l'autre lent et fondé sur l'esprit critique. Fournir un cadre de pensée critique pour façonner notre identité éthique est intéressant pour plusieurs raisons déontologiques et conséquentialistes à travers les sciences sociales.

L'objectif de cette thèse est de proposer au lecteur de s'appuyer sur un cadre de pensée critique - lui-même décomposable en trois éléments : une expérience de pensée<sup>15</sup>, des informations philosophiques et des règles pour traiter ces informations – afin de guider la formulation de nos jugements de valeur et d'améliorer leur justesse.

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<sup>13</sup>Ces expériences de pensée sont le pendant en philosophie de ce que sont les modèles en sciences avec une légère différence: des fenêtres, non sur ce qu'*est* le monde (le propre de la science), mais sur ce que *doit* être le monde (le propre de la philosophie).

<sup>14</sup>Le lecteur intéressé de manière plus détaillée à l'influence de l'opérationnalité en psychologie cognitive contemporaine peut se référer à la revue de littérature de Feest (2005).

<sup>15</sup>Cette thèse se focalise globalement sur les deux derniers éléments. Nous invitons le lecteur intéressé à notre livre compagnon, "l'expérience de l'incertitude morale", qui définit cette expérience de pensée à l'aune de la phénoménologie morale, de l'histoire moderne de la philosophie et la philosophie économique.

## 1.4 Principe délibératif local et idéal : le voile de l'ignorance

Proposer une expérience de pensée comme principe de rationalité et d'éthique pratique n'est pas nouveau dans l'histoire moderne et contemporaine de la philosophie morale<sup>16</sup>. Nous pouvons citer le "voile d'ignorance" proposé par les économistes et philosophes William Vickrey (Vickrey (1945)), John Harsanyi (Harsanyi (1953), Harsanyi (1977)), et John Rawls (Rawls 1971). Les auteurs de cette expérience invitent les lecteurs à oublier complètement la représentation de leur soi sociologique et psychologique discutée plus haut et d'accepter l'idée que durant cette expérience ils ne sauront pas ce qu'ils deviennent dans cette société possible définie par les jugements de valeur résultant de ce voile. En d'autres termes, l'on peut dire que cette expérience s'apparente à une incertitude de l'identité totale. Cet exercice de pensée présente deux limites.

Premièrement, le voile d'ignorance est idéal, en termes d'accès aux conditions d'informations. En effet, sans même parler d'opérationnalisation de cette expérience qui semble simplement impossible, il semble peu plausible d'envisager que des individus dotés d'une agence morale, puissent oublier radicalement toutes les dimensions de leur identité (représentation du soi). D'abord, le lien, éventuellement inconscient, qu'un individu entretient avec son « moi biographique » ou « moi psychologique » existe et est fort, négligé par le voile de d'ignorance. Même lorsque l'individu prend conscience de ce lien et souhaite s'en détacher, il est difficile, du fait de sa

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<sup>16</sup>Cette section a pu bénéficier d'une discussion éclairante avec Thomas Scanlon avant le début de ma thèse, à Francfort, en 2017.

rationalité éthique limitée, d'effacer complètement son influence sur la formulation d'un jugement de valeur par une simple demande aux individus d'oublier qui ils sont (Scanlon (1986), Scanlon (2014)). Enfin, il est difficile d'envisager qu'un individu puisse imaginer tous les événements et valeurs qui devraient sous-tendre cette nouvelle société et agir conformément à ces croyances tel que le requiert le voile d'ignorance (Bradley (2017a)).

Supposant qu'il soit possible d'effectuer cette impossible tâche. Il revient alors de se demander quand et où cet acte d'imagination a lieu. Autrement dit, l'individu qui ferait l'expérience du voile d'ignorance le ferait dans des circonstances spécifiques. Il est alors difficile ne pas prendre en compte l'influence que ces circonstances pourraient avoir sur cette expérience du voile d'ignorance.<sup>17</sup> Ces deux exigences nous paraissent ainsi tout simplement à jamais inaccessibles à l'être humain.

Deuxièmement, au-delà de ces considérations de possibilités et se focalisant simplement sur ses caractéristiques éthiques, l'on remarque aisément la perspective locale et non universaliste du voile d'ignorance, qui réduit l'espace éthique à un sous-ensemble très restreint de théories éthiques égalitaristes, comme si l'éthique de l'ensemble de l'humanité se réduisait à ce sous-ensemble. En effet, la théorie de Rawls impose au lecteur de délibérer avec des principes de type égalitariste (Nozick (1973), Nozick (1974)). Par conséquent, le voile d'ignorance rawlsien ne concerne qu'un

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<sup>17</sup>Bien sûr, nous ne disons pas que la contingence viendrait déterminer entièrement un principe éthique; toutefois, comme nous l'a montré le développement de l'histoire contemporaine de la philosophie morale et la multiplication de sous branches d'éthique pratique (par exemple, l'éthique de la santé, de l'intelligence artificielle), les principes éthiques s'adoptent et varient grandement, au sein même d'une seule "famille morale" (par exemple, l'utilitarisme) d'un domaine à un autre, en fonction de la contingence spécifique qui accompagne chaque domaine ou marché.

sous-ensemble de la collection complète des principes moraux en conflit dans cet espace éthique plus global, qui comprend à la fois en termes de plus grande hétérogénéité d'attitude face aux risques et inégalités.

En résumé, ces deux limites nous amènent à envisager une expérience de pensée alternative pour la formulation de jugements de valeur plus juste: l'expérience d'incertitude normative.

## **1.5 Un principe délibératif global et pragmatique : l'incertitude normative**

Face à une situation à juger de manière normative, l'expérience de l'incertitude normative consiste à se poser la question suivante: dois-je adopter les attitudes pour ou contre que je viens de prendre naturellement (pour des raisons sociologiques ou psychologiques) ou dois-je envisager d'autres positions, qui peuvent s'y opposer; si oui, comment les pondérer pour formuler mon jugement de valeur final? Maintenir ce sentiment de doute normatif crée une distance entre soi et ses représentations sociologiques et psychologiques, permettant l'émergence d'une représentation éthique de soi, à travers cet exercice de pensée critique. Dans la première partie de notre thèse, nous décrivons de manière spécifique et formelle les différentes règles de raisonnement que l'agent peut adopter en contexte d'incertitude normative, en fonction de l'information empirique et normative dont il dispose et de son identité biographique, que l'on représente par ses attitudes face au risque<sup>18</sup>. Nous détaillons maintenant de

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<sup>18</sup>Nous sommes conscient que ceci est une réduction, mais elle permet de modéliser de manière précise ces règles et de pouvoir être mesurée concrètement, comme nous le faisons

manière informelle cet exercice. Cette incertitude normative se décompose en plusieurs étapes<sup>19</sup>.

Premièrement, face à la situation, se poser la question formulée ci-dessus afin de prendre conscience de ses représentations sociologiques et psychologiques du moi et suspendre notre jugement de valeur formulé instinctivement à partir de ces représentations<sup>20</sup>. Deuxièmement, questionner ces représentations afin de mieux comprendre pourquoi nous devrions les adopter ou non<sup>21</sup>. Troisièmement, accéder à un ensemble plus large de jugements de valeur possible et d'un ensemble de règles de raisonnement qui permettent de pondérer ces différents jugements et arriver

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dans la seconde partie de notre thèse. Par ailleurs, la notion de risque est très riche, comme nous le verrons dans la première partie, car elle permet non seulement de retranscrire la représentation psychologique du soi de l'agent mais également, en partie, sa représentation sociologique du soi.

<sup>19</sup>Cette expérience de l'incertitude normative présuppose une motivation morale de la part de l'agent, qui possède la volonté d'améliorer la justesse de ses jugements de valeur et ainsi effectuer un progrès moral. Cependant, il existe de nombreux cas où l'agent ne possède pas une telle volonté. D'abord, dans des cas d'akrasie comme le montre Jaffro (2018), l'agent subit une faiblesse de volonté morale plus ou moins sévère, l'empêchant de maintenir une motivation morale suffisante pour posséder une agence morale active. Ce sujet n'est pas le propos de notre thèse mais c'est un point qui est important; ainsi, dans un article annexe, "L'agent économique face à sa faiblesse morale", nous envisageons ce type "d'agent faible" en contexte d'économie et les stratégies de contrôle de soi que l'agent peut essayer de mettre en place afin de recouvrer cette volonté morale. Ensuite, dans des cas où la motivation morale n'est pas la seule motivation de l'agent, par exemple les agents économiques (entreprises ou individus) et les agents politiques (institutions et gouvernements). Chez les agents économiques, il faut alors réussir à montrer *comment* la délibération sous incertitude normative permet de maximiser respectivement, les intérêts économiques et politiques; c'est ce que nous faisons dans l'article "Critical Thinking Via Storytelling" en co-auteur avec Elia Sartori. Selon que la motivation de l'agent est moral ou non, la délibération sous incertitude normative est soit une conséquence directe des actions de l'agent, soit une conséquence indirecte de ses actions (comme la motivation économique ou politique de l'agent comprise comme une externalité, qui est peut-être internalisé tel que nous le montrons dans cet article).

<sup>20</sup>De manière empirique, dans la partie II de notre thèse, nous développons des techniques de sondage et adressons la question aux participants.

<sup>21</sup>Dans l'article "Critical Thinking", nous développons des techniques d'économie expérimentale et demandons, entre autres, aux participants, d'écrire un essai critique sur les raisons qui les pousseraient à adopter et rejeter leur représentations.

à un jugement de valeur global<sup>22</sup>, en fonction de différentes perspectives (résolution de l'incertitude normative au niveau individuel ou collectif) et des conditions informationnelles. Dans notre thèse, nous nous focalisons sur les perspectives de résolution individuelles de l'incertitude normative (un individu, un ministre, une entreprise, une institution, compris de manière atomique) mais nous discutons brièvement des approches collectives dans notre revue de littérature contemporaine. Par ailleurs, dans cette même revue, nous discutons plus en détail de ces conditions informationnelles.

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<sup>22</sup>De manière, dans la première partie I de notre thèse, nous développons un cadre d'analyse qui décrit de manière précise ces conditions informationnelles et ces règles de raisonnement.

Ce cadre d'analyse, bien que formalisé, ne peut pas être appliqué scientifiquement, étant donné les suppositions que nous faisons à propos des échelles de comparaisons de ces différents jugements de valeur; ces échelles restent, in fine, métaphysiques mais permettent de définir l'ensemble le plus grand possible de jugements de valeur possible. En revanche, nous montrons de manière précise les restrictions nécessaires que nous devons faire à propos de ces échelles pour pouvoir appliquer concrètement et simplement ces règles de raisonnement, par exemple dans nos choix scientifiques de politiques publiques. Ces restrictions réduisent l'ensemble des jugements de valeur que nous pouvons considérer dans notre pensée critique. Nous explorons ces enjeux dans le troisième article de ma thèse d'économie, en co-auteur avec Marc Fleurbaey, où nous opérationnalisons ces règles en faisant les restrictions d'échelles de comparaison de valeur. L'avantage de notre approche réside dans le fait qu'elle est simple et immédiatement applicable dans les administrations publiques. L'inconvénient est que l'ensemble des jugements de valeur que l'on peut considérer est plutôt petit (égalitariste). Il est possible de l'élargir, par exemple comme fait chez Trammell (2021) ou Eden (2022), mais cela est un coût en termes de complexité informationnelle et très rapidement nous perdons la possibilité de pouvoir appliquer ces règles facilement; nous nous retrouvons finalement proche du degré d'impraticabilité de notre cadre d'analyse de la partie I.



## Chapter 2

# Définitions et Revue de Littérature

Dans ce chapitre, nous proposons une analyse détaillée de l'incertitude normative, à la lumière de la littérature contemporaine. La [Section 2.1](#) définit l'incertitude normative et propose une taxonomie des concepts corrélés. La [Section 2.2](#) explique comment nous utilisons le langage mathématique pour formaliser un problème moral et élaborons sur les conditions d'information nécessaires pour résoudre ce problème (notamment sur les échelles de comparaisons entre des différents jugements de valeur). La section [Section 2.3](#) discute de la compatibilité de l'incertitude normative selon les différentes positions méta-éthiques contemporaines. La [Section 2.4](#) passe en revue les principales perspectives individuelles à l'incertitude normative. La [Section 2.5](#) passe en revue les principales perspectives collectives à l'incertitude normative.

## 2.1 Incertitude Normative et Incertitude Empirique

Selon Bradley and Drechsler (2014), l'« incertitude » est un concept multidimensionnel complexe - au moins tridimensionnel. Nous distinguons la *nature*, l'*objet* et la *sévérité* de l'incertitude. En raison de sa complexité, il n'existe pas d'approche consensuelle unique pour l'appréhender. En revanche, différentes règles de décision existent, toutes impliquant une analyse coût-bénéfice en fonction de l'objectif poursuivi par le décideur dans sa résolution. Dans ce qui suit, nous proposons une taxonomie de l'incertitude. Nous passons ensuite en revue les règles de décision élaborées en contexte d'incertitude morale, qui est l'objet de notre thèse.

D'abord, en ce qui concerne *sa nature*, l'incertitude peut être d'une part, empirique ou normative; d'autre part, subjective ou objective. L'*incertitude empirique* porte sur les faits empiriques (Savage (1954)). Par exemple, ne sachant pas avec certitude s'il va pleuvoir, les individus peuvent se demander s'ils doivent prendre leur parapluie. L'incertitude empirique est omniprésente dans la délibération et les décisions, qu'elles soient privées, comme dans l'exemple précédent ou bien publiques, comme dans l'exemple suivant. Par exemple, le ministre de la santé peut se demander s'il doit mettre en place une politique de vaccination étant donné que les recherches scientifiques ne permettent pas de garantir un certain niveau d'efficacité avec certitude. Une telle incertitude a été au centre de la théorie de la décision tout au long du dernier siècle en philosophie économique, en théorie économique et, plus récemment, en éthique pratique. L'*incertitude*

*normative* porte sur la norme d'évaluation qui sous tend d'intuitions normatives ou de visions du monde concurrentes<sup>1</sup>. Par exemple, une personne peut se demander si elle doit manger de la viande parce qu'elle n'est pas sûre si manger de la viande est considéré comme mauvais. Comme l'incertitude empirique, l'incertitude normative est omniprésente dans la prise de décisions privées et publiques. Pour citer quelques exemples, les gouvernements peuvent se demander dans quelle mesure ils doivent valoriser les libertés et l'autonomie des citoyens (par exemple, dans des contextes de pandémies); les agents peuvent se demander quelles conséquences devraient compter le plus et si les considérations déontologiques devraient également compter; les agents fondés sur la raison peuvent se demander quelles propriétés comptent, et comment elles comptent. En résumé, une des différences fondamentales entre ces deux types d'incertitude est que l'incertitude normative n'est pas réductible à des faits empiriques. L'incertitude normative subsiste, même après avoir fourni tous les faits empiriques pertinents. Par exemple, un ministre de la Santé qui connaît précisément les probabilités globales de réussite d'un vaccin particulier sur une population donnée peut encore être incertain à mettre en place ou non cette politique parce qu'il est incertain de savoir s'il doit maximiser la santé de ses citoyens (et donc rendre la vaccination obligatoire pour tout le monde) ou maximiser la liberté de ses citoyens (et donc laisser la vaccination facultative pour ceux qui souhaitent la faire).

De plus, que ce soit pour l'incertitude normative ou empirique, l'*objet* de l'incertitude, l'incertitude porte sur les options d'une action ou les états du

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<sup>1</sup>Nous utiliserons ce mot comme synonyme de « idéologies », « philosophies » et « positions normatives » tout au long de cette thèse.

monde. Concernant les options d'une action, l'incertitude porte généralement sur les conséquences possibles d'une option donnée, dont une réalisera en fonction de l'état du monde qui se réalisera. Enfin, que ce soit pour l'incertitude normative ou empirique, en ce qui concerne sa *sévérité*, l'incertitude peut varier en degré. Cette variation de précision est généralement représentée par les philosophes à travers différentes mesures de probabilité, allant de mesures de probabilité très précises sur l'espace des états (il est courant de se référer au *risque* dans de tels cas) à l'absence complète de probabilités (il est courant de se référer à l'*ignorance* dans de tels cas) en passant par des probabilités imprécises (il est courant de se référer à l'*ambiguïté*).

Dans cette thèse, nous considérons l'incertitude comme le concept tridimensionnel suivant : son *objet* considère les options et états du monde; sa *nature* est normative et empirique, subjective ou objective ; son degré de sévérité est le *risque* (même si tout ce que l'on fait ici est facilement applicable à des degrés de sévérité plus élevés).

## **2.2 Formalisation des décisions morales et comparaison des valeurs**

Avant de nous plonger dans les différentes approches de l'incertitude morale, il est important d'établir les bases formelles pour agir en contexte d'incertitude morale et de comprendre quelles suppositions à propos du concept de valeur sont nécessaires pour pouvoir comparer les différentes perspectives normatives en contexte d'incertitude normative.

### 2.2.1 Formalisation de la prise de décision

Dans sa forme la plus élémentaire, en utilisant une approche empruntée à [Bradley \(2017b\)](#), nous pouvons formaliser un problème de décision de base en définissant quatre éléments constitutifs.

Premièrement, nous devons avoir un *décideur* (ou agent) pour percevoir et interagir avec son environnement. Deuxièmement, cet agent doit être en mesure d'agir, c'est-à-dire, de choisir parmi des *options*. Troisièmement, chacune de ces options est associée à plusieurs *conséquences*, que l'agent peut classer en fonction de leur désirabilité. Quatrièmement, le résultat qui se réalise, étant donnée l'option choisie par l'agent, dépend de la réalisation d'un fait parmi un ensemble de faits possibles, que nous appelons *états du monde*. Pour plus de clarté, examinons et formalisons le cas d'un individu confronté à un problème de décision.

Un agent, Claude, se voit offrir une offre d'assurance santé et veut formaliser son problème de décision. Il considère ses options : acheter une assurance santé ou ne pas acheter d'assurance santé. S'il achète une assurance santé, il y a deux conséquences possibles. Dans l'état du monde où Claude tombe malade, il paie seulement une prime, mais son plan d'assurance couvre le coût de ses frais médicaux élevés. Dans l'état du monde où il ne tombe pas malade, il paie une prime. De nouveau, s'il n'achète pas d'assurance santé, il y a deux conséquences possibles. S'il tombe malade, il n'a pas à payer de prime mais doit supporter l'intégralité des coûts élevés de ses frais médicaux. S'il ne tombe pas malade, il n'a pas à payer de prime, et rien ne change. Ce problème de décision peut être représenté visuellement à l'aide d'une matrice d'état-conséquence comme suit :

	<b>Claude tombe malade</b>	<b>Claude ne tombe pas malade</b>
<i>Claude achète une assurance</i>	Claude paie une prime annuelle, les frais médicaux de Claude sont couverts	Claude paie une prime annuelle
<i>Claude n'achète pas d'assurance</i>	Claude doit payer l'intégralité de ses frais médicaux	Rien ne change

Comment Claude doit-il prendre cette décision ? Selon [Savage \(1954\)](#), la théorie standard de la décision recommande de choisir l'action avec l'utilité espérée la plus élevée. Nous devons ajouter deux parties à ce problème de décision pour donner du sens à cette recommandation. Tout d'abord, nous avons besoin de représenter la façon dont Claude perçoit ces conséquences "bons" ou "mauvais". Pour cela, nous utilisons une fonction d'utilité qui attribue une valeur numérique à chaque conséquence et qui capture l'idée suivante: plus cette valeur numérique est élevée, plus Claude préfère cette conséquence à telle autre dont la valeur est inférieure. De manière formelle, nous disons que la fonction d'utilité, que l'on dénote  $u$ , fait correspondre les conséquences à l'ensemble des nombres réels, que l'on dénote  $\mathbb{R}$ . Et, à la place de "valeur numérique", nous nous référons à "utilité"<sup>2</sup>.

<sup>2</sup>Nous détaillons plus loin les propriétés mathématiques et comportementales de cette fonction.

Ensuite, nous devons identifier les différents environnements dans lesquels les agents prennent des décisions. Si Claude est certain de ne pas tomber malade, alors en nous appuyons sur cette idée de comparaison d'utilité présentée ci-dessus, nous lui recommandons de choisir l'action avec la plus haute utilité, dans ce cas, il ne serait pas nécessaire d'acheter une assurance. C'est un exemple d'un agent agissant sous certitude. Cependant, la plupart du temps les agents agissent en contexte d'incertitude. La prise en compte de cette incertitude, vient pondérer notre comparaison de la meilleure des conséquences. De manière formelle nous représentons cette prise en compte en définissant une fonction de probabilité,  $p$ , qui lie les états du monde à un nombre réel compris dans  $[0, 1]$ . Pour résumer et représenter ces concepts de manière formelle, nous pouvons définir un problème de décision comme un quintuple  $\langle A, B, C, u, p \rangle$ :

- $A$  est un ensemble d'options disponibles pour le décideur.
- $S$  est un ensemble d'états du monde.
- $O$  est un ensemble de conséquences qui dépendent de  $A$  et  $S$ , où  $o_{i,j}$  est le résultat qui découle de l'action  $j \in A$ .
- $u : O \rightarrow \mathbb{R}$  est une fonction d'utilité qui représente comment un résultat dans  $C$  est bon ou mauvais pour le décideur.
- $p : S \rightarrow [0, 1] \in \mathbb{R}$  est une fonction de probabilité qui représente l'estimation du décideur de la probabilité d'un état du monde particulier.
- L'*utilité espérée* d'une option  $j \in A$  est  $\sum p_i u(o_{i,j})$  pour chaque  $i \in S$ .

Cette approche nous donne un cadre pour aborder les problèmes d'incertitude empirique. Comment pouvons-nous adapter ce cadre pour

aborder les cas d'incertitude normative? Premièrement, nous devons définir un ensemble de *théories morales de premier ordre*<sup>3</sup> pertinent pour le problème de décision à propos desquelles un agent est incertain. Nous pouvons dénoter cet ensemble de théories  $\mathcal{V}$  et chaque élément (chaque théorie) de cet ensemble,  $v$ . Dans le cas idéal où un agent n'a pas à traiter l'incertitude empirique et doit seulement prendre une décision en contexte d'incertitude morale, l'ensemble  $\mathcal{V}$  remplace notre ensemble d'états  $S$  défini précédemment. Deuxièmement, l'incertitude d'un agent sur ces théories morales peut être représentée à l'aide d'une fonction de probabilité représentant leur degré de croyance subjective (c'est-à-dire leur *crédence*) dans chaque élément  $v \in \mathcal{V}$ .

La prochaine section explore comment les probabilités sont traditionnellement utilisées dans la prise de décision en contexte d'incertitude empirique et comment elles peuvent être adaptées à la prise de décision en contexte d'incertitude morale. Nous traitons ensuite de la formalisation de ces théories morales et de la façon de les comparer.

### 2.2.2 Utilisation des probabilités pour formaliser les croyances

Joyce (2005) décrit le développement de l'approche bayésienne subjective des probabilités en philosophie des sciences humaines et sociales. Selon cette approche, les objets d'incertitude sont des événements ou des propositions dans une algèbre de Boole, dénotée  $\Omega$ , qui est fermée sous la négation et la disjonction dénombrable. Ici, les probabilités sont interprétées

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<sup>3</sup>Appelées aussi plus simplement des philosophies morales, visions du monde ou idéologies politiques, selon le domaine d'application de cette incertitude normative.



comme quantifiant simplement les degrés de croyance purement subjectifs du preneur de décision et sont appelées croyances ou “crédences”. La fonction de croyance est, comme définie dans la section 5.2.1, une fonction des états du monde vers  $[0, 1] \in \mathbb{R}$ . Lors de la prise de décision en contexte d’incertitude empirique, ces croyances font référence au degré de croyance subjectif du preneur de décision quant à la probabilité que les événements empiriques se produisent ou non. Dans la mesure où ces événements empiriques se produisent et peuvent être observés, il est possible de qualifier les croyances de correct, ou plus précisément, de leur attribuer des degrés de vérité. Par exemple, supposez que vous ayez une croyance de 80% qu’il va pleuvoir demain (quatre chances sur cinq), et que votre ami y croit à 20% (une chance sur cinq). Supposons que le lendemain vous observez qu’il ne pleut pas. Dans ce cas, il est possible de dire que votre ami “avait plus raison que vous”, car sa croyance reflétait plus précisément l’état réel du monde<sup>4</sup>.

Il est ainsi possible d’utiliser des probabilités pour formaliser les croyances et les rendre compatibles avec le cadre décisionnel standard en contexte d’incertitude empirique. Cependant, il est difficile de savoir si cela est également possible lors de la prise de décisions en contexte d’incertitude morale. En contexte d’incertitude morale, les crédences reflètent le degré de croyance subjective d’un décideur dans le fait qu’une théorie morale est correcte. On pourrait faire la supposition similaire au décideur en contexte d’incertitude empirique, à savoir qu’un décideur agissant en contexte

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<sup>4</sup>On pourrait soutenir que posséder des croyances précises est irréaliste, étant donné la complexité de certains événements et l’étendue de notre ignorance à leur sujet. Ici, l’approche bayésienne subjective recommanderait d’utiliser des probabilités imprécises - des croyances représentées par des intervalles contenus dans  $[0, 1]$ . Par exemple, nous dirions: l’agent y croit entre 20% et 40%.

d'incertitude morale utilise des probabilités pour représenter ses degrés de croyance subjectifs quant à la probabilité de faits moraux, et non pas empiriques. Cette supposition n'est pas évidente car elle repose elle-même sur une supposition méta-éthique de la notion de "faits normatifs", qui n'est pas admise par tous les philosophes et qu'il est tout simplement impossible à réfuter telle une hypothèse scientifique. Il est cependant tout aussi difficile de faire fi de la portée empirique des enjeux moraux dans la vie des agents, au delà de ces disputes scolastiques. A défaut de pouvoir établir scientifiquement l'existence de faits moraux, il nous semble possible et utile de formaliser, à l'aide d'un langage traditionnellement utilisé en sciences, la prise de décision en contexte de dilemmes moraux, comme en contexte d'incertitude morale, afin d'aider les agents à mieux rationaliser et contrôler leurs décisions morales et leurs conséquences possibles, notamment lorsqu'elles sont soumises à des effets d'échelle, impactant la vie de milliers ou millions d'autres agents (comme dans le cas de décision publique). Compte tenu de cette limite de représentation fidèle de la réalité normative, pourquoi alors utiliser des probabilités pour formaliser les croyances en contexte d'incertitude morale ? Malgré cette limite méta-éthique, qui n'est pas propre à l'incertitude normative, la mesure de probabilité reste un outil standard dans le travail des philosophes contemporains pour traiter des problèmes éthiques comme le rappelle [McCARTHY \(2006\)](#). L'enjeu est alors de pouvoir expliquer quelle information utile ces probabilités en contexte moral (croyances morales) peuvent véhiculer, au delà de cette limite méta-éthique. Dans notre contexte, nous proposons deux dimensions orthogonales d'interprétation de ces croyances, donnant lieu à quatre interprétations possibles de ces croyances:

1. *Cognitiviste et non-psychologique*
2. *Cognitive et psychologique*
3. *Non-cognitiviste et psychologique*
4. *Non-cognitiviste et non-psychologique*

D'abord, selon l'approche *cognitiviste et non-psychologique*, l'incertitude morale représente une incertitude à propos des faits moraux. Ainsi, avoir une croyance de 0,8 dans la théorie morale A signifie avoir un degré de croyance subjectif de 0,8 que A est la théorie morale vraie. Ensuite, l'approche *cognitiviste et psychologique* considère l'incertitude morale comme une incertitude concernant les véritables désirs d'une personne. Sur cette base,  $p(a) = 0.6$  équivaut à dire qu'un agent croit à hauteur de 0,6 que  $a$  est sa théorie morale préférée.

Par ailleurs, pour les deux interprétations non-cognitivistes, l'incertitude morale représente une incertitude concernant les tendances psychiques de l'agent (comme l'angoisse, la foi, l'ambivalence) envers les théories morales de premier ordre. Les points de vue *non-cognitiviste et non-psychologique* et *non-cognitiviste et psychologique* diffèrent en ce que le premier considère que les croyances sont des expressions du degré de tendances psychiques vers la croyance en une théorie morale correcte. En revanche, le dernier les considère comme des expressions de tendances psychiques vers le désir qu'une théorie morale soit correcte.

### 2.2.3 Mesure et comparaison des valeurs morales

Maintenant que nous avons décrit de quelle manière formaliser l'incertitude normative, mais aussi comment utiliser et interpréter de manière sensée la notion de probabilité, nous devons élaborer une *échelle de la valeur* (ou mesure de la valeur) qui permette de comparer la valeur numérique associée à chaque conséquence par chacune des théories morales distinctes, et ce dans l'ensemble des états du monde possibles. Il s'agit ainsi de trouver un rapport entre ces valeurs (tel un taux de change) qui soit fondé en rationalité afin d'être utilisable de manière cohérente dans différents dilemmes moraux. Pour cela, nous utilisons notre fonction d'utilité,  $u$  définie dans la section 5.2.1, mais au lieu que cette fonction nous donne l'utilité de conséquences particulières, il nous donne une valeur méta-normative de notre évaluation en contexte d'incertitude morale, que nous appelons simplement "valeur"<sup>5</sup> et que nous dénotons  $V$ . Jusqu'à présent, nous avons supposé que les valeurs des conséquences sont comparables et commensurables. Cependant, cela n'est pas évident. Considérons les actions suivantes:

- (i) Dire un mensonge inoffensif à un ami qui augmentera certainement son bien-être
- (ii) Rester silencieux

L'utilitarisme naïf déclarerait que le choix (i) a plus de valeur morale que (ii) et le déontologisme déclarerait que le choix (ii) a plus de valeur morale (i). Cependant, un agent agissant en contexte d'incertitude morale doit tenir

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<sup>5</sup>MacAskill nomme cette valeur la "valeur de choix"; nous proposons cette traduction de l'anglais originel chez MacAskill: "choiceworthiness" dans [MacAskill \(2014\)](#).

compte des différences entre (i) et (ii) sous les deux théories morales. Par exemple, est-ce que le fait de maximiser l'utilité représente une action bien plus bonne au niveau moral chez les utilitaristes qu'elle n'est mauvaise chez les déontologistes? Comment comparer ces deux intensités et savoir laquelle, *in fine*, importe le plus dans notre évaluation méta-normative de la situation? Ces deux questions renvoient au problème communément appelé *le problème des comparaisons interthéoriques de valeur* (PCIV). Cette section vise à préciser ces questions et à y répondre. Pour cela, nous introduisons les concepts de commensurabilité et de comparabilité des valeurs et en les appliquant à notre cadre de prise de décision en contexte d'incertitude morale. Ensuite, nous proposons des solutions à ces questions.

En général, nous disons de deux objets qu'ils sont "commensurables" s'il est possible de les mesurer en utilisant la même échelle d'unités de valeur. Par exemple, la Tour Eiffel et l'Empire State Building sont commensurables en termes de hauteur car les deux peuvent être mesurés à l'aide d'une échelle cardinale tel que les pieds ou les mètres. Outre ce type de mesure cardinale (aussi connu sous le terme d'intervalle), il existe trois autres types d'échelles de comparaison, que l'on retrouve en philosophie morale – nominale, ordinale, et ratio – que nous résumons dans le Tableau [Table 2.1](#) ci-dessous.

Type de mesure	Description	Exemples
Nominale	Les objets peuvent être classés dans des groupes mutuellement exclusifs, mais il n'y a pas d'ordre entre les catégories	Ville de naissance, genre, état civil
Ordinale	Les objets peuvent être classés et rangés dans un ordre, mais il n'y a pas d'informations sur les intervalles entre les classements	Niveau de langue (débutant, intermédiaire, avancé)
Intervalle/cardinale	Les objets peuvent être classés et rangés, et la magnitude des intervalles peut être inférée entre les objets. Il n'y a pas de point zéro réel (c'est-à-dire que zéro sur une échelle purement cardinale ne reflète pas un manque absolu de la quantité mesurée)	Température en Celsius ou en Fahrenheit, notes d'examens
Ratio	Les objets peuvent être classés et rangés, la magnitude des intervalles peut être inférée entre les objets, et il y a un point zéro réel.	Taille, poids, âge

Table 2.1: **TYPES D'ÉCHELLES DE COMPARAISON DE LA VALEUR**

Quel type de mesure devrions-nous utiliser en philosophie morale? Tout comme pour l'usage des probabilités en philosophie morale, cette question est toujours ouverte et il existe des désaccords persistants à ce sujet<sup>6</sup>. Chang (1997) et Chang (2014) affirment que l'échelle sur laquelle les éléments à comparer sont placés doit être cardinale, tandis que d'autres philosophes tels que Raz (1986) et Rabinowicz (2022) affirment qu'elle doit être ordinale.<sup>7</sup>

De son côté, la comparabilité, telle que définie dans Chang (1997), fait référence à l'existence d'une "relation de valeur binaire positive qui lie des objets en ce qui concerne une considération couvrante". Cette "considération couvrante" fait référence à une variable  $C$  à laquelle deux objets doivent être rapportés et comparés. Par exemple, il n'est pas possible de comparer la crème glacée et le gâteau à moins que la comparaison ne porte sur une

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<sup>6</sup>Une des manières de résoudre, au moins partiellement, ce débat, est de considérer le contexte dans lequel nous nous préoccupons de ce problème. Par exemple, si j'ai besoin de conduire des recherches en sciences sociales et expérimentales et que j'ai besoin de choisir un type de mesure, je pourrais choisir en fonction de la compatibilité du type de mesure de la valeur et des technologies expérimentales qui me permettent de mesurer ce type. Nous renvoyons le lecteur à notre article en sciences économiques, "Aversion à l'inégalité en contexte d'incertitude morale", en co-auteur avec Marc Fleurbaey.

<sup>7</sup>Selon ce type de mesure ordinale, la commensurabilité de deux objets correspond à l'existence d'une relation entre eux tel que l'un est meilleur que l'autre ou également bon. Faisant leur cette approche ordinaire, Hájek and Rabinowicz (2022) soutiennent que nous avons besoin d'une compréhension plus affinée de l'ordinalité. A ce titre, ils proposent que chaque décideur dispose d'un ensemble d'ordres de préférence admissibles avec lesquels il peut évaluer deux objets,  $A$  et  $B$ . Cet ensemble reflète la variété des critères avec lesquels nous évaluons deux objets -  $A$  peut être meilleur que  $B$  sur certains de ces critères, mais  $B$  peut être meilleur que  $A$  sur certains autres. Rendre ces objets commensurables est difficile car il n'y a pas de façon objective et immédiate de peser ces critères (c'est-à-dire qu'il n'y a pas de "taux de change fixe" entre eux). Étant donné cet ensemble d'ordres de préférence admissibles, nous pouvons souligner que deux objets sont "plus commensurables" (c'est-à-dire qu'ils ont un degré de commensurabilité plus élevé) lorsque plus d'ordres de préférence admissibles fournissent le même classement entre eux. Si plus d'ordres de préférence sont en désaccord sur la façon de classer ces objets, leur degré de commensurabilité est plus faible. Une façon de quantifier cette relation est de mesurer la proportion d'ordres de préférence admissibles qui classent  $A$  au-dessus de  $B$  (cela est choisi arbitrairement et peut être remplacé par  $B \succ A$  ou  $A \sim B$ ) par rapport au nombre total de classements.

variable telle que la teneur en calories ou la saveur. L'*incomparabilité* se produit lorsqu'il n'existe aucune relation de valeur binaire positive entre deux objets concernant une considération couvrante  $C$ <sup>8</sup>.

*Relation entre la commensurabilité et la comparabilité.* Est-ce que l'incommensurabilité implique l'incomparabilité? D'Agostino (2019) et Anderson (1995) soutiennent que si les valeurs ne peuvent être placées sur une seule échelle (c'est-à-dire qu'elles sont incommensurables), elles sont incompatibles en tant qu'alternatives. Si nous avons besoin d'une échelle cardinale pour que les valeurs soient commensurables, l'incommensurabilité n'implique pas nécessairement l'incomparabilité. Considérons l'exemple proposé par Chang (2015): il est peu probable qu'il y ait une unité de mesure cardinal significative pour évaluer les valeurs de la justice et de la miséricorde. Cependant, il ne semble pas incorrect de prétendre que la valeur de justice soit meilleure que la valeur miséricorde pour régler les rapports sociaux grâce à des institutions et, en même temps, l'on peut soutenir que la valeur de miséricorde est plus attrayante que celle de la justice dans une perspective religieuse. Ainsi, dans ce cas, l'incommensurabilité n'implique pas l'incomparabilité. En revanche, si l'incommensurabilité signifie la non-existence d'une échelle de mesure ordinaire sur laquelle nous pouvons placer deux valeurs, la proposition selon laquelle l'incommensurabilité implique l'incomparabilité semble plus plausible.

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<sup>8</sup>Il convient de noter que les termes "commensurabilité" et "comparabilité" sont souvent utilisés de manière interchangeable dans la littérature.



*Pourquoi l'incommensurabilité et l'incomparabilité sont-elles des considérations importantes en matière d'incertitude morale?* Les critiques de l'incertitude morale considèrent le problème des comparaisons de valeurs inter-théoriques (vu sous le prisme de l'incommensurabilité ou de l'incomparabilité) comme une objection rédhibitoire à la “couverture morale” - la prise de décisions qui maximisent la valeur de choix attendue des actions, étant donné l'incertitude quant à la vérité de la théorie morale de premier ordre. En particulier, [MacAskill et al. \(2020\)](#) résume les principaux arguments de la littérature contemporaine afin d'expliquer pourquoi les comparaisons inter-théoriques semblent impossibles. Même si nous parvenons à établir une unité commune entre les théories, les comparaisons inter-théoriques peuvent être impossibles parce que certaines théories dominent les autres<sup>9</sup>. Par ailleurs, nous avons l'argument de l'unité arbitraire. Les théories morales attribuent des valeurs aux conséquences de manière à créer des valeurs de choix uniques jusqu'à des transformations affines positives. Cela signifie que l'unité que nous utilisons pour faire des comparaisons intra-théoriques est, dans un sens fondamental, arbitraire. Par conséquent, il est dénué de sens de dire qu'une unité de valeur de choix sur une théorie est supérieure, inférieure ou égale à une unité de valeur de choix sur une autre théorie.

Cependant, plusieurs philosophes ont répondu à ces critiques. [Lockhart \(2000\)](#), notamment, introduit le principe d'équité entre les théories morales (PETM), qui stipule que nous devrions égaliser les degrés maximum et minimum de valeur attribués aux options par toutes les théories morales

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<sup>9</sup>[Hedden \(2016\)](#) considère cette objection dans le contexte de la comparaison entre la “vue totale”<sup>10</sup> et la vue moyenne<sup>11</sup> en éthique de la population.

dans lesquelles un agent a une crédibilité positive. [Sepielli \(2013\)](#) note que cette méthode peut générer des comparaisons incohérentes entre les théories en soutenant que nous devrions plutôt égaliser les degrés maximum et minimum concevables de valeur. Cependant, de nombreuses théories conséquentialistes, par exemple, admettent des degrés de valeur sans maximum ou minimum concevable, de sorte que ces théories souffrent toujours de problème inter-théorique de comparaison de la valeur (PICV). [Sepielli \(2009\)](#) introduit également l'utilisation de ratios de différences de valeur pour résoudre le problème. Cette approche consiste à normaliser une paire de théories en trouvant des options telles que les deux théories attribuent le même ratio de valeurs aux deux alternatives. Cela permet d'établir un "classement de fond" des options que les théories partagent. Cependant, cette technique peut également conduire à des comparaisons incohérentes entre les théories comme le souligne [MacAskill \(2014\)](#). [Tarsney \(2018a\)](#) adopte une approche plus modeste et soutient qu'il est possible d'identifier des classes de théories morales entre lesquelles nous pouvons faire des comparaisons inter-théoriques. Par exemple, considérons la comparaison de deux formes de conséquentialisme : le conséquentialisme moniste et hédoniste, qui ne considère que le bien-être hédoniste comme unité de valeur, et le conséquentialisme pluraliste, qui inclut des biens tels que la beauté et la justice. Tarsney affirme qu'un agent incertain entre ces deux premières théories morales ne souffre pas de PICV car les deux théories utilisent les mêmes objets comme porteurs de valeur (c'est-à-dire les conséquences).

### 2.2.4 Problèmes de décision en contexte d'incertitude morale

Après avoir discuté des problèmes de représentation formelle de l'information *morale*, nous pouvons maintenant définir un problème de décision formel en contexte d'incertitude morale en utilisant des analogues des outils utilisés dans la prise de décision en contexte d'incertitude *empirique*. Un problème de décision formel en contexte d'incertitude morale peut être considéré comme un quintuplet  $\langle A, \mathcal{V}, O, C, p \rangle$ . Le tableau suivant compare les composantes d'un problème de décision en contexte d'incertitude morale à leurs homologues dans un problème de décision en contexte d'incertitude empirique.

<b>Incertitude Empirique</b>	<b>Incertitude Morale</b>
$A$ est un ensemble d'options disponibles pour le décideur	$A$ est un ensemble d'options disponibles pour le décideur
$S$ est un ensemble d'états du monde	$\mathcal{V}$ est un ensemble fini et non vide de théories morales de premier ordre. Chaque $v \in \mathcal{V}$ est une fonction d'évaluation <sup>12</sup> qui correspond à une théorie morale de premier ordre spécifique.
$O$ est un ensemble de résultats qui dépendent de $A$ et de $S$	similaire
$u : C \rightarrow \mathbb{R}$ est une fonction d'utilité qui représente le caractère bon ou mauvais d'un résultat dans $C$ pour le décideur	Chaque fonction d'évaluation $v$ nous donne la valeur méta-normative d'une option particulière (ou conséquence dans le cadre conséquentialiste) et peut être écrite sous la forme $v : A \rightarrow \mathbb{R}$ .
$p : S \rightarrow [0, 1] \in \mathbb{R}$ est une fonction de probabilité qui représente l'évaluation par le décideur de la probabilité qu'un état du monde particulier se produise	$p : \mathcal{V}_i \rightarrow [0, 1] \in \mathbb{R}$ pour chaque $i \in \mathcal{V}$ est une fonction de croyance qui représente le degré de croyance subjective du décideur dans une théorie morale de premier ordre.

Table 2.2: **CONFIGURATION FORMELLE DES PROBLÈMES DE DÉCISION SOUS L'INCERTITUDE EMPIRIQUE ET MORALE**

## 2.3 Compatibilité méta-éthique

Nous pouvons remarquer que la littérature existante ne s'intéresse que peu ou prou au statut méta-éthique de l'incertitude morale. Qu'est-ce que les jugements moraux exactement, et comment les différentes théories méta-éthiques les considèrent? Les faits normatifs à propos desquels nous sommes incertains sont-ils objectifs ou subjectifs, ou bien, tout simplement n'existent pas<sup>13</sup>? Cette section explore ces questions et montre que l'incertitude morale reste un problème éthique d'importance, quelque soit la position méta-éthique envisagée.

### 2.3.1 Compatibilité avec le cognitivisme

L'approche méta-éthique généralement adoptée dans la littérature à propos de l'incertitude morale est celle du *cognitivism*. Selon le cognitivisme, les énoncés moraux possèdent un critère de vérité, et il est ainsi possible de les qualifier comme « vrai » ou « faux ». De plus, les jugements moraux peuvent être considérés comme des croyances qui peuvent être représentées à travers une mesure de probabilité subjective<sup>14</sup>. Cependant, il existe un désaccord parmi les cognitivistes quant à la source de la valeur de vérité des jugements moraux. Selon la vision subjectiviste, la valeur de vérité d'un jugement moral est déterminée par le fait qu'une personne (généralement la

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<sup>13</sup>Ces questions ne doivent pas être confondues avec l'incertitude méta-éthique présentée précédemment, qui concerne la question de savoir comment l'incertitude normative doit être représentée au niveau de l'éthique formelle – communément appelée "formal ethics" dans la littérature et épistémologique – communément appelée "moral epistemology" dans la littérature.

<sup>14</sup>Où plus la probabilité est proche de 1, plus l'agent croit que son jugement moral est vrai.

personne qui émet le jugement) ou un groupe de personnes (généralement un groupe social choisi) approuve le jugement. En revanche, selon la vision objectiviste, la valeur de vérité d'un jugement moral est indépendante de l'agent. Autrement dit, un jugement moral peut être vrai ou faux, indépendamment de savoir si un individu ou un groupe croit qu'il est vrai ou faux.

### 2.3.2 Compatibilité avec le non-cognitivism

Même si la compatibilité de l'incertitude normative avec le non-cognitivism est moins évidente, elle existe. Le non-cognitivism peut être défini comme la combinaison de ces deux propositions :

- (i) **Non-factualisme sémantique** : les propositions morales ne sont pas aptes à la vérité, en ce sens qu'elles ne peuvent être vraies ou fausses, indépendamment de la source de leur valeur de vérité.
- (ii) **Non-cognitivism psychologique** : les propositions morales ne sont pas des croyances, mais plutôt des attitudes qui transmettent des informations sur l'état d'esprit de l'agent qui les énonce. Elles peuvent également être interprétées comme des dispositions à agir.

Selon [Smith \(2001\)](#), les jugements moraux possèdent trois caractéristiques structurelles distinctes : la certitude, l'importance et la robustesse. La certitude fait référence au degré de confiance dans un jugement, l'importance fait référence à l'évaluation de la qualité d'une issue, bonne ou mauvaise, et la robustesse fait référence à la stabilité de ces jugements dans le temps. Selon Smith, les attitudes non-cognitives n'ont que les caractéristiques de l'importance et de la robustesse. Par exemple, dans un

cadre non-cognitif, un jugement moral condamnant la corruption correspond à une attitude exprimant un profond mécontentement envers la corruption en tant qu'acte (importance) qui peut changer avec le temps (robustesse). Cependant, il semble difficile de représenter dans quelle mesure un agent qui exprime une telle attitude est confiant dans son jugement et peut utiliser une telle représentation pour guider rationnellement la prise de décision en contexte d'incertitude morale. C'est une caractéristique importante des jugements moraux qui doit être capturée par une théorie méta-normative. Supposons que nous avons deux actions, A et B, qui sont également moralement justes/incorrectes. Toutefois, le décideur a plus confiance dans son jugement à propos de A qu'à propos de B. Dans ce cas, l'action A devrait être privilégiée. Sans théorie méta-normative, il reste impossible de quantifier cette différence de niveau de confiance dans ces jugements. Par conséquent, si Smith a raison, nous ne pouvons pas développer des théories d'incertitude normative tout en maintenant que les jugements moraux sont des attitudes non cognitives.

Des auteurs ont proposé des théories méta-normatives non-cognitives pour représenter cette confiance dans les jugements de valeur. Par exemple, [Lenman \(2003\)](#) fait appel aux jugements de son "soi maximal" pour représenter les degrés de confiance dans un jugement moral. Une approche plus directe et quantitative consiste à s'appuyer sur la littérature psychologique en considérant *l'ambivalence attitudinale* ([Kaplan \(1972\)](#)) comme cette troisième caractéristique [Makins \(2022\)](#). Cette ambivalence correspond à une intensité à laquelle un décideur entretient des attitudes contradictoires envers le même objet d'évaluation. Les deux attitudes sont mesurées séparément avec des échelles d'intensités de même nature et

ensuite combinées. Par exemple, l'attitude "négative" est mesurée par une échelle allant de -10 à 0 et l'attitude "positive" de 0 à 10. Les valeurs de ces mesures sont combinées et donne une mesure globale de cette ambivalence. Plus cette valeur est petite, plus l'ambivalence chez l'agent est forte. Autrement dit, l'ambivalence s'accroît avec l'intensité des forces opposées de chaque attitude. Cette méthode permet ainsi de mesurer, par approximation, l'incertitude normative vue sous la perspective du non-cognitivisme.

### 2.3.3 Compatibilité avec les vues hybrides

À mi-chemin entre le cognitivisme et le non-cognitivisme présentés ci-dessus se trouve cette branche plus complexe de la vue méta-éthique: le constructivisme. Selon cette perspective, les vérités normatives existent mais elles ne sont pas établies par des faits normatifs qui soient indépendants de l'agentivité. Au contraire, comme le souligne [Bagnoli \(2011\)](#), ces faits normatifs sont définis en rapport à un modèle de rationalité de l'agentivité. Autrement dit, la question contre-factuelle que le constructivisme pose lorsqu'il s'agit d'établir la véracité d'un jugement moral est la suivante. Comment un agent rationnel que l'on dénote *A*, évoluant dans les conditions de choix dénotée *C*, évaluerait cette situation, selon un mode de délibération *D*? En proposant de mettre en rapport l'objectivité et la subjectivité à travers un contrefactuel constitué de présupposés spécifiques à propos de *A*, *C* et *D*, le constructivisme permet de construire un pont entre le cognitivisme qui ne se focalise que sur l'objectivité (la situation) et le non-cognitivisme qui ne se focalise que sur la subjectivité (l'agent). Autrement dit, à la différence du cognitivisme pour



lequel les faits normatifs sont entièrement indépendants de l'agent et du non-cognitivisme pour lequel les faits normatifs sont entièrement dépendants de l'agent, le constructivisme propose de les considérer comme interdépendant de l'agent et de la situation. Cette approche permet de mieux appréhender le statut des expériences de pensée dans l'histoire de la philosophie morale, comme le voile d'ignorance proposé par Harsanyi et Rawls [Rawls \(1971b\)](#), qui exemplifient un contrefactuel spécifique à propos de  $A$ ,  $C$  et  $D$ . Sur la base de cette approche constructiviste, l'incertitude normative se présente alors comme suit : en supposant que les agents évoluent dans un contrefactuel  $A$ ,  $C$  et  $D$  spécifique, que doivent-ils faire lorsqu'ils font face à l'incertitude morale?

## 2.4 Approches individuelles face à l'incertitude morale

Cette section présente les principales approches de décisions individuelles en contexte d'incertitude morale<sup>15</sup>. Pour rappel, nous pouvons définir un problème de décision de cette forme comme un triplet  $\langle A, \mathcal{V}, p \rangle$  où :

- $A$  est un ensemble d'options disponibles pour le décideur.
- $\mathcal{V}$  est un ensemble fini et non vide de théories morales de premier ordre.

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<sup>15</sup>Pour les lecteurs intéressés par les premiers travaux sur les approches individuelles, nous recommandons de consulter [Oddie \(1994\)](#) qui fut le premier traitement informel de l'incertitude normative dans la littérature contemporaine. L'article développe un cadre élémentaire pour agir en cas d'incertitude morale, stipulant que les actions sont moralement justifiables si et seulement si elles présentent la plus haute *valeur éthique espérée*. Appliqué à l'expérimentation sur les embryons humains, l'auteur conclut que la réalisation d'expériences létales ou risquées sur des embryons humains n'est moralement justifiable que si le faire sur des personnes non consentantes pour obtenir des biens comparables l'est également.

- Chaque  $v \in \mathcal{V}$  est une fonction d'évaluation qui correspond à une théorie morale spécifique de premier ordre. Chaque fonction d'évaluation nous indique la valeur méta-normative d'une option particulière et peut être écrite sous la forme  $v : A \rightarrow \mathbb{R}$ .
- $p : \mathcal{V}_i \rightarrow [0, 1] \in \mathbb{R}$  pour chaque  $i \in \mathcal{V}$  est une fonction de crédence qui représente le degré de croyance subjective du décideur dans une théorie morale de premier ordre.

### 2.4.1 Ma théorie favorite

Une approche intuitive suggérée par [Gracely \(1996\)](#) et défendue par [Gustafsson and Torpman \(2014\)](#), *Ma Théorie Favorite* (MTF), recommande à un agent de choisir simplement la recommandation de la théorie morale de premier ordre pour laquelle il a le plus haut degré de crédence. Nous pouvons définir MTF ainsi:

*Si la théorie pour laquelle un décideur a la plus haute crédence stipule que A a une évaluation supérieure à B, alors il doit choisir A plutôt que B.*

Mis en application dans l'exemple présenté dans le tableau [2.3](#), MTF recommande de choisir l'option X, car la théorie pour laquelle le décideur a la plus haute crédence attribue à X un niveau d'évaluation supérieur à celui de Y.

	<b>Théorie A (60%)</b>	<b>Théorie B (30%)</b>	<b>Théorie C (10%)</b>
X	10	-10	5
Y	-10	10	0

Table 2.3: **MA THÉORIE FAVORITE**

Même si MTF est une théorie méta-normative simple et directe, elle présente quelques inconvénients majeurs. Elle viole notamment un des principes fondamentaux de la théorie de la décision: la *dominance*.

La dominance stipule que *si l'option A est jugée plus désirable que B selon certaines théories et également selon toutes les autres théories en considération, alors A est plus approprié que B.*

Pour illustrer cela, considérons l'exemple suivant<sup>16</sup> :

	<b>Théorie A (40%)</b>	<b>Théorie B (60%)</b>
X	Permissible	Permissible
Y	Inadmissible	Permissible

Table 2.4: **MA THÉORIE FAVORITE VIOLE LE PRINCIPE DE DOMINANCE**

MTF nous dit que choisir entre X ou Y serait approprié car la théorie B, celle dans laquelle l'agent a le plus de confiance, considère les deux options

<sup>16</sup>Cet exemple est tiré de [MacAskill et al. \(2020\)](#) p.40. Notez que, contrairement à l'exemple précédent, il n'utilise pas de mesures cardinales d'évaluation.

également dignes de choix. Cependant, cela viole la dominance car l'option  $Y$  est permise selon la théorie  $B$  mais interdite selon la théorie  $A$ , tandis que l'option  $X$  est permise selon les deux théories morales et devrait donc être plus appropriée. Intuitivement, la dominance semble être un principe souhaitable pour une règle de décision à suivre car, étant donné l'incertitude sur les théories morales de premier ordre, les options qui « jouent la sécurité » – c'est-à-dire, pour lesquelles il y a un consensus sur leur caractère approprié entre les théories morales – devraient être privilégiées<sup>17</sup>

Un autre inconvénient de MTF est qu'elle souffre du *problème de l'individuation des théories*. Considérez un décideur incertain entre le fait d'agir selon les recommandations déontologiques et utilitaristes, comme représenté dans le tableau 2.6.

	Déontologie (40%)	Utilitarisme (60%)
$X$	Interdite	Permise
$Y$	Permise	Interdite

Table 2.5: **MA THÉORIE FAVORITE VIOLE LE PRINCIPE D'INDIVIDUATION 1/2**

Dans ce cas, MTF recommanderait simplement de choisir l'option  $X$  car la théorie morale dans laquelle elle a le plus de confiance (utilitarisme) considère  $X$  comme permise et  $Y$  comme interdite. Elle apprend alors la distinction entre l'utilitarisme d'acte et l'utilitarisme de règle. Il y a

<sup>17</sup>Nous renvoyons le lecteur intéressé plus en détail sur comment réussir à concilier, MTF avec une version du principe de dominance, dans une certaine mesure, sans véritable succès final à notre avis, mais quand même fort intéressant à [Gustafsson and Torpman \(2014\)](#).

maintenant trois théories distinctes sur lesquelles elle est incertaine. Le problème de décision peut désormais être décrit comme suit :

	<b>Déontologie (40%)</b>	<b>Utilitarisme d'acte (30%)</b>	<b>Utilitarisme de règle (30%)</b>
X	Interdite	Permise	Permise
Y	Permise	Interdite	Interdite

Table 2.6: **MA THÉORIE FAVORITE VIOLE LE PRINCIPE D'INDIVIDUATION 2/2**

Parce qu'elle répartit sa confiance en l'utilitarisme de manière égale entre l'utilitarisme d'action et l'utilitarisme de règle, la déontologie est maintenant la théorie dans laquelle elle a la plus grande confiance, et l'action la plus appropriée selon la MTF est maintenant l'option X. Cela semble arbitraire, faisant du problème de l'individuation de la théorie une objection sérieuse à la MTF.

### 2.4.2 Mon option préférée

Une autre approche individuelle liée est l'approche **Mon Option Préférée** (MOF)<sup>18</sup>. Cette approche recommande au décideur de considérer les options plutôt que les théories morales pour décider de la voie la plus appropriée à suivre. Plus formellement, nous pouvons définir MOF comme suit:

Une option *A* est appropriée si et seulement si le décideur pense que *A* est l'option ou l'une des options qui est la plus susceptible d'être permise.

<sup>18</sup>Cette approche est suggérée dans Lockhart (2000).

Dans l'exemple ci-dessus, MOF suggérerait au décideur de choisir l'option  $X$  car elle est la plus susceptible d'être permise selon les deux théories morales.

### 2.4.3 Maximiser la valeur espérée

Plus discutée dans la littérature récente, la contribution de [MacAskill \(2014\)](#) a proposé d'utiliser des règles de décision formelles issues de la théorie de la décision, généralement utilisées pour les choix individuels en cas d'incertitude empirique, pour concevoir un compte individuel de l'expérience de pensée de l'incertitude normative telle que nous l'avons défini précédemment. Cette approche, connue sous le nom de **Maximise Expected Choiceworthiness** (MEC), est devenue l'approche dominante pour la prise de décision en cas d'incertitude morale. Nous pouvons définir la valeur espérée comme suit:

La *valeur espérée* d'une option  $a \in A$  est  $\sum_{i=1}^n p_i v_i(a)$  pour chaque  $i \in \mathcal{V}$  où il y a  $n$  théories morales en considération.

MEC, donc, peut être défini comme suit:

Une option  $A$  est appropriée si et seulement si  $A$  a la plus grande valeur espérée par rapport aux autres options.

La caractéristique clé de MEC en tant que règle de décision est qu'elle incorpore efficacement des informations sur les croyances concernant les théories morales de premier ordre *et* des informations sur les différences de niveaux de valeur attribués par les théories aux résultats. Cela résulte d'une analogie étroite, défendue par [MacAskill \(2014\)](#), entre les modèles de prise de décision en situation d'incertitude empirique (c'est-à-dire la théorie de

l'utilité espérée) et la prise de décision en situation d'incertitude morale. MacAskill motive cette analogie en affirmant que les propositions sur l'état du monde dont les décideurs sont incertains peuvent être divisées de plusieurs manières (nécessaire vs contingent, a priori vs a posteriori). La distinction entre propositions empiriques et normatives n'est qu'une telle distinction et, puisque nous ne changeons pas la théorie de la décision utilisée en fonction de la manière dont nous divisons les autres propositions, nous n'avons pas besoin de le faire avec les propositions qui traitent de l'incertitude morale.

Une mise en garde importante quant à l'utilisation de MEC en tant que règle de décision est qu'elle ne s'applique que si certaines conditions informationnelles sont remplies. Premièrement, nous devons supposer que nous avons des croyances bien définies concernant notre ensemble de théories morales de premier ordre, de manière similaire à la façon dont la théorie de l'utilité espérée standard suppose que nous avons des croyances bien définies concernant les propositions sur l'état empirique du monde. Voir 5.2.2 pour plus de discussion sur ce point. Deuxièmement, nous devons supposer la cardinalité et la comparabilité inter-théorique de la valeur pour que la MEC soit réalisable. Cela peut être un argument convaincant contre la MEC en tant que règle de décision, selon la force que l'on accorde à l'idée que la valeur cardinale et inter-théoriquement comparable est plausible. Voir 5.2.3 pour plus d'informations sur ce point.

Une autre objection importante à la MEC est celle du *fanatisme*. Soulevée pour la première fois par Ross (2006), le fanatisme est l'objection selon laquelle la MEC permet la domination de théories qui ont des enjeux

incroyablement élevés. MacAskill (2014) et MacAskill and Ord (2020) citent un exemple qui illustre cette objection. Prenons un décideur, Doug, qui hésite entre deux théories morales - l'utilitarisme et une théorie non conséquentialiste absolutiste. Doug est confronté à la décision de mentir et sauver 10 personnes de la mort ou de refuser de mentir et ne pas empêcher la mort de 10 personnes. Les deux théories conviennent que sauver des personnes est bien et attribuent à ce résultat un niveau de valeur positif. Les deux théories conviennent également que mentir est mauvais, mais seule la théorie non conséquentialiste absolutiste considère que mentir est absolument mauvais et jamais permis. Nous pouvons représenter les différences dans ces évaluations de la valeur des choix de la manière suivante :

	Utilitarianism ( $p$ )	Absolutist Non-Consequentialism ( $1 - p$ )
<i>Lie to save 10 people</i>	$+10 - 0.1 = +9.9$	$-\infty$
<i>Don't lie</i>	0	0

Table 2.7: MEC SOUFFRE DE FANATISME

Cela pose un problème pour les théories absolutistes, car si certaines actions sont absolument mauvaises selon ces théories, une manière naturelle de représenter cela dans notre cadre est d'attribuer une valeur de  $-\infty$ .

Cependant, cela signifie que, quelle que soit la faible confiance de Doug dans la théorie absolutiste (supposant qu'elle ne soit pas nulle) et/ou la grande valeur du mensonge pour sauver des vies (supposant que cette valeur soit finie), la MEC recommande que Doug ne mente jamais.



L'incapacité à prendre en compte les théories absolutistes semble être une caractéristique indésirable de la MEC en tant que règle de décision<sup>19</sup>. Face à ces objections et aux limites de la MEC, des alternatives et des ajustements ont été proposés pour mieux répondre à certains des problèmes soulevés. Par exemple, certaines propositions suggèrent de limiter l'influence des théories à très hauts enjeux ou de modifier la façon dont les valeurs infinies sont traitées dans le cadre de la prise de décision. En fin de compte, la prise de décision en situation d'incertitude morale reste un domaine complexe et en évolution, avec de nombreuses questions ouvertes et des défis à relever. Les approches discutées, telles que la MTF, la MOF et la MEC, offrent un point de départ pour aborder ces questions, mais il est probable que des développements futurs et des débats continus contribueront à affiner et à améliorer notre compréhension de la prise de décision morale sous incertitude.

## 2.5 Approches collectives de l'incertitude morale

Une catégorie distincte d'approches de l'incertitude morale consiste à utiliser des règles de décision formelles issues de la théorie du choix social et de la théorie des jeux pour orienter la prise de décision collective en contexte d'incertitude morale. La distinction clé entre ces approches et celles abordées dans la section précédente est qu'elles impliquent de modéliser les théories normatives de premier ordre comme des agents

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<sup>19</sup>Il convient de noter que ce problème n'est pas exclusif à l'incertitude morale. Même les théories de décision en contexte d'incertitude empirique ont du mal à accommoder les propositions sur les états du monde qui posent une valeur infinie (par exemple, l'existence d'un paradis/enfer infini dans le pari de Pascal). Voir Hájek (2003) pour plus de discussion sur les problèmes liés à l'infini.

(distincts du décideur) participant à des interactions stratégiques ou non. Selon l'approche en question, les agents peuvent échanger, négocier, voter et, en fin de compte, guider les actions du décideur principal en agrégeant leurs préférences. Ainsi, cette catégorie d'approches est appelée « approches collectives » de l'incertitude morale.

### 2.5.1 Pourquoi des approches collectives ?

MacAskill (2014) et MacAskill (2016) motivent cette perspective collective en les présentant comme des solutions aux problèmes de la comparabilité interthéorique et des théories simplement ordinales discutées dans la section 5.2.3. Ces articles soulignent deux similitudes clés entre la théorie du choix social et la prise de décision en situation d'incertitude morale qui rendent l'utilisation des outils développés dans le cadre de la première pertinente et utile. Premièrement, elles ont une structure formelle similaire. La théorie du choix social (telle que conçue par Amartya Sen) traite de l'agrégation des préférences des individus d'un groupe représentées par des ensembles de fonctions d'utilité en une seule fonction d'utilité « sociale » qui représente les préférences du groupe en tant que collectivité. De même, les théories de l'incertitude morale visent à agréger les recommandations de théories individuelles représentées par un ensemble de fonctions d'évaluation en une seule fonction d'évaluation (ce que MacAskill appelle une *fonction de pertinence*). Deuxièmement, la théorie du choix social vise à concilier les préférences concurrentes des individus pour trouver le meilleur résultat pour un groupe. De même, les théories de l'incertitude morale visent à le faire avec des théories normatives de premier ordre. Cependant, la théorie du choix social nous fournit encore des moyens de développer des

théories méta-normatives qui évitent les problèmes aigus d'incomparabilité interthéorique et de théories simplement ordinales. Ces principaux moyens proviennent du travail dans la théorie du vote, la branche de la théorie du choix social qui traite des préférences qui sont mesurables ordinalement et non comparables. MacAskill (2016) présente quelques systèmes de vote possibles avant de défendre le Weighted Borda Count comme système de vote idéal.

### 2.5.2 Quelques systèmes de vote

Tout d'abord, nous avons les approches “**Ma théorie préférée**” (MFT) (terme inventé par Lockhart (2000)) et “**Mon option préférée**” (MFO). Cette approche recommande au décideur de choisir l'option ayant la plus haute évaluation donnée par la théorie dans laquelle il a la plus grande confiance. Dans le contexte de la théorie du vote, nous pouvons définir MFT et MFO comme suit :

*MFT* : Si la théorie dans laquelle un décideur a la plus grande confiance affirme que  $A$  est plus digne de choix que  $B$ , alors il doit choisir  $A$  plutôt que  $B$ .

*MFO* : Si un décideur a une plus grande confiance dans l'option  $A$  qu'en  $B$ , considérant l'option  $A$  comme étant plus que digne que  $B$  alors il doit choisir  $A$  plutôt que  $B$ . Si le décideur a une confiance égale en  $A$  et  $B$  alors choisir  $A$  est aussi approprié que de choisir  $B$ .

MacAskill souligne que ces approches sont insuffisantes car elles ne tiennent pas compte des classements des options qui ne sont pas les choix

les plus dignes, de sorte que de légères différences entre les confiances dans les théories peuvent conduire à des conclusions radicalement différentes sur ce qu'il faut faire. Cependant, certains de ces problèmes peuvent être résolus si nous limitons notre attention à une classe de systèmes de vote appelés *extensions condorcet*. Ce sont des systèmes dans lesquels la condition suivante est remplie : si, pour chaque autre option,  $B$ , dans l'ensemble des options du décideur, la majorité des théories préfèrent  $A$  à  $B$ , le décideur choisit  $A$ . Dans ce cas,  $A$  est appelé le *gagnant de Condorcet*. MacAskill présente la méthode **Simpson-Kramer** comme un tel système de vote. Pour comprendre cette méthode, nous devons introduire la notion de magnitude d'une défaite. Dans une comparaison par paires entre les options  $A$  et  $B$  où  $A$  bat  $B$ , la magnitude de cette défaite est la différence entre la confiance du décideur que  $A$  est plus digne de choix que  $B$  et leur confiance que  $B$  est plus digne de choix que  $A$ . Nous pouvons maintenant définir le système de vote Simpson-Kramer comme suit :

*Simpson-Kramer* :  $A$  est plus approprié que  $B$  si et seulement si, dans un tournoi à la ronde, l'ampleur de la plus grande défaite de  $A$  est plus petite que l'ampleur de la plus grande défaite de  $B$ . Ils sont également appropriés si ces magnitudes sont égales.

Cette méthode est également insuffisante car en augmentant sa confiance dans la théorie qui considère le résultat le plus digne de choix comme le plus approprié, on augmente la magnitude de sa plus grande défaite et cela peut amener à ne plus être l'option la plus appropriée. Ceci est indésirable. Avoir plus confiance en l'utilitarisme naïf devrait rendre l'option de tirer un levier pour sauver cinq personnes et en sacrifier une plus attrayante, pas moins.

Options	Score de Borda sous $V_1$ (70%)	Score de Borda sous $V_2$ (70%)	Score de Borda pondéré par la confiance
A	$2 - 0 = 2$	$0 - 2 = -2$	$(0.7 \times 2) + (0.3 \times -2) = 0.8$
B	$1 - 1 = 0$	$1 - 1 = 0$	$(0.7 \times 0) + (0.3 \times 0) = 0$
C	$0 - 2 = -2$	$2 - 0 = 2$	$(0.7 \times -2) + (0.3 \times 2) = -0.8$

Table 2.8: **RÈGLE DE BORDA EN CONTEXTE D'INCERTITUDE MORALE**

MacAskill présente un dernier système de vote qu'il juge le plus adapté pour prendre des décisions en cas d'incertitude morale : la **règle de Borda pondérée par la confiance**. Avant de définir ce système de vote, nous devons d'abord définir les termes suivants :

Un *score de Borda* pour une option,  $A$ , étant donné une théorie  $V$ , est le nombre d'options dans l'ensemble des options qui sont moins dignes de choix que  $A$  (selon  $V$ ), moins le nombre d'options dans l'ensemble des options qui sont plus dignes de choix que  $A$  (selon  $V$ ). Nous pouvons ajouter de la confiance à ce score et calculer le *score de Borda pondéré par la confiance* de  $A$  en calculant, pour toutes les théories en considération, le score de Borda de  $A$  multiplié par la confiance du décideur dans chaque théorie. Par exemple, considérons deux théories  $V_1$  et  $V_2$  dans lesquelles un agent a des confiances de 70% et 30%, respectivement. Il y a 3 options -  $A$ ,  $B$  et  $C$  avec les classements suivants :  $V_1$  classe les options  $A > B > C$ ,  $V_2$  classe les options  $C > B > A$ . Le tableau suivant montre le score de Borda de chaque option et le score de Borda pondéré par la confiance.

Nous pouvons maintenant définir la règle de Borda dans le contexte de l'incertitude morale comme suit :

**Règle de Borda** :  $A$  est plus approprié que  $B$  si et seulement si  $A$  a un score de Borda pondéré par la confiance plus élevée que  $B$ .  $A$  et  $B$  sont également appropriés s'ils ont le même score.

Ainsi, en utilisant notre exemple ci-dessus,  $A$  est plus approprié que  $B$ , qui est plus approprié que  $C$  ; la règle de Borda suggère donc au décideur de choisir l'option  $A$ .

## Chapter 3

# Une Approche opérationnelle de l'éthique

Dans ce chapitre, nous présentons les perspectives particulières adoptées dans cette thèse. La [Section 3.1](#) introduit brièvement la philosophie des sciences de tradition opérationnaliste sur laquelle nous nous appuyons pour mener nos recherches. Elle donne également un aperçu de la récente évolution opérationnaliste que nous pouvons observer dans la recherche philosophique contemporaine. La [Section 3.2](#) présente notre programme de recherche opérationnelle sur l'éthique et la pensée critique dans les sciences humaines et sociales. La [Section 3.3](#) présente la structure de notre thèse.

### 3.1 Pour une approche opérationnelle de l'éthique

Le programme et le terme "opérationnalisme" lui-même ont été initiés et inventés par le physicien américain Percy Williams Bridgman au siècle dernier (Bridgman et al. (1927), Chang (2009)). L'opérationnalisme vise à rendre opérationnel un concept scientifique. Autrement dit, ce programme vise à le rendre mesurable, observable, quantifiable et utilisable, à travers notamment la pratique expérimentale<sup>1</sup> Cela présuppose que le concept soit déjà scientifique, autrement dit, qu'il ait été défini et formalisé afin d'être compris selon des règles d'interprétation et des conditions d'informations strictes et stables, grâce à la pratique théorique (fondamentale et appliquée)<sup>2</sup>. Or, lorsque nous souhaitons, comme dans notre thèse, appliquer la méthode opérationnelle à un concept philosophique, il faut, avant de pouvoir le mesurer, et quantifier, l'avoir défini en tant que phénomène possible grâce à la pratique méta-théorique<sup>3</sup>, puis défini précisé

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<sup>1</sup>Nous concevons cette pratique expérimentale en deux pratiques complémentaires: une pratique "expérimentale d'existence" et une pratique "expérimentale de test". La première vise à établir l'existence du phénomène associé au concept. La seconde vise à tester des comportements en rapport à ce concept, en confrontant des hypothèses économétriques au phénomène associé au concept.

<sup>2</sup>Nous concevons cette pratique théorique en deux pratiques complémentaires: une pratique théorique fondamentale et une pratique théorique appliquée. La première se charge de formaliser les définitions du concept et ses propriétés et propose des conditions d'informations idéales dans lesquelles il est possible de comprendre un concept. La seconde se charge de définir des conditions d'informations appliquées, en adéquation avec les possibilités effectives de la pratique expérimentale. En fonction du progrès technologique qui permet de repousser les frontières de la pratique expérimentale, ces conditions d'informations appliquées deviennent moins conservatrices. Même si, via le progrès technologique, les conditions d'informations appliquées "tendent à la limite" vers celles idéales, elles ne confondent jamais du fait que les conditions d'informations idéales contiennent "l'imagination", qui va au-delà d'une réduction empirique.

<sup>3</sup>Nous concevons cette pratique comme un prolégomène à toute étude scientifique du concept. Cette pratique se décompose en deux parties complémentaires: une pratique méta-théorique métaphysique et une pratique méta-théorique phénoménologique. La première



et formalisé grâce à la pratique théorique, afin de pouvoir distinguer précisément, quelle partie du phénomène peut être mesurée et quantifiée grâce à la pratique expérimentale, et quelle partie ne peut l'être<sup>4</sup>.

La conceptualisation de l'opérationnalisme était déjà présente chez des philosophes pragmatiques comme Peirce (Peirce (1997)) et Dewey (Dewey et Bentley (1960)) et des philosophes positivistes logiques comme Karl Popper (Popper (2014), Popper (2005)). Et, la pratique même de l'opérationnalisme peut être retracée au moins jusqu'aux philosophes modernes du 18ème siècle tels que Leibniz (Leibniz et al. (2000)), Pascal (Pascal (2008)) et Descartes (Descartes (2001)). Cette tradition s'est également poursuivie avec les philosophes économiques et les économistes, connus sous le nom de "Marginalistes", tels que Marshall (Marshall (2009)), Walras (Walras (2013)) et Pareto (Pareto (1896)) au 19ème et au début du 20ème siècle. Et le point culminant de cette tradition avec le travail séminal de Paul Samuelson (Samuelson (1948)).

Notre point de vue ici peut être soutenu par deux observations au sein des industries des sciences sociales et de la philosophie. Tout d'abord, nous pouvons remarquer le développement croissant du formalisme dans des

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visé à étudier les fondements métaphysiques du concept. La seconde vise à étudier les fondements phénoménologiques du concept. Dans notre manuscrit compagnon, *L'existence de l'incertitude morale*, nous fournissons un essai pour appréhender ces deux pratiques à travers des exemples issus de l'histoire moderne de la philosophie morale et de la philosophie de l'économie. Un exemple éloquent de cette pratique métaphysique est à lire chez Kant, dans *La Critique de la Raison Pure* (Kant (1905)); en ce qui concerne la pratique phénoménologique, le lecteur peut se référer à la troisième partie de ce même ouvrage mais également, dans un autre registre mais qui exemplifie tout autant cette pratique chez Merleau-Ponty, dans *Phénoménologie de la perception* (Merleau-Ponty (1976)). Nous discutons ces exemples et l'analogie qu'il peut exister avec notre concept dans ce manuscrit compagnon.

<sup>4</sup>Dans notre thèse, nous nous focalisons sur la pratique théorique fondamentale puis sur la pratique expérimentale d'existence.

domaines de la philosophie autres que la logique et la philosophie des mathématiques. Le formalisme s'appuie sur les symboles, le vocabulaire et l'appareil technique argumentatif (définitions, propositions, théorèmes, et leurs preuves associées) mathématiques en priorité pour définir les propriétés d'un concept, ses règles d'interprétation et ses conditions d'information et souvent pour élaborer un argument philosophique. Même s'il n'est pas encore évident de savoir si cet engouement pour le formalisme dans toutes les branches de la philosophie soit une victoire pour la pratique philosophique dans son ensemble, le formalisme en philosophie morale constitue un progrès louable dans la mesure où il permet de dépasser le stade de production d'éthiques idéales et de produire des éthiques opérationnelles, sur lesquelles les décideurs publics peuvent explicitement s'appuyer pour prendre des décisions et pouvant être explicitement expliquées en fonction de présupposés éthiques précis<sup>5</sup>. En effet, l'opérationnalisation permet de comparer différents systèmes moraux dans un même cadre d'analyse étant donné des hypothèses explicites concernant la commensurabilité des valeurs. En outre, un tel formalisme facilite les échanges entre différentes disciplines, en particulier entre les sciences humaines, les sciences cognitives et les sciences informatiques, disciplines utilisées pour développer et mettre en œuvre des actions éthiques non seulement individuelles mais aussi collectives. En particulier, un tel langage formel permet l'intégration rapide d'un point de vue philosophique particulier dans un modèle économique formel et des simulations

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<sup>5</sup>Même si, pour des raisons diverses et variées issues de l'économie politique, ce type de communication est encore inexistant ou presque dans l'espace public: il ne s'agit pas de citer tel ou tel concept ou tel ou tel auteur; il s'agit d'expliquer précisément quelle valeur éthique a été appliquée dans tel algorithme de recommandation encore trop rare dans les disciplines de l'intelligence artificielle, telle que "AI Safety" et "AI Alignment".

macroéconomiques, utilisés ensuite pour élaborer des politiques mais également dans des modèles d'ingénierie en intelligence artificielle. Dans ces deux cas, ces différents systèmes moraux se réduisent à des "poids" qui permettent de pondérer les recommandations issues du modèle.

Deuxièmement, cette approche pragmatique peut découler d'un changement de normes professionnelles de la pratique de la philosophie elle-même. Nous pouvons considérer l'approche contemporaine de l'incertitude normative comme innovante dans le sens suivant. La philosophie morale classique et moderne s'est concentrée sur le développement de philosophies morales complètes particulières, chacune prétendant être celle qu'il faut suivre pour effectuer la "bonne action". De telles philosophies restent en concurrence, et il semble difficile de parvenir à un consensus sur un ensemble d'actions à mettre en œuvre en utilisant seulement la connaissance issue de la philosophie morale. Ainsi, nous pouvons dire que l'objectif de la philosophie morale est plus d'inspirer une éthique (approche idéale de l'éthique) plutôt que d'opérationnaliser une éthique (approche pragmatique de l'éthique). Au contraire, l'approche contemporaine en éthique formelle ne semble plus avoir pour ambition de développer une éthique idéale complète mais de parvenir à un consensus pragmatique sur des problèmes de décision particuliers. Il s'agit ainsi de proposer, suivant Amartya Sen, une "meilleure" éthique (Sen (2009)), réalisable, par comparaison avec l'offre de théories morales idéales (Rawls (1971a)), qui, malgré leur caractère idéal sont trop souvent citées comme références d'action publique. Dans son livre, Sen fait valoir avec force que nous devons cesser de penser en termes de concepts idéaux de justice sociale qui visent une équité éthique parfaite mais inaccessible en pratique

et de privilégier plutôt une approche pragmatique qui vise de petits gains éthiques en termes d'équité éthique mais qui sont réels. C'est dans cette approche d'humilité morale de Sen que nous inscrivons notre thèse.

## 3.2 L'éthique opérationnelle: un programme de recherche

Premièrement, pour pouvoir opérationnaliser l'incertitude normative, nous devons montrer que l'expérience de l'incertitude normative est à la fois plausible (concevable) et effective (empirique). Par "plausible", nous entendons qu'étant donné l'agentivité morale<sup>6</sup> et rationnelle limitée des hommes et de leur environnement informationnel dans lequel ils agissent. En particulier, nous devons montrer en quoi il est difficile d'envisager des expériences de pensée morale opérationnelles sans tenir compte de l'identité des agents. Par "effective", nous entendons pouvoir établir cette expérience de manière empirique, autrement dit, montrer qu'il s'agit d'une expérience déjà connue des agents.

Deuxièmement, nous devons montrer qu'il est simple et possible d'utiliser des règles et algorithmes de décision en contexte d'incertitude normative et empirique – puisqu'il est rare de ne faire face qu'à l'une des deux incertitudes.

Troisièmement, nous devons montrer que délibérer en contexte d'incertitude normative permet de faire un réel progrès moral, c'est-à-dire

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<sup>6</sup>L'expression "agentivité morale" vise à décrire un sous-ensemble de l'ontologie dans un contexte moral: l'être compris dans la perspective de ses facultés rationnelles et émotionnelles naturellement mobilisées en contexte moral.

de pouvoir juger des situations de manière moins biaisée au niveau éthique. Nous caractérisons ce progrès de la manière suivante. Prendre des décisions en contexte d'incertitude normative permet une plus grande transparence et impartialité de la délibération. D'une part, la transparence tient au fait que les règles de délibération sont connues de tous, les "poids" sont rendus publics<sup>7</sup>. D'autre part, l'impartialité tient au fait que l'agent en contexte d'incertitude fait preuve de doute normatif et d'humilité normative et apporte une plus grande écoute à la pensée d'autrui et essaye, du mieux possible, de le pondérer dans sa délibération, plus que d'en faire fi.

Il est très difficile de quantifier les bénéfices et coûts éthiques de chaque règle de décision éthique. Autrement, il est possible que dans certains cas, une règle de décision semble au décideur plus appropriée qu'une autre. Toutefois, ce projet révèle les intentions de rendre explicite et commun, disponible à tous, une information éthique, les valeurs qui sous-tendent une politique publique plutôt qu'une autre, rarement évoquée, pour diverses raisons, dans la communication politique. A ce titre, des disciplines interdisciplinaires, telle que l'économie du bien-être, se situant à la jonction de la philosophie politique, sociologie, de l'économie et des mathématiques, ont vu le jour pour s'atteler à ce type de problèmes.

En montrant ces deux points, nous espérons convaincre les plus sceptiques à l'idée d'adopter l'expérience de l'incertitude normative comme principe éthique de délibération et formation du jugement de valeur.

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<sup>7</sup>Rendre les "poids" d'un modèle publique devrait être au coeur de l'approche nommée "open-source", trop souvent gardés privés par les entreprises de l'intelligence artificielle qui se revendiquaient de cette approche. Cependant, il n'est pas si évident de déterminer si l'open-source est exempte de toute critique, notamment car rendre publique et accessible à tous, sans aucun discernement, de telles technologies de l'IA pourrait accroître de manière considérable les risques de catastrophiques globaux.

### 3.3 Structure de la thèse

Notre thèse est composée de deux parties. La première partie explore la délibération et la prise de décision individuelle en contexte d'incertitude normative empirique. Les lecteurs trouveront une méthodologie d'analyse formelle pour évaluer les options et prendre des décisions dans un contexte d'incertitude normative, étant donné des contraintes de rationalité et d'impartialité éthique. Pour simplifier ce problème, nous faisons l'hypothèse métaphysique que les valeurs peuvent non seulement être représentées de manière numérique mais aussi que ces représentations cardinales sont significatives *en soi*. Autrement dit, nous supposons qu'il est possible de lier une valeur numérique à une valeur morale pour quantifier son importance, relativement à d'autres valeurs et agents et même, de manière absolue. En partant de cette hypothèse, nous fournissons un cadre complet pour traiter simultanément l'incertitude empirique et l'incertitude normative: étant donné un paramètre d'information  $\mathcal{I}$ , et étant donné les valeurs morales choisies par l'agent, ce dernier dispose de quatre règles de décisions différentes.

Les deux principales questions que traite cette partie sont les suivantes. D'abord, devons-nous traiter l'incertitude normative toujours comme de l'incertitude empirique? Ensuite, devons nous nécessairement adopter une attitude neutre vis-à-vis du risque moral? Aux deux questions, le formalisme de cette partie permet de considérer l'ensemble des cas possibles pour chacune de ces questions et de répondre par la négative aux deux. En opposition à la littérature naissante, qui y répond de manière positive, nous proposons des alternatives concrètes et plus générale: nous devons adopter

une attitude *impartiale* vis-à-vis du risque moral – ce qui implique de pouvoir traiter l’incertitude normative de manière différente de l’incertitude empirique.

La deuxième partie explore comment observer l’incertitude normative grâce à une méthodologie interdisciplinaire de sondage. Dans cette partie, les lecteurs trouveront une méthode de sondage en deux étapes pour mesurer l’incertitude normative. Nous montrons comment les positions méta-éthiques adoptées peuvent façonner les échelles de mesure de l’incertitude normative et leurs interprétations. En outre, nous explorons l’existence de cette incertitude dans un vaste cas de situations normatives, allant de sujets politiques, sociaux aux dilemmes moraux.

Dans la conclusion, nous résumons nos principales contributions.

## **Part II**

### **General Introduction**



## **Abstract**

In this general introduction, we present moral uncertainty. **Chapter 4** stresses the social consequences of value judgments and how moral uncertainty can help us formulate more just value judgments.

**Chapter 5** provides the key definitions, formal background, and a comprehensive review of the literature on moral uncertainty.

**Chapter 6** presents the particular perspectives taken in this doctoral thesis.

## Chapter 4

# The Social Consequences of Value Judgments

This chapter highlights the potential social consequences of value judgments and how formulating our value judgments within the context of normative uncertainty can enhance their accuracy. [Section 4.1](#) discusses three common-places about value judgments that distract our attention from their social consequences. [Section 4.2](#) addresses the significance of speech in the digital age, which sees its phenomenological essence transform from transitional to permanent and is now continuously reproduced in writing. [Section 4.3](#), building on the previous one, discusses the critical thinking (deliberation) process that agents can mobilize to better formulate value judgments and thus better manage their possible social consequences. [Section 4.4](#) continues by focusing on a particular framework of critical thinking in an ethical context (moral deliberation), the veil of ignorance, and its limits with respect to concrete individual, institutional,

and policy applications. [Section 4.5](#) proposes an alternative framework principle that responds to the criticisms that the veil of ignorance suffers from deliberation under moral uncertainty.

## 4.1 Three Fallacies About Value Judgments

The persistence of moral, political, religious, and aesthetic disagreements should remind us of how challenging it is to formulate and articulate a value judgment that is adequate to the situations to be judged and encourage agents to embrace normative humility. However, three commonplaces about value judgments seem to persist and motivate a certain normative arrogance: the social implications of value judgments are frequently regarded as virtual, as if the words remained devoid of meaning; value judgments are often formed quickly as if they were accessible without any effort; their expression is frequently accompanied by certainty as if they were about obvious matters. Let us briefly develop why we should be cautious about these clichés.

First, value judgments can have social consequences independently of the meta-ethical positions on which they are based. On the one hand, based on "internalist" meta-ethical positions, value judgments motivate individual and collective actions, either directly, in and of themselves, or indirectly, through the emergence of an emotion involved in motivation ([Smith \(1994\)](#)). If vegans judge that eating meat is bad, they are unlikely to do so. Furthermore, if they speak out publicly, they may motivate others to refrain from eating meat. On the other hand, according to different versions of "externalist" meta-ethical positions, value judgments generate individual

and social representations about the subject being judged, creating favorable or unfavorable attitudes towards it. In other words, expressing a value judgment can, quite simply, create bad publicity that, if repeated enough, can affect long-term social norms, which, in turn, will influence the set of socially accepted actions available to agents (Bicchieri (2005)).

Therefore, value judgments have social consequences in modifying the social environment surrounding us, either through motivations and actions or through representations and attitudes.

Secondly, the development of value judgments is not without psychological effort. Despite this complexity, psychologists have shown how quickly individuals formulate (and express) them, notably due to cognitive biases (Kahneman (2011a)). In such cases, agents rely on "heuristic principles" corresponding to simple cognitive functions (Tversky and Kahneman (1974)). Individuals are more inclined to simplify their perception of a situation when it is difficult to judge, as in the domain of ethics (Harman (2014)). This simplification occurs through a cognitive substitution process in which agents mentally replace objective attributes of the situation with subjective attributes that resemble them. These subjective attributes originate from the agent's past experiences and values. Among all these attributes memorized by the agent, only those that seem familiar to them in the situation are mobilized. In particular, this familiarity emerges when individuals activate their memory and find a "heuristic attribute that comes more easily to mind" (Kahneman and Frederick (2002)). This phenomenon is called "attribute replacement" (Kahneman and Frederick (2002)) in the sense

that these attributes act as "representative events"<sup>1</sup> of the situation. Because of the complexity of each normative dilemma and their multiplication in daily lives, individuals may respond to this excessive demand for ever more attention in our digital economy, as we point out in the next section, with such empirical heuristics, to quickly form more value judgments. Allowing to lighten the cognitive load of the oversolicited agent, this process, formed by cognitive biases, does not do justice to the moral situation to be judged, whose perceptual complexity always requires a greater attentional and psychological investment on the part of the agent to be judged adequately<sup>2</sup>.

Third, value judgments are most often about ambivalent issues (Kaplan (1972), Haidt (2012)). Value judgments can be classified according to several competing "theories of value", which fall into two broad metaethical categories: realist and nonrealist. These theories concern value judgments and the objects to be evaluated, as foreshadowed in the distinction between internalist and externalist metaethical positions above. The main question is whether value judgments can be attributed to a degree of truthfulness (realism) or consist of mere manifestations of attitudes (nonrealism). This question echoes the second: whether normative facts are independent of the agent (realism) or not (nonrealism).

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<sup>1</sup>The notion of representativeness here does not refer to the statistical concept of representativeness but rather to a subjective assessment based on personal histories.

<sup>2</sup>As we show in our companion Ph.D. in economics, it is ultimately the whole society that suffers from this situation of over-solicitation and under-investment. As we show in our coauthored paper with Elia Satori, this situation can be corrected by developing an economy of critical thinking in a digital society

## 4.2 An Economy of Words to Avoid an Economy of Catastrophes

Our digital era is characterized by accelerating technical and technological progress with significant social consequences. We can now reproduce all speech continuously and simultaneously, transforming it *de facto*, into social facts. Indeed, physical and forgotten public life has become a digital and recorded public life. Certainly, since the beginning of the twentieth century, as Benjamin theorized (Benjamin (1935)), public speech has already been transcribed in the mass media (television, radio, newspapers, and cinema) and archived in various ways (cassettes, CDs, newspaper paper archives). However, this reproducibility was still limited on the basis of "mechanical" techniques. Indeed, due to significant physical costs of reproducibility, it was impossible to reproduce any given speech infinitely in its temporal dimension (in terms of frequency) or spatial dimension (in terms of simultaneous places of expression), but only in a finite way. In phenomenological terms, we witnessed a transformation of the temporality of speech. In the mechanical era, its flow was measurable in time in a "discrete" way (as in mathematics). In contrast, this flow is measurable in time in the digital era in a "continuous" way. With the advent of the Internet and new technologies, we have transitioned from mechanical to digital reproducibility. This has resulted in a drastic reduction in the costs of reproducing public speech, allowing us to move from a discrete time of speech to a continuous time and to multiply the spaces of synchronous and diachronic (re)diffusion.

We can cite two major examples that illustrate this new low-cost digital reproducibility. First, access to the archives is now free and available to everyone. Previously, access to the archives was reserved for a few specialized and accredited individuals at different institutions or companies. For example, an interview given by a minister in a newspaper edition was only accessible in that specific edition, stored in the archives in the basement of the journalistic enterprise. Now digital, access to this interview is open to everyone, all the time, and in different spaces (website of the newspaper, another website, Internet archive<sup>3</sup>). This liberalization of access to speech and, more globally, to all information allowed by the digital revolution has been accompanied by the multiplication of sources of (re)production and platforms of (re)consumption. Before this digital revolution, it was unlikely that if a citizen vaguely remembered an interview with a minister given in a certain newspaper, they would obtain the necessary authorization to access the newspaper's archives, thus limiting the sources of reproduction of this interview. With the Internet and, more particularly, the multiplication of social networks and what is called "digital media", this has become possible. Indeed, all those who wish to do so can access a large amount of information reserved, *de facto*, to accredited journalists, through low-cost robotics and low-tech devices such as drones and handheld cameras. Through the difficulty of institutions controlling access to the very sources of information, we see the emergence of "content creators" venturing into war-torn territories, a practice previously reserved for accredited war reporters. With this new access and a mastery of the entire value chain of the media economy, anyone can not only (re)produce but also (re)distribute

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<sup>3</sup><https://archive.org/>.

this information instantly. The era of mechanical rebroadcasting has given way to digital rebroadcasting (for example, through YouTube "channels"). The real revolution is the one we are experiencing, where we are transitioning from a hundred years of technological progress aimed at "reproducing", whether it is, as in Benjamin's case, in a mechanical way, or as in our case, in a digital way, to technologies aimed at "producing", recently with artificial intelligence. Thus, after the mechanical era, we are about to transition from the digital era to the synthetic (or artificial) one, where the production of content and its reproductions become synthetic.

Furthermore, the arrival in this information market of new human actors in the digital era and now new artificial actors in the synthetic era may disrupt the choice of the editions of *what* information to disseminate. Formerly able to respect a certain socio-politico-demographic logic of society, this choice is no longer confined to the publishing rooms of the media: *any* information can be disseminated at the discretion of the content creators, human or synthetic.

In short, before the advent of mechanical reproduction, public speech almost always ended up forgotten in the archives of history. On the contrary, through the advent of content reproduction techniques and mass media ([Benjamin \(1935\)](#)), the decentralization of the power of media representation first through the multiplication of media companies and more recently, brought to a larger scale even today via social media platforms, any spoken or written word is transcribed, archived but also, easily mobilized, at any time, and, repeatedly without cost (or very low). Thus, a word can be brought to the attention of society's actors in a constant manner and, in



extreme cases, saturate their attention to the point where some authors even speak of a "cognitive apocalypse" (Bronner (2021)).<sup>4</sup> Beyond the behavioral and psychological effects, which can be generated by this contemporary capacity to make speech exist as writing, public speech (including value judgments) becomes a vocal and permanent social fact.

What are the consequences of the passage from the era of mechanical speech to the digital one and, from now on, to what we can call the *synthetic era* on value judgments?

The decentralization of networks multiplies the number of information channels available and the quantity of information available within each channel, whether factual information or value judgments, to judge these new situations. These multiplicity effects (number of situations and number of perspectives per situation), beyond making situations more complex to manage at the level of deliberation, increase our possibilities to affect the social world around us through our value judgments. In the same way that our consumption of information is amplified, our voice, expressed in public in the digital world, finds more and more echoes, using several channels without additional transmission costs. As a result, if our evaluations are distorted, the social consequences of our judgments are likely to be negatively echoed. To measure the importance of speech as a social fact, we can, for example, consider "public opinion" and its further role of social pressure in votes during elections or political decisions (Lippmann (1922)). For example, in a short-term perspective, in light of a potential world nuclear war, regarding the conflict between Ukraine and Russia, the "threat"

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<sup>4</sup>Our translation from the French "apocalypse cognitive".

made by a value judgment ("Russians/Americans are bad"), digital, beyond being reproduced, by the multiple repetitions operated by various uncontrolled information channels, can be rewritten and transformed into a descriptive, erroneous statement ("Russians/Americans will attack us"). This transformation of the statement, conveying wrong information, can induce an anticipated reaction of one of these parties to counter a possible attack and thus realize a self-fulfilling prophecy.

Thus, in the era of the digital economy, where speeches now act more and more like acts, it becomes urgent to take words seriously and consider them as an additional source of social risk or catastrophe. In our opinion, the development of this "economy of speech" requires the elaboration of a normative framework for the formulation of our moral speech (our value judgments), which is both sufficiently ambitious at the ethical level and, above all, pragmatic and realistic to be put in place operationally at the individual and institutional level. This pragmatism and this urgency of moral progress move us away from ideal theories of justice à la Rawls (Rawls (1971a)) and closer to pragmatic theories à la Sen (Sen (2009)).<sup>5</sup> We now turn to the importance of deliberation in this economics of speech.

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<sup>5</sup>We invite readers interested in the operational implementation of this framework to refer to our doctoral thesis in economics at the Paris School of Economics, where we explore, in particular, the implementation of a framework in political and industrial economics (see the article "Critical Thinking Via Storytelling: Theory and Social Media Experiment" co-authored with Elia Sartori) and in environmental economics (see the article "Redistribution Under Welfare Uncertainty: Theory and Application to Climate Economics" co-authored with Marc Fleurbaey).

## 4.3 The Deliberation Process: Emotions and Reasoning

When confronted with a situation that requires a value judgment, we react emotionally (Greene and Haidt (2002)). A situation can surprise us positively or negatively, shock or please us, repulse us, or win our empathy, depending on its characteristics and our identity (defined according to our values, origins, and social and economic positions in society). These emotions may contain all the information we need to evaluate the situation. However, they often need to be complemented by searching for additional information and deliberation. The first sources of information complementary to the emotions available to individuals are the representations they have of their own identity, i.e., about their desires and psychological states and how these relate to the situation (Kahneman and Tversky (2013)). Moreover, their socio-demographic values, i.e., their origins and social and economic positions in society, also come into play (Bourdieu (1979), Graham et al. (2009)). When individuals communicate their value judgments, many psychological traits and attitudes can be revealed. Value judgments can provide information about their attitudes toward risk, self-confidence, moral character, beliefs about their future, desire to belong to a particular group, and concern for social image. Thus, according to this psychological perspective of value judgment, questioning one's value judgment would be tantamount to questioning one's psychological characteristics and attitudes. On the other hand, value judgments can reveal to the public their

socio-demographic values.<sup>6</sup> These values are determined by affiliation with a specific family, religion, ethnic group, nation, political party, or profession. Thus, according to this sociological perspective of value judgment, questioning their value judgment is equivalent to questioning their socio-demographic values. Philosophers have provided an alternative source of additional information: moral and political philosophies themselves, as well as a special cognitive tool for accessing this information efficiently: thought experiments (Thomson (1976), Sorensen (1991), Walsh (2011))<sup>7</sup>. These experiments consist of a simplified description of a complex or dilemma situation and a specific set of knowledge we call "safe knowledge" (expert-certified knowledge, as opposed to social *doxa*), which must be used and weighed to provide the solution to the question (Brown and Fehige (2022)). These thought experiments are the counterpart in the philosophy of what models are in science: images, not of the world (the proper of science), but of what the world could be (the proper of philosophy). Even if we are aware of these challenges, we must recognize that making a value judgment based on our "sociological self" or "psychological self" is equivalent to making a value judgment that is generally described as "biased", resulting from what is called "motivated" reasoning (Kunda (1990)). On the other hand, with the help of these thought experiments, we can create a critical thinking framework and base our value judgments on our "ethical self". This

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<sup>6</sup>Socio-demographic values encompass, at least, the following: age, gender, income, capital, education, place of birth, location, and family status.

<sup>7</sup>Although contemporary analytic philosophy has placed great emphasis on these cognitive processes of philosophical reasoning, one can find, at least, two notable examples in Pascal, with his famous example of "the wager" in the framework of decision theory, and Descartes with his famous example of "the square tower" in the framework of the philosophy of knowledge and perception.

framework is characterized by distancing our sociological and psychological self-representations to allow us to access this philosophical information in a less biased way. This framework of critical thinking, characterized operationally, has been found at least since the beginning of the 20th century in the pragmatic philosophy of Dewey.<sup>8</sup> Our thesis aims to offer the reader a framework for critical thinking – which can be broken down into three elements: a thought experiment, a research project, and a research project. This thesis focuses broadly on the last two elements.<sup>9</sup> Philosophical information and rules for processing that information – serve to guide the formulation of our value judgments and improve their accuracy.

## 4.4 Local and Ideal Deliberative Principle: The Veil of Ignorance

Proposing a thought experiment as a principle of practical rationality is familiar in the modern and contemporary history of moral philosophy. We can cite the "veil of ignorance" proposed by economists and philosophers William Vickrey (Vickrey (1945)), John Harsanyi (Harsanyi (1953), Harsanyi (1977)), and John Rawls (Rawls (1971b)). The authors of this experiment invite readers to completely forget their identity (i.e., representations of their sociological and psychological selves discussed above) and accept that they will not know what they will become in this possible society defined

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<sup>8</sup>The reader interested in the influence of operationalism in contemporary cognitive psychology can refer to the literature review of ?.

<sup>9</sup>We invite the interested reader to our companion manuscript, "The Experience of Moral Uncertainty," which defines this thought experiment in terms of moral phenomenology and the modern history of philosophy.

by the value judgments resulting from this veil. In other words, this experience is akin to a radical uncertainty of identity.

There are two limitations to this exercise in thinking. First, the veil of ignorance is "ideal" regarding access to information conditions. Indeed, without even talking about the operationalization of this experience, which seems impossible, it also seems implausible to envisage that individuals endowed with the moral agency could radically forget all the dimensions of their identity. Various factors make it difficult cognitively and emotionally to access. First, the link, possibly unconscious, that an individual maintains with their "biographical self" or "psychological self" exists and is strong; this seems to be overlooked by these authors. Even when the individual becomes aware of this link and wishes to detach themselves from it, it is difficult, due to their limited rationality, to completely erase its influence on the formulation of a value judgment by a simple request to the participants to "forget it" (Scanlon (1986), Scanlon (2014)).

Second, it is challenging to envision and operate as a fully rational agent capable of imagining all the events and values that should underlie this new society and acting according to these beliefs (Bradley (2017a)). Indeed, even assuming that it was plausible to make a table of who we are and access that experience, it is still impossible not to imagine possible circumstances that would accompany this new Rawlsian society and to ignore their influence on our value judgment; however, as the development of the contemporary history of moral philosophy and the multiplication of subbranches of practical ethics has shown us, ethical principles are adopted and vary greatly, even within a single "moral family" from one field to another. These

two requirements seem inaccessible to human beings. Second, this veil of ignorance reduces the ethical space to a restricted subset of ethical theories, as if ethics were reduced to this subset. Indeed, Rawls' theory requires the reader to deliberate with egalitarian principles (Nozick (1973), Nozick (1974)). Therefore, the Rawlsian veil of ignorance concerns only a subset of the full collection of moral principles in the conflict in this more global ethical space, defined in terms of greater heterogeneity of attitudes to risk and inequality. In summation, these two limitations lead us to consider an alternative thought experiment for formulating more just value judgments: the normative uncertainty experiment.

## **4.5 A Global and Pragmatic Deliberative Principle: Normative uncertainty**

Faced with a situation to be judged in a normative way, the experience of normative uncertainty consists of asking yourself the following question. Should I adopt the attitudes for or against that I have just taken naturally (for sociological or psychological reasons), or should I consider other positions provided by moral philosophies, which may oppose them; if so, how should I weigh them up to formulate my final value judgment? Maintaining this sense of normative doubt creates a distance between oneself and one's sociological and psychological representations, allowing the emergence of an ethical representation of oneself through this critical thinking exercise.

We now informally detail this exercise. In the first part of our thesis, we describe in a specific and formal way the different rules of reasoning that agents can adopt in a context of normative uncertainty, according to the empirical and normative information they have at their disposal and to their biographical identity, which we represent by their attitudes towards risk. Moreover, the notion of risk is very rich, as covered in the first part. It allows not only to encode of all heterogeneous ethical views from diverse agents.

This experience of normative uncertainty decomposes into several steps.<sup>10</sup> First, when faced with the situation, ask ourselves the above question to become aware of our sociological and psychological representations of the self and suspend our value judgment instinctively formulated based on these representations.<sup>11</sup> Second, question these representations to understand better why we should or should not adopt them.<sup>12</sup> Thirdly, to access a larger set of possible value judgments and a set of reasoning rules

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<sup>10</sup>This experience of normative uncertainty presupposes a moral motivation on the part of the agent, who possesses the will to improve the correctness of their value judgments and thus make moral progress. However, there are many cases where the agent does not possess such a will. First, in cases of *akrasia*, as shown by [Jaffro \(2018\)](#) where the agent suffers from a more or less severe moral will weakness, preventing them from maintaining sufficient moral motivation to possess active moral agency. This topic is not the focus of our dissertation, but it is a point that is no less important; thus, in a companion paper, "The Economic Agent Facing Moral Weakness," we consider this type of "weak agent" in the context of economics and the self-control strategies that the agent may try to implement to recover this moral will. Second, agents may not possess the same moral motivation as economic agents (firms or individuals) and political agents (institutions and governments). In the case of economic agents, it is necessary to show how normative uncertainty maximizes economic and political interests; this is what we do in the article "Critical Thinking via Storytelling: Theory and Social Media Experiment," coauthored with Elia Sartori. Whether the agent's motivation is moral or not, moral uncertainty is either a direct or indirect moral consequence of the agent (a positive externality, which may be internalized, as we show with Elia Sartori).

<sup>11</sup>Concretely, in part II of our thesis, we develop survey techniques and address the question to the participants.

<sup>12</sup>Concretely, in the article with Elia Sartori, we develop experimental economy techniques and ask, among other things, the participants to write a critical essay on the reasons that would push them to adopt or reject their representations.



that allow us to weigh these different judgments and to arrive at a global value judgment<sup>13</sup>, depending on different perspectives (resolution of normative uncertainty at the individual or collective level) and informational conditions. Our thesis focuses on individual perspectives on resolving normative uncertainty (an individual, a minister, a company, or an institution understood atomically). However, we briefly discuss collective approaches in our review of contemporary literature. Furthermore, we discuss these informational conditions in more detail in this review.

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<sup>13</sup>In this way, in [Part III](#) of our thesis, we develop an analytical framework that precisely describes these informational conditions and these reasoning rules. This framework, although formalized, cannot be applied directly, given the assumptions we make about the scales of comparison of these different value judgments; these scales remain, in fine, metaphysical but allow us to define the largest possible set of value judgments. On the other hand, we show precisely the necessary restrictions that we have to make about these scales to apply these rules of reasoning concretely and, for example, in our scientific choices of public policies. These restrictions reduce the value judgments we can consider in our critical thinking. In the third paper of my Ph.D. in economics, coauthored with Marc Fleurbaey, we explore these issues, operationalizing these rules by making the restrictions of value comparison scales. The advantage of our approach is that it is simple and immediately applicable in public administrations. The disadvantage is that the set of value judgments that can be considered is rather small. It is possible to expand it, for example, as done in [Eden \(2020\)](#) or [Trammell \(2021\)](#), but this comes at a cost in terms of complexity, and very quickly we lose the possibility of being able to apply these rules easily; we end up close to the degree of impracticality of our analysis framework in [Part III](#).

# Chapter 5

## Definitions And Literature

### Review

In [Chapter 5](#), we provide a detailed review of normative uncertainty in light of contemporary literature. [Section 5.1](#) elaborates on the definition of normative uncertainty and a taxonomy of its correlated concepts.

[Section 5.2](#) poses the formal framework of moral decision problems and elaborates on the core of informational conditions, the commensurability of values. [Section 5.3](#) discusses the compatibility of normative uncertainty with different standard meta-ethical positions. [Section 5.4](#) reviews the main individual solutions to normative uncertainty. [Section 5.5](#) reviews the main collective solutions to normative uncertainty.

## 5.1 Normative Uncertainty and Empirical Uncertainty

According to [Bradley and Drechsler \(2014\)](#), "uncertainty" is a complex multidimensional concept—at least three-dimensional: the *nature*, the *object*, and the *severity* of uncertainty. Due to its complexity, there is no single consensus approach to managing it. On the other hand, there are different decision rules, all involving a cost-benefit analysis according to the objective pursued by the decision maker in its resolution. In what follows, we discuss a taxonomy of uncertainty. We then review the decision rules developed to manage moral uncertainty, which is the focus of our thesis. First, concerning its nature, uncertainty can be empirical or normative, subjective, or objective. *Empirical uncertainty* refers to uncertainty about empirical facts, such as weather or election results ([Savage \(1954\)](#)). For example, people may wonder whether they should bring their umbrella because they are unsure whether it will rain. Empirical uncertainty is ubiquitous in private deliberation and decision-making, as in the example above, and public decisions. For example, a minister of health may wonder whether to implement a vaccination policy because they cannot determine the overall probability of success of that particular vaccine in a given population. This uncertainty has been central to decision theory throughout the last century in economic philosophy, economic theory, and, more recently, contemporary ethics ([Bradley \(2017b\)](#)). *Normative uncertainty* refers to uncertainty about the evaluative standard due to competing

normative intuitions or worldviews<sup>1</sup>. For example, a person may question whether they should eat meat because they are unsure if eating meat is considered bad. Like empirical uncertainty, normative uncertainty is pervasive in private and public decision-making. To cite a few examples, governments may wonder how much they should value citizens' freedoms and autonomy (for example, in pandemic contexts); agents may wonder which consequences should matter most and whether ethical considerations should also matter; reason-based agents may wonder which properties matter and how they matter. Second, whether it is normative or empirical uncertainty, the "object" of uncertainty can be applied to options or states of the world. The uncertainty of the option concerns the uncertainty about the consequences associated with an action. State-of-the-world uncertainty is uncertainty about the state of the world in which a decision-maker finds himself. Third, uncertainty can vary in degree for normative or empirical uncertainty related to its *severity*. Philosophers usually represent this variation in precision through different measures of probability, ranging from very precise measures of probability on the state space (it is common to refer to "risk" in such cases) through imprecise probabilities (it is common to refer to "ambiguity") to complete absence of probability (it is common to refer to "ignorance" in such cases). In this thesis, we consider uncertainty as the following three-dimensional concept: its *object* considers options and states of the world; its *nature* is normative and empirical, subjective or objective; its degree of severity is *risk* (even though everything we do here is easily applicable to higher degrees of severity). Since

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<sup>1</sup>We will use this word as a synonym for "ideologies," "philosophies," and "normative positions" throughout this thesis

normative uncertainty will be the main subject of our thesis, we will specify its main characteristics. Normative uncertainty is not reducible to empirical facts. Normative uncertainty remains even after all relevant empirical facts have been provided. For example, a minister of health who knows precisely the overall probabilities of success of a particular vaccine on a given population may still be uncertain whether to implement that policy or not because they are uncertain whether to maximize citizens' health (and thus make vaccination mandatory for everyone) or to maximize citizens' freedom (and thus leave vaccination optional for those who wish to do so).

## 5.2 Formalising Moral Decisions and Comparing Values

### 5.2.1 Formalising Decision-Making

Before delving into individual approaches to moral uncertainty, we must establish the formal foundation for acting under moral uncertainty. Philosophers and economists often rely on formalization to approach a complex problem. They do so to add explicative clarity to their approaches and allow theories to be action-guiding (i.e., to generate concrete recommendations). Furthermore, philosophers and economists can go one step further and develop an 'axiomatization' of their approach. [Gilboa et al. \(2019\)](#) explores the purpose behind the concept / theorem of axiomatizing and states that the axiomatic approach may help theories satisfy certain metascientific desiderata, such as the notion of falsifiability [Popper \(2005\)](#). It also helps to make theories more normatively compelling and descriptively

valid. In particular, formalization is useful, as it helps to operationalize a concept/theory. This dissertation states that formalization allows individuals to compare the value of outcomes across moral theories and allows academics to communicate across different fields of study through a shared formal language. This is important to guarantee the practical relevance of moral uncertainty, particularly for policy making. In its most standard form, using an approach borrowed from Bradley (2017b), we can formalize a decision problem by defining four parts. First, we must have a *decision maker* (or agent) to perceive and interact with their environment. Second, this agent must be able to take actions referred to in the literature as *options*. Third, each of these options is associated with multiple *outcomes*, which the agent can rank in terms of how desirable they are. Fourth, the outcome that is realized, conditional on a particular action taken by an agent, depends on certain realized facts about the environment, which we call *states* (or states of the world). For clarity, let us consider and formalize an example of an individual facing a decision problem. An agent, Jane, is offered a health insurance package and wants to formalize her decision problem. She considers her options: purchasing health insurance or not purchasing health insurance. If she purchases health insurance, there are two possible outcomes. In the state of the world where Jane gets ill, she pays a premium, but her insurance plan covers the cost of her expensive medical bills. In the state of the world where she does not get sick, she pays a premium. Again, if she does not purchase health insurance, there are two possible outcomes. If she becomes sick, she does not have to pay a premium, but has to bear the entire cost of her expensive medical bills. If she does not get sick, she does

not have to pay a premium and nothing changes. This decision problem can be represented visually using a state-consequence matrix as follows:

	<b>Jane gets ill</b>	<b>Jane does not get ill</b> <i>Jane buys insurance</i>
Jane pays an annual premium, Jane's medical bills are covered	Jane pays an annual premium <i>Jane does not buy insurance</i>	Jane has to pay the entirety of her medical bills
Nothing changes		

How should Jane make this decision? As outlined by [Savage \(1954\)](#), standard decision theory says that she should choose the action with the highest expected utility. We need to add two parts to this decision problem to make sense of this recommendation. Firstly, we need a way to represent how "good" or "bad" Jane perceives these outcomes. We commonly use a *utility function* that gives us a numerical value associated with each outcome. The higher the number, the more Jane prefers this outcome. More formally, we say that the utility function,  $u$ , maps the results to the set of real numbers. Second, we must recognize that agents make decisions in different environmental settings. If Jane were sure she would not fall ill, standard decision theory would advise her to pick the action with the highest utility - in this case, it would be not to purchase insurance. This is an example of an agent acting under certainty. However, most decision problems involve an agent acting under *risk* or *uncertainty*<sup>2</sup>. In both cases, a

<sup>2</sup>In a decision involving risk, an agent is aware of the probabilities of different states of the world (and therefore outcomes). In the cases of uncertainty, she is unaware of these probabilities, but can be expected to make a reasonable judgment about them that is not arbitrary

*probability function*,  $p$ , maps the states of the world to a real number between 0 and 1. To summarize and represent these concepts formally, we can formalize a decision problem as a quintuple  $\langle A, S, O, u, p \rangle$  where:

- $A$  is a set of options available to the decision-maker
- $S$  is a set of states of the world
- $O$  is a set of outcomes that depend on  $A$  and  $S$  where  $o_{i,j}$  is the outcome that results from taking action  $j \in A$
- $u : O \rightarrow \mathbb{R}$  is a utility function representing how good or bad an outcome in  $O$  is for the decision-maker
- $p : S \rightarrow [0, 1] \in \mathbb{R}$  is a probability function representing a decision-maker's assessment of how likely a particular state of the world is
- The *expected utility* of an option  $j \in A$  is  $\sum p_i u(o_{i,j})$  for each  $i \in S$

This approach gives us a framework to tackle cases in which agents are uncertain about the world's states (empirical uncertainty). How can we adapt this framework to tackle cases where agents are uncertain about which first-order moral theory is correct (moral uncertainty)?

### 5.2.2 First-Order Moral Theories

Firstly, we need to define a set of *first-order moral theories* relevant to the decision problem over which an agent is uncertain. We can refer to this as the set  $\mathcal{V}$ . In the simple case where an agent does not have to deal with empirical uncertainty and only decides under moral uncertainty, the set  $\mathcal{V}$  replaces our set of states  $S$  defined above. An agent's uncertainty over these moral theories can be formalized using a probability function representing



their subjective degree of belief (i.e., their *credence*) in each element, (moral theory), in  $\mathcal{V}$ .

**Using probabilities to formalize credences** Joyce (2004) describes the development of the subjective Bayesian approach to probabilities. In this view, the objects of uncertainty are events or propositions in a Boolean algebra  $\Omega$  that is closed under negation and countable disjunction. Here, probabilities are interpreted merely as quantifying a decision-maker's purely subjective degrees of belief and are referred to as credences. The credence function is, as defined in 5.2.1, a function of states of the world to  $[0, 1] \in \mathbb{R}$ . When making decisions under empirical uncertainty, these credences refer to the subjective degree of belief of a decision-maker about the likelihood of empirical events happening or not. Since these empirical events occur and can be observed, it is possible to deem one's credence right or wrong or, more accurately, to assign degrees of rightness and wrongness to them. For example, suppose that you have a credence of 90% that it will rain tomorrow and that your friend has a credence of 20%. Suppose that you observe that tomorrow it does not rain. In that case, it is possible to state that your friend had more right than you because his credence more accurately reflected the actualized state of the world<sup>3</sup>. Although it seems natural to rely on probabilities to represent such empirical beliefs, it is less so in the case of decision-making under moral uncertainty, as it is uncertain whether this is also possible when making decisions under moral uncertainty. Under moral uncertainty, credences reflect a decision maker's

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<sup>3</sup>One might state that having precise, point-valued credences is unrealistic, given the complexity of certain events/propositions and the extent of our ignorance about them. Here, the subjective Bayesian approach recommends using imprecise probabilities, credences represented using intervals within  $[0, 1]$ .

subjective degree of belief that a first-order moral theory is right. One could claim that, like the decision-maker in the case of empirical uncertainty, a decision-maker acting under moral uncertainty uses probabilities to represent their subjective degrees of belief about the likelihood of facts but moral and not empirical facts. This claim is dubious, given that it requires some controversial, preliminary meta-ethical assumptions about the status of such facts. It also needs to be clarified what kind of evidence one would require to confirm or deny moral facts and whether it is possible to access such evidence as this seems like a consequence and not a preliminary of specific metaethical views. Given this difficulty, why still use probabilities to formalize credentials under moral uncertainty? [McCarthy \(2016\)](#) makes the case that probability is central to ethicist work by pointing out cases in which probability is useful in formalizing a wide range of ethical issues. Whether probabilities are the best way of formalizing the values under moral uncertainty seems uncertain.

Similarly to the most existing literature on moral uncertainty, we shall treat the motifs in first-order moral theories as exogenously given to the decision-making model. Given this, how do we interpret the references in first-order moral theories? We provide a taxonomy that classifies interpretations of normative beliefs along two axes: (i) Cognitivist or non-cognitivist; (ii) Psychological or nonpsychological. The cognitivist and non-psychological approach considers moral uncertainty as uncertainty about moral facts. Hence, having a credence of 0.8 in moral theory  $A$  means having a subjective degree of belief of 0.8 that  $A$  is a true moral theory. The cognitivist and psychological approach views moral uncertainty as uncertainty about one's true desires. On this view,  $p(a) = 0.6$  is equivalent

to saying that an agent believes to degree 0.6 that  $a$  is their most desired moral theory. Both non-cognitivist interpretations view moral uncertainty as uncertainty about perceptual tendencies toward first-order moral theories. The noncognitivist nonpsychological and psychological views differ in that the former considers credences to be expressions of the degree of perceptual tendencies towards believing a moral theory is correct. In contrast, the latter considers them expressions of perceptual tendencies toward a desire for a moral theory to be correct.

### 5.2.3 Measurement and Comparison of Moral Values

Secondly, we need to establish a *measure of value* for the results under different moral theories. For this, we use our utility function,  $u$  defined in [section 5.2.1](#), but instead of this function giving us the utility of particular outcomes, it gives us a meta-normative value of an outcome, which we call *choiceworthiness* [MacAskill \(2014\)](#). Until now, we have assumed that the values of the outcomes are commensurable and comparable. However, this is not obvious. Consider the following actions:

- (i) Tell a friend a harmless lie that will certainly increase their wellbeing
- (ii) Stay Silent

Naive utilitarianism would state that (i) is more morally choice worthy than (ii), and deontology would state that (ii) is more morally choice worthy than (i). However, an agent acting under moral uncertainty must consider the differences between (i) and (ii) in both moral theories. Is it reasonable to state that lying to increase utility is a worse moral wrong under deontology than a moral good under utilitarianism? How do we even compare utility

and deontological obligations? This is the problem *of the intertheoretic value comparisons* (PIVC). This section aims to clarify some of these questions by introducing the concepts of commensurability and comparability of values and applying them to our decision-making framework under moral uncertainty. It also introduces some attempts to resolve this issue.

**Commensurability.** We can call two objects ‘commensurable if measuring them using the same scale of value units is possible. For example, the Eiffel Tower and the Empire State Building are commensurable in height because both can be measured using a cardinal scale such as feet or meters. It is worth digressing slightly here to establish the different measurement classes, as it will be useful for further discussion. There are four types of measurement: nominal, ordinal, interval/cardinal, and ratio. Descriptions of these four types and some examples are shown in the table below.

Measurement type	Description	Examples
Nominal	Items can be categorized into mutually exclusive groups, but there is no order between the categories	City of birth, Gender, Marital status
Ordinal	Items can be categorized and ranked in order, but there is no information about intervals between rankings	Language ability (beginner, intermediate, fluent)
Interval/cardinal	Items can be categorized and ranked, and the magnitude of intervals can be inferred between items. There is no true zero point (that is, a zero on a purely cardinal scale does not reflect an absolute lack of the quantity being measured)	Temperature in celsius or Fahrenheit, test scores
Ratio	Items can be categorized and ranked, the magnitude of intervals can be inferred between items, and there is a true zero point.	Height, weight, age

Table 5.1: TAXONOMY OF COMPARISON VALUES

There is some disagreement about the type of measurement required to establish commensurability. Chang (1997) and Chang (2015) assert that the scale on which the items are placed must be cardinal, whereas other

theorists such as Raz (1986) and Rabinowicz (2022) state that it must only be an ordinal scale. In this second definition, the commensurability of two objects refers to the existence of a relation between them such that one is better than another or equally good. Using this second definition, Hájek and Rabinowicz (2022) claim that we need a more refined understanding of this concept and claim that there are varying degrees of incommensurability. They claim that each decision maker has a set of permissible preference orderings with which to evaluate two objects,  $A$  and  $B$ . This set reflects the variety of criteria with which we evaluate two objects:  $A$  may be better than  $B$  on some of these criteria, but  $B$  may be better than  $A$  on some. Making these objects commensurable is difficult because there is no way to weigh these criteria (i.e., no 'fixed exchange rate' between them). Given this set of permissible preference orderings, two objects are more commensurable (i.e., they have a higher degree of commensurability) when more permissible orderings deliver the same ranking between them. If more preference orderings disagree about how to rank these objects, their degree of commensurability is lower. One way to quantify this is by measuring the proportion of permissible preference orders that rank  $A$  above  $B$  (this is chosen arbitrarily and can be replaced with  $B \succ A$  or  $A \sim B$ ) compared to the total number of rankings.

**Comparability.** Comparability, as defined in Chang (1997), refers to the existence of a "positive, basic, binary value relation that exists between items concerning a covering consideration,"  $C$ . A covering consideration here refers to some variable  $C$  that two items must be compared. For example, we can only compare ice cream and cake if the comparison is

about a variable such as caloric content or tastiness. *Incomparability* occurs when there is no positive, basic, binary value relation between two items concerning a cover consideration,  $C^4$ . *How do the concepts of commensurability and comparability relate to each other?* A possible question is whether incommensurability entails incomparability. D'Agostino (2019) and Anderson (1995) make the case that if values cannot be placed on a single scale (i.e., they are incommensurable), they must be incomparable as alternatives. Whether this is true or not depends on whether the scale needs to be cardinal or merely ordinal. If we require a cardinal scale for values to be commensurable, then it is not true that incommensurability entails incomparability. Consider the following example from Chang (2015): it is implausible that there is a cardinally significant unit of measurement to evaluate the values of justice and mercy. However, it does not seem right to claim that justice is not better than mercy with respect to creating a securepolis than mercy or that mercy is not better than justice with respect to being godly. However, if incommensurability means the nonexistence of even an ordinal measurement scale on which we can place two values, the claim that incommensurability entails incomparability seems more plausible. *Why are incommensurability and incomparability important considerations regarding moral uncertainty?* Here, it is important to distinguish between the commensurability (comparability) of values and bearers of value. The former concerns our ability to compare and place abstract values such as utility, justice, deontic obligations, and beauty on a common scale. The latter concerns our ability to do so with particular

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<sup>4</sup>Readers must note that commensurability and comparability are often used interchangeably in the philosophical literature.

instantiations of these values. In the case of moral uncertainty, we are less concerned with whether it is possible to make claims about the comparative value of different first-order moral theories (such as utilitarianism or virtue ethics) in terms of their moral rightness/choiceworthiness, and more concerned with comparing particular actions and their associated outcomes (the instantiations of first-order moral theories). In this case, the actions and associated outcomes are the bearers of value and the subject of our inquiry under moral uncertainty. The concern for actions and outcomes to be comparable is a result of a 'comparativist' view. This is the view that the comparability of alternatives is necessary to make a justified choice between them. Critics of moral uncertainty treat the problem of intertheoretic value comparisons or incommensurability of values or incomparability as a defeating objection to moral hedging - the practice of taking decisions that maximize expected choiceworthiness of actions, given uncertainty about which first-order moral theory is true. [MacAskill et al. \(2020\)](#) specifies three reasons why intertheoretic comparisons are impossible. First, we can appeal to cases where inter-theoretic comparisons of choice-worthiness differences are impossible, even in cases where the theories are similar (for instance, between utilitarianism and prioritarianism). Second, even if we establish a common unit between theories, inter-theoretic comparisons may be impossible because some theories swamp others<sup>5</sup>. Lastly, we have the arbitrarily uniform argument. Individual moral theories assign values to outcomes in a way that creates unique choice-worthiness up to positive affine transformations. This means that the unit we use to make

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<sup>5</sup>[Hedden \(2016\)](#) consider this objection in the context of comparing totalism and averaging in population ethics



intratheoretic comparisons is, in some fundamental sense, arbitrary. Therefore, it is meaningless to say that one unit of choiceworthiness in one theory is greater than, smaller than, or equal to one unit of choiceworthiness in another. However, several academics have responded by offering solutions to these problems. Lockhart (2000) introduces the Principle of Equity among Moral Theories (PEMT), which states that we should equalize the maximum and minimum degrees of value assigned to options by all moral theories in which an agent has positive credence. Sepielli (2013) notes that this may generate inconsistent comparisons between theories and amends this by stating that we should instead equalize the maximum and minimum conceivable degrees of value. However, many consequentialist theories, for example, admit degrees of value with no conceivable maximum or minimum, so these theories still suffer from PIVC. Sepielli (2009) also introduces the use of ratios of value differences to resolve the problem. This involves normalizing a pair of theories by finding options such that the two theories assign the same ratio of values to the two alternatives. This allows us to establish a "background ranking" of options that the theories share. However, this method is not without problems, as finding such options may only be possible sometimes. ? takes another approach to the problem of incommensurability. Some incommensurable theories might be sufficiently similar to allow for approximate comparisons of the values they assign. The key idea is that, even though these theories use different units of value, we can still judge the rough comparative magnitude of different actions or outcomes. This approximate approach to comparisons might be good enough for making decisions under moral uncertainty. ? suggests that we can avoid the problem of incommensurability by adopting a pluralist

approach. This involves recognizing multiple value dimensions (e.g., utility, virtue, rights) and using these dimensions to guide action. According to Ross, the different value dimensions can be compared as context dependent, allowing for decision-making under moral uncertainty. In conclusion, the challenges of incommensurability and incomparability in moral uncertainty are significant, but various solutions have been proposed. These include normalizing units of value, using ratios of value differences, making approximate comparisons, and adopting a pluralist approach. While there is yet to be a consensus on the best way to address these challenges, these solutions provide a foundation for further research and discussion.

#### **5.2.4 Decision Problems Under Moral Uncertainty**

Having discussed issues with formally representing *moral information*, we can now define a formal decision problem under moral uncertainty using analogs of tools employed in decision making under empirical uncertainty. A formal decision problem under moral uncertainty can be considered a quintuple  $\langle A, T, O, C, p \rangle$ . The following table compares the components of a decision problem under moral uncertainty with their counterparts in a decision problem under empirical uncertainty.

<b>Empirical Uncertainty</b>	<b>Moral Uncertainty</b>
$A$ is a set of options available to the decision-maker	$A$ is set of options available to the decision-maker
$S$ is a set of states of the world	$\mathcal{V}$ is a finite, non-empty set of first-order moral theories.
$O$ is a set of outcomes that depend on $A$ and $S$	similar.
$u : C \rightarrow \mathbb{R}$ is a utility function that represents how good or bad an outcome in $C$ is for the decision-maker	Each $v \in \mathcal{V}$ is a valuation function <sup>6</sup> that corresponds to a specific first-order moral theory. Each valuation function tells us the metanormative value of a particular option and can be written as $v : A \rightarrow \mathbb{R}$ .
$p : S \rightarrow [0, 1] \in \mathbb{R}$ is a probability function that represents a decision-maker's assessment of how likely a particular state of the world is such that	$p : \mathcal{V}_i \rightarrow [0, 1] \in \mathbb{R}$ for each $i \in \mathcal{V}$ is a credence function that represents the decision-maker's degree of subjective belief in a first-order moral theory.

Table 5.2: **FORMAL SETUP OF DECISION PROBLEMS UNDER EMPIRICAL AND MORAL UNCERTAINTY**

To recap, we can define a decision problem under moral uncertainty as a quintuple  $\langle A, \mathcal{V}, O, C, p \rangle$  where:

- $A$  is a set of options available to the decision-maker

- $\mathcal{V}$  is a finite, non-empty set of first-order moral theories
- Each  $v \in \mathcal{V}$  is a valuation function corresponding to a specific first-order moral theory. Each valuation function tells us the metanormative value of a particular option and can be written as  $v : A \rightarrow \mathbb{R}$
- $p : \mathcal{V}_i \rightarrow [0, 1] \in \mathbb{R}$  for each  $i \in \mathcal{V}$  is a credence function that represents the decision-maker's degree of subjective belief in a first-order moral theory

### 5.3 Meta-Ethical Compatibility

We now discuss the metaethical concepts on which such a solution depends and begin by clarifying an important point that needs to be addressed in the current literature. Much can be debated about the meta-ethical status of normative uncertainty: Is there uncertainty about subjective or objective facts? About real or constructed facts?<sup>7</sup> The main point we want to stress is that normative uncertainty is meaningful under different meta-ethical views about value.<sup>8</sup>

**Compatibility with Cognitivism.** The most dominant metaethical approach to normative uncertainty is that of cognitivism. This approach is based on the idea that normativity concerns normative facts. Hence, as in the case of descriptive facts, it is possible to assign truth values to normative judgments and to represent them as probabilistic propositions. Within the

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<sup>7</sup>Such questions should not be conflated with meta-ethical uncertainty presented earlier, which refers to these questions: how *should* normative uncertainty be represented?

<sup>8</sup>I am grateful to John Campbell for discussing this taxonomy in 2017.

cognitivist approach, the distinction lies between "realist" and "nonrealist" interpretations of "value".<sup>9</sup> Within the realist approach, we find two subcategories: "subjective realism" and "objective realism". It follows that normative uncertainty can be interpreted as normative uncertainty about subjective normative facts or as normative uncertainty about objective normative facts.

First, one can find different interpretations of those "subjective normative facts" within the subjective realist approach. The most immediate approach would be to consider being normatively uncertain about one's subjective interests. In particular, the agent would be certain about her "goal achievement" composition but uncertain how much the different options achieve her goal. For instance, the goal might be "material interest", "social justice", or "moral goodness". The uncertainty then relates to what serves her material interests, social justice, or moral goodness. The idea is that normative uncertainty about goal achievement should be immediately plausible. The most fundamental would be to consider being normatively uncertain about one's subjective interest: pursuing material interests and social justice.

Second, within the objective realist approach, normative uncertainty could be "uncertainty about what to do (despite empirical certainty)" without or prior to formulating any goal. Indeed, it could be an uncertainty about the goal itself. After all, when I sit in a chair thinking about what to do next, I am not solving an optimization problem but having uncertainty about the goal itself.

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<sup>9</sup>In this section, we leave aside the minor approach, the non-realist cognitivist approach, since no normative uncertainty theory has been developed upon it.

**Compatibility with Non-Cognitivism.** Noncognitivists agree with error theorists (Mackie (1977), Joyce (2001)) that moral attributes and truths do not exist. Noncognitivists argue that moral assertions are not in the business of predicting qualities or making statements that may be true or untrue in any meaningful sense (Van Roojen (2004)). Furthermore, noncognitivists argue that moral sentences are not often used to convey states of mind that are beliefs or cognitive in the same way as beliefs are. Instead, they communicate noncognitive feelings like wishes, acceptance, or displeasure. Based on the noncognitivist approach, normative uncertainty concerns one's desires or tastes. Moreover, if we were to use probability theory to formalize the normative uncertainty problem, then probabilities would not stand for beliefs but rather for some psychological trends to certain desires and tastes. To align with the scientific limits imposed by measurement techniques and other empirical requirements, this approach is the one most likely to be compatible with the work done by quantitative empirical social scientists and economic theorists, who specifically perform field studies or design behavioral economic models (mainly aimed at being tested outside the experimental lab). Such noncognitivist interpretation allows them to model (and test) meaningfully (empirically speaking) what philosophers refer to as "moral judgments" or "moral beliefs" through the use of probability measure theory (Ok et al. (2012)).

**Compatibility with Hybrid Views.** At the midway point between cognitivism and noncognitivism presented above lies this more complex branch of the metaethical view: metaethical constructivism. According to this view, as normative truths exist, they are not established by normative

facts independent of what rational agents would agree to under certain choice conditions (Bagnoli (2011)). This viewpoint is interesting and complex to grasp. It promises to explain how normative facts are objective and independent of our actual judgments, while being binding and authoritative for agents. Constructivism bridges this gap between objectivity and the role of agency by relying on the design of an idealized or hypothetical process of rational deliberation. This approach has been relevant in developing thought experiments in the history of moral philosophy, such as the veil of ignorance proposed by Harsanyi (Harsanyi (1995)) and Rawls (Rawls (1971a)), who explicitly coined the term.

Based on this constructivist approach, normative uncertainty would be interpreted as follows. Given that agents evolve under a specific moral agency, what should they do when uncertain about the right course of action?

## 5.4 Individual Approaches to Moral Uncertainty

This section deals with approaches to moral uncertainty in which individual decision-makers face decision problems of the form discussed in 5.2.1. For readers interested in the early work on individual approaches, we recommend looking at Oddie (1994), the first informal treatment of normative uncertainty in the contemporary literature. The paper develops a basic framework for acting under moral uncertainty, which states that actions are only morally justifiable if they have the highest *expected* ethical

value (more on this later). When applied to human embryo experimentation, the author concludes that performing lethal or risky experiments on human embryos is morally justifiable only if doing so on non-consenting persons to obtain comparable goods is also morally justifiable.

### 5.4.1 My Favorite Theory

One intuitive approach to moral uncertainty is suggested by Gracely (1996) and defended by Gustafsson and Torpman (2014), where an agent simply chooses the recommendation of the first-order moral theory in which they have the highest credence. This is known as the **My Favorite Theory** (MFT) approach. We can define this principle as follows:

#### Definition 1 (My Favourite Theory)

*If the theory in which a decision maker has the highest credence states that  $a_1$  is more choice worthy than  $a_2$ , then they should choose  $a_1$  over  $a_2$ .*

Consider the following decision problem:

	$v_1$ (60%)	$v_2$ (30%)	$v_3$ (10%)
$a_1$	10	-10	5
$a_2$	-10	10	0

According to MFT, the correct course of action is to choose the option  $a_1$  because the theory in which the decision maker has the highest credibility assigns a higher overall value level to  $a_1$  than to  $a_2$ . Despite being a simple



metanormative decision rule, MFT has some critical drawbacks. One of such drawbacks is that it violates the principle of *dominance*.

**Definition 2 (Dominance)**

*If  $a_1$  is more valuable than  $a_2$  in some theories and equally valuable according to all other theories considered, then  $a_1$  is more appropriate than  $a_2$ .*

To demonstrate this, consider the following example:<sup>10</sup>

	$v_1$ (40%)	$v_2$ (60%)
$a_1$	Permissible	Permissible
$a_2$	Impermissible	Permissible

MFT tells us that choosing either  $a_1$  or  $a_2$  would be appropriate as  $v_2$ , the theory in which the agent has the highest credence, considers them equally valuable. However, this violates dominance, as an option  $a_2$  is permissible under  $Theory_{v_2}$  but impermissible under  $v_1$ , whereas an option  $a_1$  is permissible under both moral theories and therefore should be more appropriate. Intuitively, dominance is a desirable principle for a decision rule because options that 'play it safe' (i.e., that there is consensus about their appropriateness between moral theories) should be prioritized given uncertainty about first-order moral theories. [Gustafsson and Torpman \(2014\)](#) suggests adjusting MFT to avoid violating the principle of dominance.

<sup>10</sup>This example is taken from [MacAskill et al. \(2020\)](#) p.40. Note that, unlike the previous example, it does not use cardinal measurements of the overall value.

Another drawback of MFT is that it suffers from the *problem of individuation theory*. Consider a decision-maker who is uncertain about a form of deontology and utilitarianism. We can represent this problem in the following way:

	<b>Deontology (40%)</b>	<b>Utilitarianism (60%)</b>
$a_1$	Impermissible	Permissible
$a_2$	Permissible	Impermissible height

In this case, MFT would straightforwardly recommend that she choose the option  $a_1$  because the moral theory in which she has the highest credence (utilitarianism) considers  $a_1$  permissible and  $a_2$  impermissible. She then learns about the distinction between act- and rule-utilitarianism. There are now three distinct theories about which she is uncertain. The decision problem can now be conceived as follows:

	<b>Deontology (40%)</b>	<b>Act Utilitarianism (30%)</b>	<b>Rule Utilitarianism (30%)</b>
$a_1$	Impermissible	Permissible	Permissible
$a_2$	Permissible	Impermissible	Impermissible

Because she has evenly split her credence in utilitarianism between act and rule utilitarianism, deontology is now the theory with the highest credence. The most appropriate action under MFT is option  $a_1$ . This seems arbitrary, making the problem of theory individuation a serious objection to MFT.

### 5.4.2 My Favorite Option

Another related individual approach is the **My Favorite Option** (MFO) approach<sup>11</sup>. This approach suggests that a decision-maker considers options instead of moral theories to decide the most appropriate action. More formally, we can define MFO as follows.

**Definition 3 (My Favorite Option)**

*$a_1$  is an appropriate option if and only if the decision maker thinks that  $a_1$  is the option or one of the options that are the most likely to be permissible.*

In the above example, MFO would suggest that the decision maker choose the option  $a_1$  as it is the most likely to be permissible under both moral theories.

### 5.4.3 Maximise Expected Choiceworthiness

More important is the contribution of [MacAskill \(2014\)](#), which proposed the innovation of using formal decision rules from decision theory that are generally used for individual choices under empirical uncertainty to design an individual account of the normative uncertainty thought experiment. This approach, known as **Maximize the Expected Choiceworthiness** (MEC), has become the dominant approach to decision making under moral uncertainty. We can define expected choiceworthiness as follows:

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<sup>11</sup>This approach is suggested in [Lockhart \(2000\)](#).

**Definition 4 (Choiceworthiness)**

*The expected valuation of an option  $a \in A$  is  $\sum_{i=1}^n p_i v_i(a)$  for each  $v \in \mathcal{V}$  where there are a finite number of moral theories under consideration.*

MEC, then, can be defined as:

**Definition 5 (Maximise Expected Choiceworthiness)**

*MEC:  $a_1$  is an appropriate option if only  $A$  has the highest expected choiceworthiness relative to other options.*

The key feature of MEC as a decision rule is that, unlike MFT and MFO, it effectively incorporates information about credences over first-order moral theories *and* information about differences in choice-worthiness levels assigned by theories to outcomes. This results from a close analogy, defended by MacAskill (2014), between ideal decision-making models under empirical uncertainty (that is, expected utility theory) and decision-making under moral uncertainty. MacAskill motivates this analogy by claiming that propositions about the state of the world about which decision makers are uncertain can be divided in many different ways: necessary vs. contingent, a priori vs. a posteriori, et cetera. The distinction between empirical and normative propositions is merely one of such distinctions. Since we do not change the decision theory used according to how we divide up other propositions, we need not do so with propositions that deal with moral uncertainty.

An important caveat to using MEC as a decision rule is that it only applies when certain formal conditions are met. First, we must assume that we have well-defined credences over our set of first-order moral theories, similar to how standard expected utility theory expects us to have well-defined credences over propositions about the empirical state of the world. See 5.2.2 for more discussion on this point. Second, we must assume cardinality and inter-theoretic comparability of choice-worthiness for MEC to be feasible. This may be a compelling objection to MEC as a decision rule, depending on how strong one finds the view that cardinal, inter-theoretically comparable choice-worthiness is plausible. See 5.2.3 for more on this point.

Another important objection to MEC is that of *fanaticism*. First raised by Ross (2006), fanaticism is the objection that MEC allows for dominating theories with incredibly high stakes. MacAskill (2014) and MacAskill and Ord (2020) cite an example that demonstrates this objection. Take a decision-maker, Doug, who is unsure between two moral theories, utilitarianism and an absolutist non-consequentialist theory. Doug is faced with the decision to either lie and save 10 people from dying or refuse to lie and fail to prevent the death of 10 people. Both theories agree that saving people is good and assign this outcome a positive value level. Both theories agree that lying is bad, but only the absolutist nonconsequentialist theory considers lying bad and never permissible. We can represent the differences in these valuations in the following way:

	Utilitarianism ( $p$ )	Absolutist Non-Consequentialism ( $1 - p$ )
<i>Lie to save 10 people</i>	$+10 - 0.1 = +9.9$	$-\infty$
<i>Don't lie</i>	0	0

This presents a problem for absolutist theories because if some actions are wrong under these theories, a natural way to represent this in our framework is to assign an overall value of  $-\infty$ . However, this means that, no matter how small Doug's credence in the absolutist theory is (supposing that it is nonzero) and/or how big the value of lying to save lives is (supposing that this value is finite), MEC recommends that Doug never lie. The inability to consider absolutist theories seems like an undesirable feature of MEC as a decision rule.<sup>12</sup>

## 5.5 Collective Approaches to Moral Uncertainty

A distinct class of approaches to moral uncertainty involves the use of formal decision rules from social choice theory and game theory to guide decision making. The key distinction between these approaches and those discussed in the previous section is that they involve modeling first-order normative theories as agents (separate from the decision maker) engaging in strategic interactions. Depending on the approach in question, they can

<sup>12</sup>It must be noted that this is not a problem exclusive to moral uncertainty. Even models of empirical uncertainty struggle with accommodating propositions over states of the world that posit infinite value (for instance, the existence of an infinite heaven/hell in Pascal's wager). See Hájek (2003) for more discussion on issues with infinity.

trade, bargain, vote, and ultimately guide the actions of the main decision maker by aggregating their preferences. Therefore, this class of approaches is called ‘collective approaches’ to moral uncertainty.

### 5.5.1 Why collective approaches?

MacAskill (2014) and MacAskill (2016) motivate this class of approaches by presenting them as solutions to the twin problems of intertheoretic comparability and merely ordinal theories discussed in Section 5.2.3. These papers highlight two key similarities between social choice theory and decision making under moral uncertainty that make the use of tools developed under the former relevant and useful. First, they have a similar formal structure. Social Choice Theory (as conceived by Amartya Sen in Sen (1970)) deals with aggregating the preferences of individuals in a group represented by sets of utility functions into a single ‘social’ utility function that represents the preferences of the group as a collective. Similarly, moral uncertainty theories aim to aggregate the recommendations of individual theories represented by a set of choice-worthiness functions into a single choice-worthiness function (which MacAskill calls an *appropriateness function*). Second, the theory of social choice aims to reconcile the competing preferences of individuals to find the best outcome for a group. Similarly, theories of moral uncertainty aim to do so with first-order normative theories. However, there are some key differences. For example, unlike in social choice theory, where methods of aggregating preferences that are axiomatized under different assumptions about measurability and comparability (called informational assumptions) constitute separate theories, any one theory of moral uncertainty will have to accommodate

theories that may vary about their informational assumptions (i.e., some may be intertheoretically comparable and cardinal, whereas others are not). However, the theory of social choice still provides us with ways to develop meta-normative theories that avoid the acute problems of inter-theoretic incomparability and merely ordinal theories. These mainly come in the form of work in voting theory, the branch of the social choice theory that deals with preferences that are ordinally measurable and noncomparable. [MacAskill \(2016\)](#) outlines some possible voting systems before outlining a defense for the Weighted Borda count as the ideal voting system.

### 5.5.2 Some Voting Systems

Firstly, we can apply the *My Favorite Theory* and *My Favorite Option* presented in the individual approach section to collective approaches to moral uncertainty. This approach recommends that a decision-maker choose the option with the highest choice-worthiness level given by the theory in which they have the highest credence. In the context of voting theory, we can define them as follows:

**Definition 6 (My Favourite Theory as a Voting Theory)**

*If the theory in which a decision maker has the highest credence states that  $a_1$  is more choice worthy than  $a_2$ , then they should choose  $a_1$  over  $a_2$ .*

**Definition 7 (My Favourite Option as a Voting Theory)**

*If a decision maker has a higher credence in  $a_1$  being maximally choiceworthy than in  $a_2$  being maximally choiceworthy, they should*



*choose  $a_1$  over  $a_2$ . If there is equal credence in  $a_1$  and  $a_2$  being maximally choice worthy, then choosing  $a_1$  is equally as appropriate as choosing  $a_2$ .*

These approaches are inadequate because they fail to consider rankings of options that are not maximally choice-worthy, so minute differences between credences in theories can lead to radically different conclusions about what to do. However, some of these problems can be fixed if we restrict our focus only to a class of voting systems known as *condorcet extensions*.

These are systems in which the following condition is met: If for every option in a decision maker's option set, most theories prefer  $a_1$  to  $a_2$ , the decision maker chooses  $a_1$ . In this case,  $a_1$  is the *condorcet winner*. MacAskill introduces the *Simpson-Kramer* method as one such voting system. To understand this method, we must introduce the magnitude of a defeat. In a pairwise comparison between options  $a_1$  and  $a_2$  where  $a_1$  defeats  $a_2$ , the magnitude of this defeat is the difference between the credence of a decision maker that  $a_1$  is more choice worthy than  $a_2$  and their credence that  $a_2$  is more choice worthy than  $a_1$ . We can now define the Simpson-Kramer voting theory as follows:

**Definition 8 (Simpson-Kramer Theory)**

*$a_1$  is more appropriate than  $a_2$  if and only if, in a round-robin tournament, the magnitude of the largest defeat of  $a_1$  is smaller than that of the largest defeat of  $a_2$ . They are equally appropriate if these magnitudes are equal.*

This method is also inadequate because increasing one's credence in the theory that considers the optimal choice-worthy outcome the most appropriate increases the magnitude of its largest defeat and can cause it to no longer be the most appropriate option. This is not desirable. Increasing one's credence in naive utilitarianism should make the option to pull a lever to save five people and sacrifice one more attractive, not less. The author introduces one final voting system he deems the most suitable for making decisions under moral uncertainty, the *credence-weighted Borda rule*. Before defining this voting system, we must first define the following terms.

The option *borda score* for an option,  $a_1$ , given a theory  $\mathcal{V}$ , is the number of options in the option set that are less choice worthy than  $a_1$  (according to  $\mathcal{V}$ ), minus the number of options in the option set that are more choice worthy than  $a_1$  (according to  $\mathcal{V}$ ). We can add credence to this score and calculate the Borda score based on  $A$ 's *credence weighted* by calculating, for all theories considered, the Borda score of  $A$  multiplied by the credence of the decision maker in each theory. For example, consider two theories,  $v_1$  and  $v_2$ , in which an agent has the credentials of 70% and 30%, respectively. There are 3 options -  $a_1$ ,  $a_2$ , and  $a_3$  with the following rankings:  $v_1$  ranks the options  $a_1 > a_2 > a_3$ ,  $v_2$  ranks the options  $a_3 > a_2 > a_1$ . The following table shows the Borda score for each option and the Borda score based on credence.

Options	Borda Score under $v_1$ (70%)	Borda Score under $v_2$ (70%)	Credence-Weighted Borda Score
$a_1$	$2 - 0 = 2$	$0 - 2 = -2$	$(0.7 \times 2) + (0.3 \times -2) = 0.8$
$a_2$	$1 - 1 = 0$	$1 - 1 = 0$	$(0.7 \times 0) + (0.3 \times 0) = 0$
$a_3$	$0 - 2 = -2$	$2 - 0 = 2$	$(0.7 \times -2) + (0.3 \times 2) = -0.8$

We can now define the Borda rule in the context of moral uncertainty as follows:

**Definition 9 (Borda Rule)**

***Borda Rule:**  $a_1$  is more appropriate than  $a_2$  if it has a higher credence-weighted Borda score than  $a_2$ .  $a_1$  and  $a_2$  are equally appropriate if they score similarly.*

Therefore, using our example above,  $a_1$  is more appropriate than  $a_2$  is more appropriate than  $a_3$ . Thus, the Borda rule suggests that the decision maker chooses option  $a_3$ .

## Chapter 6

# An Operational Perspective of Ethics

In [Chapter 6](#), we present the particular perspectives of our doctoral thesis. [Section 6.1](#) introduces the operationalist philosophy of the sciences on which we rely to conduct our research. It also gives an overview of the recent operationalist evolution in our philosophy profession. [Section 6.2](#) introduces our agenda to conduct operational research on ethics and critical thinking in the human and social sciences. [Section 6.3](#) presents the specific structure of our thesis.

## 6.1 For an Operational Approach to Ethics

The program and term "operationalism" itself were initiated and coined by the American physicist and Nobel Laureate Percy Williams Bridgman in the last century (Bridgman et al. (1927)). However, its conceptualization was already present among pragmatic philosophers such as Peirce (Peirce (1997)) and Dewey (Dewey and Bentley (1960)), as well as logical positivist philosophers such as Karl Popper (Popper (2014), Popper (2005)). The practice of operationalism can be traced back at least to modern philosophers of the 18th century, such as Leibniz (Leibniz et al. (2000)), Pascal (Pascal (2008)), and Descartes (Descartes (2001)). This tradition continued with economic philosophers and economists, known as "Marginalists," such as Marshall (Marshall (2009)), Walras (Walras (2013)), and Pareto (Pareto (1896)) in the 19th and early 20th centuries, culminating in the seminal work of Paul Samuelson (Samuelson (1948)).

My view here can be supported by two observations within the disciplines of the social sciences and philosophy.

First, one can notice the tremendous development of formalism within areas of philosophy other than logic and philosophy of mathematics. Formalism can be defined as the use of mathematical notation, vocabulary, and argumentative technical apparatus (defining propositions, theorems, and their associated proofs) to convey a philosophical argument. Although it is not yet obvious whether it is a win or a loss for the future of all branches of philosophy<sup>1</sup>, we can say that formalism in moral philosophy is already a

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<sup>1</sup>See, for instance, the very recent article by Gilboa et al. (2019).

step towards operationalizing ethics since it becomes possible to read and compare different moral codes within the same framework given explicit assumptions regarding the commensurability of values.<sup>2</sup> Furthermore, such a formalism facilitates bridges between different disciplines, particularly between humanities<sup>3</sup>, cognitive sciences<sup>4</sup>, and computer sciences<sup>5</sup>, which are used to develop and implement not only individual but also collective moral actions. In particular, such a language enables the rapid integration of a specific philosophical view into a formal economic model and macroeconomic simulations, which can then be used to inform policymaking<sup>6</sup>.

Second, this pragmatic approach may stem from a change in professional norms regarding the practice of philosophy itself. The contemporary approach to normative uncertainty is innovative in the following sense. Classical and modern moral philosophy has focused on developing particular complete moral philosophies, each claiming to be *the* one to be followed. Consequently, such philosophies remain in the competition, and reaching a consensus on a set of actions to implement seems challenging. Therefore, it makes the implementation of ethics, *ideal but non-operational*. By contrast, the contemporary approach no longer aims to develop *the* moral code to follow but rather to reach a pragmatic consensus on

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<sup>2</sup>As already discussed in Vuillemin (1986). For a contemporary treatment in formal ethics, see Chang (1997), Chang (2014) for more ethical treatment, and Dietrich and List (2017), Dietrich and List (2016) for more formal treatment.

<sup>3</sup>Including Philosophy, Philology, and History

<sup>4</sup>Including Economics, Marketing, and Management Sciences

<sup>5</sup>Including Machine Learning

<sup>6</sup>As we aim to show in this thesis.

particular decision problems, rendering ethics *non-ideal but operational*. In particular, the concept of "better" social justice promoted extensively by Amartya Sen (Sen (2009)) can illustrate this change. Sen makes the strong point that we should stop thinking about ideal concepts of social justice that aim for infinite ethical fairness but are inaccessible in practice and instead favor a pragmatic approach that aims for small ethical gains in terms of ethical fairness accessible in practice. Hence, in this second approach we consider normative uncertainty.

What are the practical consequences of such an evolution in the ethics profession?

The promises offered by classical and modern philosophy or contemporary ideal theories of justice may appear more attractive, from an ethical point of view, than those offered by contemporary approaches for the following reason. The former promises to the believer, who would give their full credence, a perfect state of morality if they always follow their recommendations in all cases. On the other hand, because of their limited ambitions, the latter promises nothing more than the guarantee to act morally in a specific case, with 'morally' defined minimally.

However, the main underlying question is What are the chances of correctly interpreting the ideal moral code correctly regarding specific actions and following this code consistently in all situations? Hence, by comparison with the veil of ignorance, while it could appear more attractive due to its complete elimination of personal bias in assessing moral situations, it would also seem highly improbable to make decisions under the veil of ignorance.

Because the greater the distance between our ethical self and our biographical self, the more accurate (or unbiased) our value judgments will be, the potential ethical gain from using the experience of normative uncertainty appears to be less than the potential ethical gain from using the veil of ignorance. We assume a minimum distance between these selves for normative uncertainty, whereas, for the veil of ignorance, we assume a maximum gap between these selves. On the other hand, the normative uncertainty experiment appears to be more practicable than the veil experiment for the reasons indicated above. In other words, the probability of realizing the ethical gain of normative doubt is greater than the probability of achieving the ethical benefit of ignorance. Consider the following thought experiment: By imagining a computation of the expected ethical gain (measured in terms of the ethical correctness achieved) of each of these thought experiments, we should not take this "computation" literally, but rather consider it as a schematic representation of thought that helps us compare the ethical relevance of each of these experiments.

These thought experiments are used in both the history of moral philosophy and modern philosophy to guide the reader through the ideas of the philosopher. The reader can, for example, consult the works of the famous English philosopher John Locke<sup>7</sup> and German philosopher G. Leibniz<sup>8</sup>. Closer to us, the reader can refer to the entire literature at the crossroads between moral philosophy and economic philosophy known as "formal ethics," which appears to be in continuity with these philosophers in terms

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<sup>7</sup>See the first theory of his *Essays* in Locke (1975) and also insightful discussions on this by Gibson (1896), Youngren (1992)

<sup>8</sup>See Piro (1999), Leibniz et al. (2000)



of formal methodology and the pursuit of moral knowledge.<sup>9</sup> In our case, the calculation of this expected ethical gain is as follows: the probability of success of the experiment multiplied by its potential gain. As a result, when comparing the projected ethical gains of each thought experiment, the one that involves normative uncertainty appears to be larger than the one that uses veils of ignorance in the aggregate.

## 6.2 Operational Ethics: A Global Research Agenda

Our pluridisciplinary research agenda goes beyond our thesis in philosophy here. We present how we conceive it and which specific parts our thesis tackles. We must demonstrate the following points to persuade the reader that this ethical calculation is valid and to help them establish their value judgments based on their own experiences with normative uncertainty.

First, we must demonstrate that the experience of normative uncertainty is both plausibly conceivable and real, that is, that it is a natural and empirical reality. By natural fact, we mean a thought experiment that is reasonable for men to conduct in light of their moral agency<sup>10</sup> and the social environment. In particular, we must demonstrate why it is impossible to deliberate without taking into account our sociological or psychological identities, as well as how normative uncertainty can mitigate the impact of these

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<sup>9</sup>See all the past events, contributions, and philosophers associated with this field here: [formal ethics](#).

<sup>10</sup>The expression "moral agency", aims at describing a subset of ontology in a moral context: the being taken in the perspective of its rational and emotional faculties naturally mobilized in its moral activities.

identities on ethical deliberation, which already represents significant ethical advancement. By "empirical fact," we refer to a thought experiment that can be observed and measured. In particular, if this experiment already exists, that is, if individuals are actually experiencing it, it may be easier to persuade those who are unsure to adopt this thought experiment as an ethical principle and assess the ethical advantages it produces.

Second, we must demonstrate that the probability of successfully using this experiment in practice to obtain ethical advantages is substantial. The ability to concretely use this experience at the level of deliberating as individuals and as a society in a situation of empirical uncertainty is particularly important, as this environment corresponds to our most familiar deliberative context.

Third, we need to demonstrate that normative uncertainty can result in potential ethical gains. In particular, we must demonstrate that making decisions in the face of normative uncertainty ensures greater impartiality and transparency than making decisions in the absence of normative uncertainty. Additionally, we must consider the implications of various choices and the values that are associated with them. It is difficult to quantify and objectively measure the ethical benefits of a choice in the field of ethics. This means that proving why we should follow one ethical principle over another in a scientific manner is a challenging task. However, interdisciplinary disciplines such as welfare economics, which are situated at the nexus of political philosophy, sociology, and mathematics for social sciences, have emerged in order to investigate these challenges. As a general rule, in welfare economics, we quantify the ethical benefits of a

choice by assessing the social welfare consequences of the action taken (and thus of the chosen judgment that preceded that action). To summarize, if we arrive at the same alternatives when selecting under normative uncertainty as we do when deciding under normative certainty, then the already satisfactory ethical benefit is impartiality and transparency. Otherwise, we would not only have such an ethical benefit, but also a recommendation for an alternative course of action.

### **6.3 The Structure of the Dissertation**

As mentioned in our abstract, our dissertation is made up of three parts. We can extend it now.

Part I explores the evaluation of options and the making of decisions under normative uncertainty through formal languages. In this part, the readers will find a methodology from philosophical decision theory to evaluate options and make decisions under normative uncertainty, given rational and ethical impartial constraints. To simplify this complex problem, we make the metaphysical assumption that “values” can be numerically meaningful *per se*. That is to say, meaningfully attaching a numerical value to a moral value to quantify its importance, relative to other values or agents or absolutely. Building on this assumption, we provide a comprehensive framework to deal simultaneously with empirical uncertainty and normative uncertainty: given an empirical-normative information parameter and given the chosen moral values held by the agent, she ends up with four different decision rules. The main takeaway is whether one should morally be risk neutral under normative uncertainty. We suggest an

alternative: we should morally be risk-impartial rather than risk-neutral, in a sense that is specifically defined.

Part II explores how to describe normative uncertainty through empirical methods. In this part, readers will find a two-step methodology from survey sciences to elicit moral judgments and diverse preferences under normative uncertainty. We show how meta-ethical positions can shape the scales of normative uncertainty and their interpretations. Besides, as expected by normative ethics, ethical dilemmas do not have clear answers, but on the contrary, citizens show real difficulty in solving them by exhibiting normative uncertainty.

In summary, we can suggest different ways to read our thesis, depending on your interest. First, readers interested in philosophical decision theory, ethics, and political philosophy could be more interested in Part I. Second, readers interested to see how philosophy and applied ethics can be helpful for empirical investigation may refer to Part II.

## **Part III**

# **DECISION-MAKING UNDER NORMATIVE UNCERTAINTY**

## Abstract

In **Part III**, we explore formally how to evaluate options and make decisions under normative uncertainty. **Chapter 7** starts by posing the standard framework of normative uncertainty. **Chapter 8** elaborates two objections against this framework. **Chapter 9** introduces a new framework to answer both objections: *Expectationalism under Complex Uncertainty*. **Chapter 10** describes four evaluation modes and their expectational theories within this new framework. **Chapter 11** shows that the evaluation mode determines the risk attitudes underlying the (meta)evaluations. **Chapter 12** defends a particular theory within this framework, the *partial value theory*. **Chapter 13** provides a taxonomy of information concepts. **Chapter 14** generalizes the evaluation modes and proposes a general framework of complex uncertainty: *General expectationalism under complex uncertainty*.

## Chapter 7

# The Standard Framework of Normative Uncertainty

In [Chapter 7](#), we start by presenting the standard framework of normative uncertainty. [Section 7.1](#) introduces the objects to be evaluated under normative uncertainty. [Section 7.2](#) introduces the valuations used to evaluate these objects. [Section 7.3](#) discusses an underestimated assumption made in the standard framework of normative uncertainty regarding the *kind* of values on which valuations and meta-values rely to operate.

[Section 7.4](#) introduces the beliefs that agents have about valuations.

[Section 7.5](#) introduces the meta-valuations, which combine the beliefs and the valuations in a specific way to determine an ‘overall expected value for each object. [Section 7.6](#) discusses another underestimated assumption: the *comparability* of values on which valuations and meta-valuations rely to operate.

## 7.1 The Objects of Evaluation : Option

**Section 7.1** introduces the objects to be evaluated under normative uncertainty.

We consider a nonempty set  $A$  of objects of evaluation, called ‘*options*’. Depending on the philosophical problem, these options could have a different status. On the one hand, they could be seen as *propositions*, where the agent has to evaluate and choose between different propositions to express or believe in (Ramsey (1929), Jeffrey (1990)). For example, choosing between “I believe in God” or “I do not believe in God”.

On the other hand, they could be seen as *actions*, where the agent has to evaluate and choose between different actions to perform (Von Neumann and Morgenstern (2007), Savage (1954)). These actions can be taken at the individual or collective level. For example, the question “Should I eat meat or not?” lies at an individual level, while the action that answers the question “Should we invest more public funds to tackle climate change now or later?” lies at a collective level. The most common interpretation of these options in the philosophical literature has been, so far, “actions”.<sup>1</sup>

## 7.2 Local Evaluations: Competing Valuations

**Section 7.2** introduce the valuations used to evaluate these objects.

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<sup>1</sup>In this standard framework of normative uncertainty, we leave open whether options contain empirical risk. We come back to this question in Chapter 8.



The options have an uncertain value. Following the expected value approach, our notion of value is absolute and not comparative (ordinal). We therefore represent a possible standard of evaluation by a function  $v$ , called a *evaluation*, assigning to each option  $a$  in  $A$  a value  $v(a)$  in  $\mathbb{R}$ . The agent hesitates between certain valuations. Let  $\mathcal{V}$  be their set, formally a finite nonempty set of functions from  $A$  to  $\mathbb{R}$ . Let us give moral examples without suggesting a restriction to moral choice.

Normative uncertainty comes in two species: mere ‘normative parameter uncertainty’ and fundamental ‘normative model uncertainty’<sup>2</sup>. Therefore, in the latter case,  $\mathcal{V}$  could contain a utilitarian, an egalitarian, and some deontological valuation. Alternatively, in the former case,  $\mathcal{V}$  could consist of similar valuations which differ only in a parameter: prioritarian valuations with different degrees of prioritarianism, or egalitarian valuations with different degrees of inequality-aversion<sup>3</sup>, or intertemporal well-being valuations with different discounting of future well-being, or valuations (of risky options) with different degrees of risk-aversion, etc. In such parametric examples, normative uncertainty boils down to uncertainty about the correct parameter value: the correct amount of prioritarianism, inequality aversion, discounting, risk aversion, etc.

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<sup>2</sup>A similar distinction is made in other fields, especially statistics and macroeconomics (e.g., Hansen and Sargent (2001)).

<sup>3</sup>As we will consider in our Part III in welfare analysis and economic policies.

## 7.3 Integrating Rational Uncertainty : For vNM Values and Beyond

**Section 7.3** discusses an underestimated assumption made in the standard framework of normative uncertainty, regarding the *kind* of values on which valuations and meta-valuations rely to operate.

Earlier work on moral uncertainty has often restricted attention to vNM valuations. This can be legitimate as a working assumption for decision-making under moral uncertainty. However, we wish to overcome this restriction by addressing normative uncertainty in a more general way through a general framework of decision making under normative uncertainty.

A valuation  $v$  in  $\mathcal{V}$  could have the notorious von Neumann-Morgenstern property: it could ‘be vNM’. Being vNM means evaluating options  $a$  in  $A$  by the expected value of the result:  $v(a) = \sum_{x \in X} a(x)v(x)$ .

Valuations of the vNM type could also be called ‘expectational’, but in a different sense from that of expectational *meta*-valuations. A vNM-type valuation is ‘expectational in its response to *empirical* uncertainty – the only sort of uncertainty faced by a first-order valuation. In this paper, ‘Expectationalism refers to a meta-valuational approach.

Ever since the Harsanyi-Sen debate, it has been controversial whether the vNM property is a necessary property of a coherent valuation or a coincidental property that may or not hold. The Harsanyi-Sen debate is a debate about whether an ethically relevant notion of utility, especially one

relevant to utilitarianism, is of vNM type, as is defended by Harsanyi and rejected by Sen.<sup>4</sup> Harsanyi's (Harsanyi (1955)) famous theorem on additive social welfare is based on vNM-type utility. Depending on whether utility in the utilitarian sense is of vNM type, this theorem does or does not pertain to utilitarianism.

The framework introduced in this chapter is 'standard because it is ecumenical. Indeed, the agent could be utterly certain that the correct value is of vNM type, by having positive credence only in vNM-type valuations; or be utterly certain of the opposite, by having positive credence only in nonvNM-type valuations; or be uncertain about the issue by having positive credence in both types of valuation.

Being ecumenical is important because even if we (as philosophers) were certain that the true value is some type, the agent we model might not share this certainty. We should, for instance, not assume that  $\mathcal{V}$  contains only vNM-type valuations or only nonvNM-type valuations; this would restrict the model to very special agents who are *certain* that value is of vNM-type or *certain* that value is not of this type, unlike most or all philosophers interested in the vNM property.

A deeper methodological issue is at stake. The field of normative uncertainty is engaged in meta-normativity. Thus, it should avoid prejudging first-order normative questions. It should take people's *actual* normative beliefs and uncertainties at face value (without 'forbidding some of them), however non-ideal or 'mistaken' they might be and tell people

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<sup>4</sup>If readers want to know more about the debate they can consult Broome (1991), Weymark (1991), Nissan-Rozen (2015a), Fleurbaey and Mongin (2016), Greaves (2017), who present divergent analyses of the debate.

how to respond to their nonideal normative beliefs. Even if the true value was necessary of the vNM type, as some philosophers argue, we should not assume the agent is aware of this. This being said, the (very common) restriction to vNM-type valuations can sometimes be legitimate as a working assumption for applications.<sup>5</sup>

In this part, we avoid this restriction, as our aim here is to provide the most comprehensive set of decision rules in the event that we would be able, in applied research, to work with more a general assumption than the vNM one.

## 7.4 Credences In Valuations: For Moral Realism and Beyond

Section 7.4 introduces the beliefs that agents hold over the valuations.

You assign to each valuation  $v$  in  $\mathcal{V}$  a probability  $Pr(v) \geq 0$ , where

$$\sum_{v \in \mathcal{V}} Pr(v) = 1.$$

Economists distinguish between ‘risk’, in which probabilities are (in some sense) objective, and ‘uncertainty’, in which they are subjective. All probabilities, of outcomes or valuations, are exogenously given in our model. Technically, this makes our framework one of risk, not uncertainty. But one can *interpret* probabilities subjectively. Regarding valuations, our term ‘credence’ already suggests a subjective interpretation. Subjective probabilities may be unobservable, which is why economists feel uncomfortable with having subjective probabilities as model primitives

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<sup>5</sup>As we shall assume it for simplicity in our applied work in ??.

rather than as ‘outputs of characterization theorems such as Savage’s Theorem. In this thesis, taking an economic philosophy approach, we do not mind subjective probabilities as model primitives, which allows us to investigate the different meta-ethical interpretations below.

From Section 5.3, we know that there is a meta-ethical taxonomy and, as such, a taxonomy interpretation of this probability. While the recent literature seems to condemn a noncognitivist approach to normative uncertainty, we suggest below how to integrate such an approach in our framework.

The two main interpretations would be the following. On the one hand, from a cognitivist approach,  $Pr(v) = \frac{1}{2}$  means believing to the degree  $\frac{1}{2}$  that  $v$  represents true value. On the other hand, expressionistically,  $Pr(v) = \frac{1}{2}$  means to be to degree  $\frac{1}{2}$  in a state of desires represented by  $v$ . N.B.:  $v$  now represents a desire function, not a value function, and  $Pr$  represents the degree of tendency, not the degree of belief.

In more detail, we note that there are  $2 \times 2 = 4$  types of normative uncertainty, since (i) the attitude in question can be of belief type (cognitivism) or not (non-cognitivism), and (ii) the object or content of the attitude can be a normative proposition or a psychological state<sup>6</sup> Below, we propose these four ways to interpret probability  $Pr(v)$ .

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<sup>6</sup>As presented in our introductory chapter.

## Cognitivist interpretation of Credences

We propose two main cognitivist interpretations of  $Pr(v)$ : a *cognitivist & non-psychological* interpretation and a *cognitivist & psychological* interpretation.

**Cognitivist & non-psychological interpretation.** This interpretation considers normative uncertainty as uncertainty about normative facts. This means that agents do not know the true value of something. In this case, ' $Pr(v) = \frac{1}{2}$ ' means 'believing to degree  $\frac{1}{2}$  that  $v$  is the true value function. As described in Section, the normative facts that 'facts refer to here could be of various main kinds: objective/subjective, relative/absolute.'<sup>7</sup>

**Cognitivist & psychological interpretation.** This interpretation considers normative uncertainty about your own (true) desires. Unknowing what one truly wants. Here the object of uncertainty is not a normative fact but a fact about one's psychology. So ' $Pr(v) = \frac{1}{2}$ ' means believing to degree  $\frac{1}{2}$  that  $v$  is one's true desire function. This interpretation should be uncontroversial for economists.

## Non-Cognitivist Interpretation of Credences

Based on table xx, there are two main non-cognitivist interpretations of  $Pr(v)$ : *non-cognitivist & non-psychological* and *non-cognitivist & psychological*.

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<sup>7</sup>We do not see, as such, any opposition to consider those facts even though the lengths of hybrid views such as constructivism or error-theory.

**Non-cognitivist & non-psychological interpretation.** This interpretation considers normative uncertainty as an uncertain perceptual tendency towards a normative first-order belief. Here ‘ $Pr(v) = \frac{1}{2}$ ’ means tending to degree  $\frac{1}{2}$  towards believing that  $v$  is the correct value function.

**Non-cognitivist & psychological interpretation.** This interpretation considers normative uncertainty as an uncertain perceptual tendency towards a desire. Here ‘ $Pr(v) = \frac{1}{2}$ ’ means tending to degree  $\frac{1}{2}$  toward the desire function  $v$ .

These two interpretations consist of either personality split or instability. Being “haunted” by ethical anguish – as described in Kierkegaard’s account of ethical uncertainty as elaborated in [Jabarian \(2016\)](#) – by different normative beliefs (Type 3) or different desires (Type 4) is not a cognitive problem since one may perfectly know that those conflicting beliefs or desires haunt one. The tendency can be understood as either a simultaneous co-existence of different beliefs or desires or as instability in the sense that beliefs or desires fluctuate over time.

## 7.5 The Global Evaluation: Meta-Valuation

**Section 7.5** introduces meta-valuations, which combine beliefs and valuations in a specific way to determine an overall expected value for each object.<sup>8</sup>

Given these motifs, how should you evaluate options *overall*? This is the problem of evaluating under normative uncertainty. An answer takes the

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<sup>8</sup>When we say theory, we mean meta-theory  $V$ , not first-order theory  $v$  in  $\mathcal{V}$ .

form of a *meta-valuation* or *theory*, formally a function assigning to each option in  $A$  a (meta-)value in  $\mathbb{R}$ . To distinguish meta-values from valuations, we denote them by upper-case letters like ‘ $V$ ’. Two examples suffice for now. Standard Expectationalism evaluates the options  $a \in A$  by their expected value:

$$V(a) = \sum_{v \in \mathcal{V}} Pr(v)v(a). \quad (7.1)$$

Another (decidedly nonexpectational) theory evaluates options  $a \in A$  by their minimal possible<sup>9</sup> value:

$$V(a) = \min_{v \in \mathcal{V}: Pr(v) \neq 0} v(a) \quad (7.2)$$

Unlike first-order theories, it was not essential to define metatheories as functions rather than orders on  $A$ . Readers could replace in their mind any  $V$  by the value order  $\succeq$  it induces.<sup>10</sup>

## 7.6 Cardinal Measurability and Comparability of Value

**Section 7.6** discusses another underestimated assumption: the *comparability* of values on which valuations and meta-valuations rely to operate.

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<sup>9</sup>‘Possible’ is understood as ‘probabilistically possible’, i.e., correct with non-zero probability.

<sup>10</sup>For instance, Standard Expectationalism would then be defined as the order  $\succeq$  on  $A$  such that, for all options  $a, b \in A$ ,  $a \succeq b$  if and only if  $\sum_{v \in \mathcal{V}} Pr(v)v(a) \geq \sum_{v \in \mathcal{V}} Pr(v)v(b)$ .



Comparability and measurability are addressed by Bossert and Weymark (2004) and in the context of normative uncertainty by, e.g. Ross (2006), Sepielli (2009), Tarsney (2018b). As usual in the expectational approach, we take the first-order value to be numerically measurable and comparable across valuations.

Full measurability makes it meaningful to say that an option  $x$  has value 7 under a valuation  $v$  ( $v(x) = 7$ ), or is twice as valuable as another option  $y$  ( $v(x) = 2v(y)$ ), or exceeds  $y$ 's value by 2 ( $v(x) - v(y) = 2$ ), etc.

The complete comparability makes it meaningful to say that two valuations  $v$  and  $v'$  assign the same value to option  $x$  ( $v(x) = v'(x)$ ), or the same value gain to the change from option  $x$  to option  $y$  ( $v(y) - v(x) = v'(y) - v'(x)$ ), etc.

Such assumptions are strong and debatable. They can be relaxed in ways that differ between versions of expectationalism. For instance, all versions need only *affine* measurements of value, and Standard Expectationalism needs only *unit* comparisons, not *level* comparisons. For now, we set aside when and how measurability and comparability can be justified,<sup>11</sup> and how different versions of Expectationalism could relax them.

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<sup>11</sup>Hence, as we shall in Part III, justifying cross-valuation comparisons is easier if  $\mathcal{V}$  consists of theories of similar type, e.g., egalitarian theories with different degrees of inequality-aversion.

## Chapter 8

# Against the Standard Expected Value Theory

In [Chapter 8](#), we elaborate on two objections against the expected value framework and show why a new expectational framework is desirable.

[Section 8.1](#) shows that the expected value theory overrules normative *risk-attitudinal judgments*. [Section 8.2](#) shows that the expected value theory is based on *ad hoc information*. Based on both criticisms, one could be tempted to abandon the use of expected values under normative uncertainty entirely. [Section 8.3](#) shows that going *non-expectational* is no solution.

## 8.1 Expected Value Theory Overrules Risk-Attitudes

Section 8.1 shows that the expected value theory overrules the normative *risk-attitudinal judgments*.

This section raises the first objection against expected value theory and proposes some principles, either general normative or methodological, for designing operational meta-theories. We draw on empirical uncertainty in addition to normative uncertainty. The possibility that options carry empirical uncertainty, e.g. uncertainty about consequences, is often acknowledged and explicitly allowed in the literature (Weatherson (2014), Nissan-Rozen (2015b), MacAskill and Ord (2020)), although empirical uncertainty is usually not formalized (an exception is Bradley and Drechsler (2014)). Our objections and principles will so far be stated informally, as we postpone the formalization of empirical uncertainty to the next chapter.

Consider two options  $a$  and  $b$  in  $A$ . Think of them as containing no empirical risk: their features are fully known. Let there be just two competing valuations  $v$  and  $v'$  in  $\mathcal{V}$ , each of correctness probability  $\frac{1}{2}$ . Table 8.1 shows how each option is evaluated by  $v$  and  $v'$ , and by the expected value (meta-) theory.

We can make the example concrete. Ann, Bob, and Claire suffer from a disease. Ann has 2g of medicine, which is enough to cure her. Bob and Claire would need only 1 g of that medicine to cure. The agent (e.g., a public health authority) can either not intervene so that her medicine cures Ann

option	evaluation by		
	$v$	$v'$	meta-theory $EV$
$a$	2	2	$2 = \frac{1}{2}2 + \frac{1}{2}2$
$b$	4	0	$2 = \frac{1}{2}4 + \frac{1}{2}0$

Table 8.1: **SAME OVERALL EVALUATION DESPITE DIFFERENT LEVELS OF NORMATIVE RISK**

while Bob and Claire stay ill. This is the option  $a$ . Alternatively, the agent confiscates Ann's medicine and redistributes it among Bob and Claire so that Bob and Claire get cured while Ann stays ill. This is option  $b$ . Curing someone contributes two units of well-being to that person. Let  $v$  be a utilitarian theory that evaluates options by total resulting well-being. So the option  $a$  has value 2 (one person cured), while  $b$  has value 4 (two persons cured). The theory  $v'$  is a deontological theory that also attaches importance to the respect of the property. It evaluates options by the total resulting well-being, *minus* 4 in the case of property violation. So, option  $a$  has value 2 (one person cured, property respected), while  $b$  has value  $0 = 4 - 4$  (two persons cured, property violated).

The options  $a$  and  $b$  have the same expected value of 2. However, assigning the same overall value to  $a$  and  $b$  is problematic, as  $b$  contains normative uncertainty, while  $a$  does not. When giving  $b$  as the overall value 2, one is neutral to the normative risk in  $b$ . Recall that  $b$ 's possible values 0 and 4 are not von Neumann-Morgenstern utilities. Expectational reasoning with vNM utilities would have been compatible with risk aversion.

Such meta-theoretic risk neutrality can overrule a unanimous risk attitude among first-order valuations in three cases. First, some options  $c$  display the

same risk as  $b$  in terms of the resulting value, except that the source of risk is empirical rather than normative. Second, the first-order valuations  $v$  and  $v'$  evaluate  $c$  identically, at the same risk premium. Third, the expected value (meta) theory evaluates  $b$  with no risk premium.

For example, assume that both valuations  $v$  and  $v'$  are risk-averse: risky options – options that could result in different empirical worlds according to certain probabilities – are evaluated below the expected value of the resulting world. Let the risky option  $c$  result in a ‘positive’ or a ‘negative’ world, each with probability  $\frac{1}{2}$ . These worlds have values 4 and 0, respectively, according to both  $v$  and  $v'$ .<sup>1</sup>

The option  $c$  can be made concrete. Imagine a second medicine that can only cure Bob for genetic reasons. With probability  $\frac{1}{2}$ , that the medicine has a terrible side effect that reduces Bob’s well-being by 4 units. Option  $c$  consists in giving Bob that medicine without redistributing Ann’s medicine.  $c$  can result in two opposite worlds. On the one hand, it can result in the ‘positive world without side effects, of value 4 under both valuations (two persons cured, no side effect, property respected). On the other hand, it can result in the ‘negative world with a side effect of value  $0 = 4 - 4$  under both valuations (two persons cured, one suffering side effect, property respected).

Being risk averse,  $v$  and  $v'$  evaluate  $c$  below the expected resulting value of  $2 = \frac{1}{2}4 + \frac{1}{2}0$ . We assume  $v(c) = v'(c) = 1$ , which amounts to a risk premium of  $2 - 1 = 1$ .

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<sup>1</sup>So a hypothetical option that surely results in the ‘positive’ world has a value of 4. In contrast, under both theories, a hypothetical option that surely results in the ‘negative world has a value of 0.

The options  $b$  and  $c$  both lead to the same *value prospect*: the prospect that the resulting value is 4 with probability  $\frac{1}{2}$  and 0 with probability  $\frac{1}{2}$ . Therefore,  $b$  and  $c$  show the same risk in terms of the resulting value, although the source of the risk is normative for  $b$  and empirical for  $c$ . Since this risky value prospect justifies a risk premium of 1 according to  $v$  and  $v'$  (given how  $v$  and  $v'$  evaluate  $c$ ), one would have expected the meta-theory to adopt this unanimous risk aversion, even where the source of risk is normative. This suggests evaluating  $b$  at a risk premium against the expected value theory.

In sum, expected value theory can create the awkward situation of neutrality to normative risk paired with an aversion to empirical risk. Such a hybrid risk attitude is at least question begging, as one wonders what would justify neutrality to normative risk if one should certainly be averse to empirical risk.

More systematically speaking, expected value theory violates the following principle.

**Risk-Attitudinal Unanimity Principle (stated informally):** *If there is certainty about the correct risk attitude, that is, all positive probability valuations in  $\mathcal{V}$  have the same risk attitude, then the meta-theory adopts this risk attitude (even toward normative risk).*

The following broader principle also covers cases of risk-attitudinal heterogeneity or uncertainty:

**Risk-Attitudinal Impartiality Principle (stated informally):** *The meta-theoretic risk attitude reflects impartially the judgment about the correct risk attitude captured by the correctness probabilities of first-order theories.*

This principle requires forming a compromise between the risk attitudes of the first-order theories. The more likely a risk attitude is to be correct, i.e., the higher the total probability of first-order theories with that risk attitude, the more weight that risk attitude should get in the meta-theory. Although the details are postponed to Section ??, it should already be clear that, under any plausible interpretation, the principle implies the Risk-Attitudinal Unanimity Principle, because a certainty that a particular risk attitude is correct is ‘respected impartially only if that risk attitude is adopted.

## 8.2 Expected Value Theory Relies on Ad-Hoc Information

Section 8.2 shows that the theory of expected value is based on *ad hoc information*. On the basis of both critics, one could be tempted to abandon the use of expected values under normative uncertainty entirely. We explain why.

The expected value theory also violates a very basic idea captured by the following principle.

**Value-Prospect Principle (stated informally):** *The overall value of an option is determined by its value prospect, i.e. its (probability distribution of) possible values after resolution of uncertainty.*

Before motivating this principle, let us see how the expected value theory violates it. The options  $b$  and  $c$  of our leading example have the same value prospect denoted  $4_{50\%}0_{50\%}$ : the resulting value is 4 with probability  $\frac{1}{2}$  and 0 with probability  $\frac{1}{2}$  – for  $b$  due to normative uncertainty about the value of the outcome (single possible) and for  $c$  due to empirical uncertainty about which outcome is obtained (each outcome having uncontroversial value).

option	value prospect	evaluation of option by		meta-theory $EV$
		$v$	$v'$	
$b$	$4_{50\%}0_{50\%}$	4	0	$2 = \frac{1}{2}4 + \frac{1}{2}0$
$c$	$4_{50\%}0_{50\%}$	1	1	$1 = \frac{1}{2}1 + \frac{1}{2}1$

Table 8.2: **DIFFERENT OVERALL EVALUATION DESPITE SAME VALUE PROSPECT**

Being risk-averse,  $v$  and  $v'$  evaluate  $c$  at 1, below  $c$ 's expected outcome value of  $2 = \frac{1}{2}4 + \frac{1}{2}0$ . This leads to a lower overall value for  $c$  than for  $b$  – against the Value-Prospect Principle.

The principle is plausible because value prospects seem to capture everything relevant: they represent our expectations about the value of the resulting world, where ‘worlds’ capture all normatively relevant features and are evaluated in an all-things-considered way by each valuation in  $\mathcal{V}$ .

From a consequentialist perspective, worlds are consequences, and nothing but the value of consequences matters. Consequentialism ‘almost’ implies our principle – ‘almost’, because it extends consequentialism to risky cases. That natural extension takes consequentialism to require that options are evaluated solely based on the probability distribution of the (value of the) consequence – which *is* our principle.



Nevertheless, even outside the consequentialist paradigm, our principle is plausible. The fact that worlds go beyond consequences does not change the fact that worlds contain all normatively relevant features and are being comprehensively evaluated by each valuation in  $\mathcal{V}$  – so that it remains plausible that two options have the same overall value if they have the same value prospect, i.e., are indistinguishable in the probabilities with which final values are achieved. This defense of the principle relies on the classic assumption that value is comparable across theories in  $\mathcal{V}$ , as value prospects mix across different theories in  $\mathcal{V}$ .

### 8.3 Going Non-Expectational is No Solution

Section 8.3 shows that going *non-expectational* is no solution.

The classic expected value theory needs revision, as it violates the principles from the previous section, of which at least one – the Risk-Attitudinal Unanimity Principle – seems incontestable. In the face of those objections, one might be tempted to give the expectational approach to normative uncertainty for once and for all. Furthermore, instead of testing a nonexpectational approach to satisfy the principles, it would have been to ‘go non-expectational’. In this section, we show that this is a no-go.

As we have complained, the expected value theory is neutral to normative risk, rather than reflecting the attitudes of the first-order theories to empirical risk. Let us stick to aggregating the option values  $v(a)$  ( $v \in \mathcal{V}$ ), rather than for instance the prospect values  $v(p_a)$  ( $v \in \mathcal{V}$ ). But let us aggregate the option values in a non-expectational way, which purportedly reflects the first-order risk attitudes. The new aggregate option value should

be *below* the expected value of the option if all first-order valuations (of nonzero correctness probability) are risk-averse, and *above* the expected option value if all first-order valuations (of nonzero correctness probability) are risk-prone.

To illustrate the idea, consider again our lead example, with its risk-averse valuations  $v$  and  $v'$ . According to this approach, the overall value of an option  $o$  is not its expected value  $\frac{1}{2}v(o) + \frac{1}{2}v'(o)$ , but some *non-expectational* aggregate  $F(v(o), v'(o))$  of  $v(o)$  and  $v'(o)$ . Here the aggregation functional  $F$  maps any combination  $(k, k') \in \mathbb{R} \times \mathbb{R}$  of first-order values to an overall value  $F(k, k')$ , where to respect risk-aversion  $F(k, k') < \frac{1}{2}k + \frac{1}{2}k'$  (unless  $k = k'$ , the case of certainty about the option value). The amount by which  $F(k, k')$  falls short of the average  $\frac{1}{2}k + \frac{1}{2}k'$  represents a risk premium. For instance, consider the option  $b$  of redistributing the medicine among Bob and Claire. Its value is 4 under  $v$  and 0 under  $v'$ ; so here  $(k, k') = (4, 0)$ . The overall value of  $b$  would thus be  $F(v(b), v'(b)) = F(4, 0) < 2$ .

What is the problem? Consider another option  $d$  which (unlike  $b$ ) contains empirical uncertainty: it has two possible outcomes of probability 50% each, of values 7 and 3 under  $v$  and of values 3 and  $-1$  under  $v'$ .

option	value prospect of option			evaluation of option by			
	under $v$	under $v'$	overall	$v$	$v'$	$EV$	$NEV$
$b$	4 <sub>100%</sub>	0 <sub>100%</sub>	4 <sub>50%</sub> 0 <sub>50%</sub>	4	0	2	$F(4, 0)$
$d$	7 <sub>50%</sub> 3 <sub>50%</sub>	3 <sub>50%</sub> (-1) <sub>50%</sub>	7 <sub>25%</sub> 3 <sub>50%</sub> (-1) <sub>25%</sub>	4	0	2	$F(4, 0)$

**Table 8.3: A NON-EXPECTATIONAL VALUE THEORY CANNOT DISTINGUISH BETWEEN THE OPTIONS  $b$  AND  $d$  DESPITE THEIR DIFFERENT OVERALL VALUE PROSPECTS**

Following the risk-aversion of  $v$  and  $v'$ , let  $v(d)$  be 4 (below the expected value  $\frac{1}{2}7 + \frac{1}{2}3 = 5$ ) and let  $v'(d)$  be 0 (below the expected value  $\frac{1}{2}3 + \frac{1}{2}(-1) = 1$ ). Option  $d$  is indistinguishable from  $b$  in terms of first-order valuations:  $v(d) = v(b)$  and  $v'(d) = v'(b)$ . This forces  $d$  to have the same overall value as  $b$ , namely again  $F(4, 0)$  (see Table 8.3). However we see no compelling argument for overall indifference between  $d$  and  $b$ . Option  $d$  has a more ‘disparate’ value prospect than  $b$ , namely  $7_{25\%}3_{50\%}(-1)_{25\%}$  instead of  $4_{50\%}0_{50\%}$ . For instance, the probability of value 7 is the probability of the ‘better’ outcome (50%) times the correctness probability of the valuation  $v$  (50%).

In result,  $d$  is more risky than  $b$  under many risk measures. If the risk in an option is measured by the variance (second moment) of the value prospect, then  $b$  counts as less risky than  $d$ . Indeed,  $b$ ’s value prospect  $4_{50\%}0_{50\%}$  has variance  $\frac{1}{2}(4 - 2)^2 + \frac{1}{2}(0 - 2)^2 = 4$ , while  $d$ ’s value prospect  $7_{25\%}3_{50\%}(-1)_{25\%}$  has variance  $\frac{1}{4}(7 - 3)^2 + \frac{1}{2}(3 - 3)^2 + \frac{1}{4}((-1) - 3)^2 = 8$ . More generally,  $d$  counts as more risky than  $b$  if we measure risk by the  $m^{\text{th}}$  (absolute) moment of the value prospect for any order  $m \in (1, \infty]$ . If by contrast risk is measured by the first (absolute) moment of the value prospect, then  $b$  and  $d$  count as equally risky, since  $b$ ’s value prospect has first moment  $\frac{1}{2}|4 - 2| + \frac{1}{2}|0 - 2| = 2$  and  $d$ ’s has first moment  $\frac{1}{4}|7 - 3| + \frac{1}{4}|(-1) - 3| + \frac{1}{2}|3 - 3| = 2$ . Since risk should influence overall value,  $d$  may have to be evaluated differently from  $b$ .

In conclusion, the problem of expected value theory is not so much *how* it aggregates the first-order option values (namely expectationally), but *that* it

builds on the first-order option values. To fix the theory, we must ‘unpack the options and dig into their empirical risk structure.

# Chapter 9

## A New Framework: Expectationalism Under Complex Uncertainty

In **Chapter 9**, we introduce a new framework, *Experimentalism under Complex Uncertainty*, to answer both objections raised in the previous chapter. **Section 9.1** integrates complex uncertainty. As such, it reformulates options in terms of lottery and introduces two concepts: *world prospects of options* and *value prospects of options*. **Section 9.2** integrates ethical pluralism under complex uncertainty. As such, it shows how we can integrate not only moral consequentialism but also non-consequentialism. **Section 9.3** introduces the objects that expectational theories evaluate: *prospects*. **Section 9.4** introduces two other seminal concepts, over which *Experimentalism* is built on: *worlds* and *world prospects of options*. **section 9.5**

provides a taxonomy of all these different values prospects introduced in this chapter.

## 9.1 Integrating Empirical Uncertainty: Complex Uncertainty

We reconsiders options in terms of lotteries over outcomes. As such, it enables the integration of empirical uncertainty within the normative uncertainty debate (section 9.1).

The standard framework presented in Chapter 7 is complete as a model of purely normative uncertainty. In this framework, empirical uncertainty in options is allowed but not modeled.

To formally integrate empirical uncertainty, we hereafter assume that options in  $A$  are lotteries on a given set  $X$  of *outcomes*, i.e., functions  $a$  from  $X$  to  $[0, 1]$  such that  $\sum_{x \in X} a(x) = 1$ , where  $a(x)$  is non-zero for only finitely many  $x$  in  $X$ . An option is *riskless* if some outcome has probability one, and *risky* otherwise.

## 9.2 Integrating Ethical Pluralism: For Consequentialism and Beyond

Second, it further shows how we can interpret outcomes as empirical states of affairs beyond mere consequences. As such, it enables a formal integration of nonconsequentialism within the normative uncertainty debate (section 9.2).

The results represent the empirical states of affairs after the resolution of the empirical uncertainty. Depending on what we wish to model, they may be ‘consequences’ of actions or go beyond ‘consequences’.

Interpreting outcomes as consequences constrain the decision-makers to deal with consequentialist valuations, and hence normative uncertainty between types of consequentialism.

Nevertheless, suppose that outcomes go beyond consequences, e.g., capturing intentions or the choice context. In that case, the model is open to nonconsequentialist valuations, and hence to normative uncertainty between possibly nonconsequentialist valuations.

Outcomes should contain everything that could bear value according to the agent we wish to model; only then can we faithfully model the agent’s normative uncertainty. If the agent believes that the context could matter normatively, the outcomes cannot exclude the context. Taking outcomes to be consequences limits us to consequentialist agents: agents who are certain that the correct valuation is consequentialist. If, instead, the outcomes go beyond the consequences, then a valuation  $v$  may or may not be consequentialist. It is consequentialist if the value of options is fully determined by their consequence aspects, i.e., if  $v(a) = v(b)$  for all options  $a, b \in A$  that contain the same consequences (but possibly different contexts or other non-consequence features).<sup>1</sup>

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<sup>1</sup>Normative uncertainty between non-consequentialist valuations is addressed by [Barry and Tomlin \(2016\)](#) and [Tenenbaum \(2017\)](#). I am grateful to Sergiu Tenenbaum and Christian Barry for the stimulating and helpful separate discussions on this issue back in 2016 in Paris and in 2017 in Canberra.



We do not require that *all* lotteries on  $X$  count as options, i.e., belong to  $A$ . However, we assume that  $A$  contains riskless lotteries that assign probability one to some outcome. We take valuations  $v$  in  $\mathcal{V}$  to also evaluate outcomes  $x$  in  $X$ , by defining  $v(x)$  as  $v(a)$  where  $a$  is the riskless option corresponding to  $x$ . Regarding the outcomes, one can interpret  $a(x)$  as the agent's subjective probability of the outcome  $x$  under option  $a$ .

### 9.3 New Objects of Evaluations: Prospects

**Section 9.3** introduce the objects that expectational theories evaluate: *Prospects*.

Expectational theories evaluate options by the expected value of *of some object*. That object is the prospect offered by the option, but there are different prospect types: the ex ante prospect, the ex post prospect, and hybrid prospects taking a partly ex ante and partly ex post perspective. Think of prospects as probability distributions.

More precisely, one can define prospects equivalently as distributions over empirical-normative worlds ('world prospects') or distributions over resulting value levels ('value prospects'). Later, we shall only work with value prospects. Let us start with the world prospects.

### 9.4 Complex Worlds and World Prospects

**Section 9.4** introduces two other seminal concepts, over which *Prospectionism* is built on: *worlds* and *world prospects of options*.

A *complex world*<sup>2</sup> – for short, a *world* – is a pair  $(x, v)$  of an outcome in  $X$  (an ‘empirical world’) and a valuation in  $\mathcal{V}$  (a ‘normative world’). In a world, all empirical or normative uncertainty is resolved.

A *world prospect* is a probability distribution over worlds, representing how likely worlds are (where for simplicity, only finitely many worlds have non-zero probability). Each option  $a$  generates a world prospect: the probability of a world  $(x, v)$  is the product  $a(x)Pr(v)$  of the probabilities of outcome  $x$  (under option  $a$ ) and valuation  $v$ . This is an ex-ante world prospect, as no uncertainty is resolved; ex-post and hybrid world prospects will be defined in a moment.

## 9.5 The Taxonomy of Value Prospects

Section 9.5 provides a taxonomy of all these different values prospects introduced in this chapter.

Value prospects are prospects of achieving certain value levels (not worlds) with certain probabilities, for instance, achieving value 4 with probability 1/2 and value 0 with probability 1/2.

A world prospect immediately induces a value prospect. Mathematically, it does so by taking the image of the world prospect under the mapping  $(x, v) \mapsto v(x)$  from worlds to resulting values). For instance, the ex-post world prospect under which world  $(x, v)$  is certain induces the riskless value prospect under which the value  $v(x)$  is certain.

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<sup>2</sup>Or equivalently, an *empirical-normative world*.

**Definition 10 (Value Prospect)**

*Formally, a value prospect is a lottery over real numbers, i.e., a function  $p$  assigning to each value  $k$  in  $\mathbb{R}$  a probability  $p(k)$  in  $[0, 1]$  such that  $\sum_{k \in \mathbb{R}} p(k) = 1$ , where (for simplicity) only finitely many values  $k$  in  $\mathbb{R}$  have non-zero probability  $p(k)$ .*

Each option  $a$  generates a value prospect, denoted  $p_a$ , which reflects empirical and normative uncertainty, as the resulting value  $v(x)$  depends on both  $x$  and  $v$ , hence on the empirical-normative world  $(x, v)$ .

The probability that the resulting value is (say) 4 is the sum-total probability of all worlds  $(x, v)$  such that  $v(x) = 4$ . The just-defined value prospect  $p_a$  of an option  $a$  is an ex-ante construct: no uncertainty is yet resolved. Indeed,  $p_a$  is simply the value prospect induced by the ex-ante world prospect.

Partly or fully ex-post value prospects are definable by eliminating one or both sources of uncertainty.

We now formally define the four kinds of value prospects. They correspond exactly to the four kinds of world prospect above.<sup>3</sup>

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<sup>3</sup>Compare our value prospects with [Rowe and Voorhoeve \(2018\)](#)'s well-being prospects in the context of health ethics under (purely empirical) risk, uncertainty, or ambiguity.

**Definition 11 (The Ex-Ante Value Prospect)**

The ex-ante value prospect of option  $a \in A$  is the value prospect ' $p_a$ ' such that any value  $k \in \mathbb{R}$  has probability

$$p_a(k) = \text{'probability that } a \text{ has final value } k\text{'}$$

$$\iff p_a(k) = \sum_{(x,v) \in X \times \mathcal{V} : v(x)=k} \underbrace{a(x)Pr(v)}_{\text{prob. of } (x,v)}$$

**Definition 12 (The Normatively Ex-Post Value Prospect)**

The normatively ex-post value prospect of option  $a \in A$  given valuation  $v \in \mathcal{V}$  is the value prospect ' $p_{a,v}$ ' such that any value  $k \in \mathbb{R}$  has probability

$$p_{a,v}(k) = \text{'probability that } a \text{ has final value } k \text{ given } v\text{'}$$

$$\iff p_{a,v}(k) = \sum_{x \in X : v(x)=k} a(x)$$

**Definition 13 (The Empirically Ex-Post Value Prospect)**

The empirically ex-post value prospect given outcome  $x \in X$  is the value prospect ' $p_x$ ' such that any value  $k \in \mathbb{R}$  has probability:

$$p_x(k) = \text{'probability that } x \text{ has final value } k\text{'}$$

$$\iff p_x(k) = \sum_{v \in \mathcal{V} : v(x)=k} Pr(v)$$

**Definition 14 (The Ex-Post Value Prospect)**

*The ex-post value prospect given both  $x \in X$  and  $v \in \mathcal{V}$  is the riskless value prospect ' $p_{x,v}$ ' giving probability 1 to the value  $v(x)$ .*

Just a remark about Definition 5. The value prospects  $p_x$  and  $p_{x,v}$  can be regarded as special cases of the value prospects  $p_a$  and  $p_{a,v}$ , by choosing  $a$  to be the riskless option that yields  $x$  for sure.

## Chapter 10

# Four Evaluation Modes and Their Expectational Theories

In [Chapter 10](#), we describe four evaluation modes and their expectational theories to deal with complex uncertainty. By taking a specific evaluation mode and assigning a particular meta-value to a given option  $a$ , each expectational theory answers the question “Expected value of what?”.

[Section 10.1](#) presents *Standard Expectationalism* which takes a normatively ex-post and empirically ex-ante evaluation mode. [Section 10.2](#) presents *Ex-Post Expectationalism* which takes a normatively ex-post and empirically ex-post evaluation mode. [Section 10.3](#) presents *Ex-Ante Expectationalism* which takes a normatively ex-ante and empirically ex-ante evaluation mode. [Section 10.4](#) presents *Reverse Expectationalism*, which takes a normatively ex-ante and empirically ex-ante evaluation mode. [Section 10.5](#) compares these four theories by discussing an example.

## 10.1 Standard Expectationalism

**Section 10.1** presents *Standard Expectationalism* which takes a normatively ex-post and empirically ex-ante evaluation mode.

The decision-maker places themselves in a normatively ex-post and empirically ex-ante position by considering a given valuation  $v$  and the lottery of empirical outcomes generated by option  $a$ . So you face the *normatively ex-post* world prospect, in which  $v$  has (marginal) probability one and any outcome  $x$  in  $X$  has (marginal) probability  $a(x)$ . It yields the value  $v(a)$ . Stepping outside of this position, you then form the expectation of the value  $v(a)$  across valuations  $v$  in  $\mathcal{V}$ . This is Standard Expectationalism.

This theory reasons empirically ex-ante, because the object whose average evaluation it forms is *the option*, which captures empirical risk. Formally, the decision rule, observed  $EV_{stan}$ , is given as follows:

### Definition 15 (Standard Expectationalism)

*The meta-value of an option  $a \in A$  is the expected value of the option itself:*

$$EV_{stan}(a) = \sum_{v \in \mathcal{V}} Pr(v)v(a) \text{ ('standard expected value').}$$

## 10.2 Ex-Post Expectationalism

**Section 10.2** presents *Ex-Post Expectationalism* which takes a normatively ex-post and empirically ex-post evaluation mode.

Decision makers place themselves in a fully ex post position, considering a given outcome  $x$  and a given valuation  $v$ . So they face the *ex-post* world prospect, in which world  $(x, v)$  has probability one. It yields the value  $v(x)$ . Stepping outside this position, then they form the expectation of the value  $v(x)$  across worlds  $(x, v)$  in  $X \times \mathcal{V}$ . This is Ex-Post Expectationalism.

This theory is fully ex-post: it forms the average evaluation of *the outcome*, which no longer contains empirical risk. This requires averaging in both outcomes and valuations, and hence in empirical-normative worlds  $(x, v)$ . Formally, the decision rule, noted  $EV_{post}$ , is given as follows:

**Definition 16 (Ex-Post Expectationalism)**

*The meta-value of an option  $a \in A$  is the expected value of the outcome:*

$$EV_{post}(a) = \sum_{(x,v) \in X \times \mathcal{V}} \underbrace{a(x)Pr(v)}_{\text{prob. of } (x,v)} v(x) \text{ ('expected final value')}.$$

## 10.3 Ex-Ante Expectationalism

**Section 10.3** presents *Ex-Ante Expectationalism* which takes a normatively ex-ante and empirically ex-ante evaluation mode.

Decision-makers place them in the fully ex-ante position, in which both parts of the empirical-normative world are unknown. So, they face the *ex-ante* world prospect, defined above. Then, they form the expected value of this ex-ante prospect; how this works is shown in Section ???. This is Ex-Ante Expectationalism.



This theory is fully ex-ante. It operates neither at the ex-post level of outcomes ( $EV_{post}$ ), nor at the semi-ex-post level of options ( $EV_{stan}$ ), but at the level of ex-ante value prospects. But how can valuations  $v$  in  $\mathcal{V}$  evaluate value prospects rather than options, that is, how should we define  $v(p)$  for a value prospect  $p$ ? We, of course, identify  $v(p)$  with  $v(a)$  for any option  $a$  in  $A$  chosen to have the value prospect  $p$  given  $v$ . If, for example  $p$  is the value prospect in which the value is 1 or 0 equiprobably, then we pick an option  $a$  that equiprobably has an outcome  $x$  of value  $v(x) = 1$  or an outcome  $y$  of value  $v(y) = 0$ , and define  $v(p)$  as  $v(a)$ . Formally, the *value of a value prospect  $p$  under a valuation  $v$  in  $\mathcal{V}$*  – denoted  $v(p)$  – is the value  $v(a)$  of options  $a \in A$  such that  $p_{a,v} = p$ . This definition implicitly rests on the following assumption, which we shall maintain for the rest of ??:

For each valuation  $v$  in  $\mathcal{V}$  and value prospect  $p$  we assume that:

- (i)  $A$  contains an option  $a$  whose value prospect given  $v$ ,  $p_{a,v}$ , is  $p$  and
- (ii) Any two such options  $a$  in  $A$  have same value  $v(a)$ .

Condition (i) is a typical richness assumption: The set of options  $A$  should be sufficiently inclusive, i.e., contain options with any given value prospects.

Condition (ii) is a consistency assumption on the valuations in  $\mathcal{V}$ . It is compatible with most or all first-order theories one would naturally want to consider.

**Definition 17 (The Value of a Value Prospect)**

Under a valuation  $v$  in  $\mathcal{V}$ , the **value of a value prospect**  $p$  – denoted  $v(p)$  – is the value  $v(a)$  of options  $a \in A$  whose value prospect under  $v$  is  $p$ , i.e.,  $p_{a,v} = p$ .

Formally the decision rule, noted  $EV_{ante}$ , is given as follows:

**Definition 18 (Ex-Ante Expectationalism)**

The meta-value of an option  $a \in A$  is the expected value of the ex-ante prospect:

$$EV_{ante}(a) = \sum_{v \in \mathcal{V}} Pr(v)v(p_a) \text{ ('expected ex-ante value').}$$

Note an intended peculiarity:  $v(p_a)$  uses a *given* valuation ( $v$ ) to evaluate a prospect ( $p_a$ ) which carries normative uncertainty about the correct valuation. Precisely this is what ex-ante evaluation should do, as it should ask how attractive each *ex-ante* prospect is on average across possible valuations.

## 10.4 Reverse Expectationalism

**Section 10.4** presents *Reverse Expectationalism* which takes a normatively ex-ante and empirically ex-ante evaluation mode.

Decision makers place themselves in an empirically ex post and normatively ex ante position by considering a given outcome  $x$  and the probability distribution over the valuations  $Pr$  reflecting their normative uncertainty.

So they face the *empirically ex-post* world prospect, in which  $x$  has a (marginal) probability of one and any valuation  $v$  has (marginal) probability  $Pr(v)$ . Then, they form the expected value of this world prospect. This is Reverse Expectationalism. It is the reverse or ‘dual’ of Standard Expectationalism, as it reasons ex-ante where Standard Expectationalism reasons ex-post, and vice versa.

This theory calculates the average evaluation of yet another object: neither the option ( $EV_{stan}$ ), nor the outcome ( $EV_{post}$ ), nor the ex-ante prospect ( $EV_{ante}$ ), but the empirically ex-post value prospect. This requires averaging across outcomes and valuations, and hence across empirical-normative worlds  $(x, v)$ . This theory reverses the evaluation of Standard Expectationalism: it reasons empirically ex-post rather than normatively ex-post. Formally the decision rule, noted  $EV_{rev}$ , is given as follows:

**Definition 19 (Reverse Expectationalism)**

*The meta-value of an option  $a \in A$  is the expected value of the empirically ex-post prospect:*

$$EV_{rev}(a) = \sum_{(x,v) \in X \times \mathcal{V}} \underbrace{a(x)Pr(v)}_{\text{prob. of } (x,v)} v(p_x) \text{ ('reverse expected value')}.$$

## 10.5 Illustration of Expectational Theories

Section 10.5 compares these four theories by discussing an example.

Suppose decision-makers hesitate between just two valuations,  $v$  and  $v'$ .

These have the credence  $\frac{1}{2}$  in each of them and the credence 0 in all other

valuations in  $\mathcal{V}$  (if any). Both valuations  $v$  and  $v'$  are risk averse. So, they are sure that risk-aversion is correct: their normative uncertainty does not pertain to the risk-attitude (more on risk attitudes in the next section).

Decision makers now compare two options. Both options lead to the value prospect ‘value 4 with probability  $\frac{1}{2}$ , value 0 with probability  $\frac{1}{2}$ ’, denoted  $4_{50\%}0_{50\%}$ , but for very different reasons. The first option involves only normative risk: It surely has the result  $x$ , whose value is  $v(x) = 4$  or  $v'(x) = 0$ . The second option involves only empirical risk: it has either outcome  $y$  or outcome  $z$  (equiprobably), where it is uncontroversial between  $v$  and  $v'$  that  $y$  has value 4 and  $z$  has value 0. By risk-aversion, the option is evaluated below the expected resulting value of  $\frac{1}{2}4 + \frac{1}{2}0 = 2$ ; let the value be 1 under both  $v$  and  $v'$ . The gap from 1 to 2 is a risk penalty or risk premium.

	VALUE PROSPECT			EVALUATION BY					
	given $v$	given $v'$	ex-ante	$v$	$v'$	$EV_{stan}$	$EV_{post}$	$EV_{ante}$	$EV_{rev}$
Option 1	$4_{100\%}$	$0_{100\%}$	$4_{50\%}0_{50\%}$	4	0	2	2	1	1
Option 2	$4_{50\%}0_{50\%}$	$4_{50\%}0_{50\%}$	$4_{50\%}0_{50\%}$	1	1	1	2	1	2

Table 10.1: **APPLICATIONS OF FOUR EXPECTATIONAL THEORIES TO TWO CONCRETE OPTIONS**

Table 12.1 displays the (ex-ante and normatively ex-post) value prospects of options and the evaluations of options by both first-order theories and the four expectational theories. The four meta-evaluations are obtained as follows.

First, *Standard* Expectationalism forms the average value of the option. This yields  $\frac{1}{2}4 + \frac{1}{2}0 = 2$  or  $\frac{1}{2}1 + \frac{1}{2}1 = 1$ , respectively.

Second, *Ex-Post* Expectationalism forms the average value of the outcome.

In principle, this requires averaging across valuations in  $\mathcal{V}$  (normative uncertainty) and outcomes (empirical uncertainty). However, our options effectively need just one dimension of averaging, as they have just one source of uncertainty. The first option has just normative uncertainty: it surely has outcome  $x$ , of value 4 or 0. The second option has empirical uncertainty: outcome  $y$  of sure value 4 or outcome  $z$  of sure value 0. Each option thus has the same average value of the outcome:  $\frac{1}{2}4 + \frac{1}{2}0 = 2$ .

Third, *Ex-Ante* Expectationalism forms the average value of the ex-ante value prospect, i.e., of  $4_{50\%}0_{50\%}$  for each option. So we must calculate  $\frac{1}{2}v(4_{50\%}0_{50\%}) + \frac{1}{2}v'(4_{50\%}0_{50\%})$ . What are  $v(4_{50\%}0_{50\%})$  and  $v'(4_{50\%}0_{50\%})$ ? As  $4_{50\%}0_{50\%}$  is option 2's value prospect given  $v$ ,  $v(4_{50\%}0_{50\%}) = v(\text{option 2}) = 1$ . As  $4_{50\%}0_{50\%}$  is also option 2's value prospect given  $v'$ ,  $v'(4_{50\%}0_{50\%}) = v'(\text{option 2}) = 1$ . So,  $\frac{1}{2}v(4_{50\%}0_{50\%}) + \frac{1}{2}v'(4_{50\%}0_{50\%}) = \frac{1}{2}1 + \frac{1}{2}1 = 1$ .

Fourth, *Reverse* Expectationalism forms the average value of the empirically ex-post value prospect. Like for  $EV_{post}$ , this can require averaging across both outcomes and valuations, but for our two options, one dimension of averaging drops out, as option 1 is empirically riskless and option 2 is normatively riskless. Option 1 surely has outcome  $x$ , whose value prospect  $4_{50\%}0_{50\%}$  is evaluated at 1 by both (risk-averse) valuations, as just seen. The average value is thus  $\frac{1}{2}1 + \frac{1}{2}1 = 1$ . Option 2 either has outcome  $y$ , whose value prospect  $4_{100\%}$  has value 4 under both  $v$  and  $v'$ ; or has outcome  $z$ , whose value prospect  $0_{100\%}$  has value 0 under both  $v$  and  $v'$ . The average value is thus  $\frac{1}{2}4 + \frac{1}{2}0 = 2$ .

# Chapter 11

## Evaluation Modes and Risk-Attitudes

In [Chapter 11](#), we show that the evaluation modes determine the empirical and normative risk attitudes that underlying the (meta)evaluations.

[Section 11.1](#) precises what we mean by risk aversion. [Section 11.2](#) defines the risk attitudes of valuations. [Section 11.3](#) introduces the risk attitudes of meta-evaluations. [Section 11.4](#) defines the concept of *risk premium for value prospects*. [Section 11.5](#) states formally the *risk-attitudinal unanimity principle*. [Section 11.6](#) illustrates the different risk attitudes of the four expectational theories introduced in the previous chapter. [Section 11.7](#) proposes a unification of the four expectational theories through *value prospects*.

## 11.1 Defining Risk-Aversion As Risk-Aversion About Outcome Value

Before talking about the ‘risk-attitudes’ of normative theories, in this **Section 11.1** we precise what we mean by risk-aversion. We interpret risk aversion and other risk attitudes as attitudes towards risk *about the outcome value*, such as (in our example) the risk of ending with value 4 or with value 0. This is not the only possible notion of risk attitudes. Different notions of risk attitudes differ in quantity in relation to which risk is defined.

For economists, this quantity is monetary wealth, consumption, or another measurable quantity. As a result, risk (aversion) lies in (aversion to) empirically unknown wealth or unknown consumption. In this philosophy dissertation<sup>1</sup>, the quantity is outcome *value*; here, risk (aversion) consists in (aversion to) unknown outcome value.<sup>2</sup> In general, being risk-averse (-prone, -neutral) with respect to a given quantity  $Q$  means that any option leading to a risky amount of  $Q$  is ranked below (above, like) receiving the option’s *expected* amount of  $Q$  for sure; in the special case of

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<sup>1</sup>Where the focus is to develop claims outside the realm of measurement constraints, to motivate the imagination of scholars and economists to other potential possibilities, like in this part of the thesis. Since, again, the focus of this part is to explore the most comprehensive decision rules under complex uncertainty “if” it would be possible to access general values in addition to monetary wealth or consumption of goods and services. Counterfactuals have been very fruitful in either derive testable assumptions in scientific work or motivate and inspire the development of scientific theories.

<sup>2</sup>An example in microeconomic theory is Grant et al. (2010, 2012), who indeed assume that an option constitutes the same risk for two individuals if it generates for each individual the same subjective value prospect, rather than wealth prospect or consumption prospect.

von-Neumann-Morgenstern preferences, an equivalent condition is that vNM utility is convex (concave, linear) in  $Q$ .<sup>3</sup>

Risk about outcome value can have an empirical, normative, or mixed origin: it can stem from uncertainty about the outcome (empirical uncertainty), uncertainty about the value of the outcome (normative uncertainty), or uncertainty about both. A meta-theory is risk-averse if its evaluation of options contains a penalty for risk in outcome value, i.e., lies below the *expected* outcome value; it is risk-neutral if evaluations match the expected outcome value. One may want the meta-theory to ‘borrow’ the risk attitude of those first-order valuations that you find credible, i.e., have non-zero credence in. For instance, if decision-makers have positive credence only in risk-averse valuations in  $\mathcal{V}$ , then the meta-theory is risk-averse. We call this *risk-impartiality* because your meta-level risk attitude defers to your risk-attitudinal judgments (Dietrich and Jabarian 2021b).<sup>4</sup> We set aside what risk-impartiality requires when decision-makers

<sup>3</sup>For instance, if outcomes are wealth levels, so that  $X \subseteq \mathbb{R}$  and  $A$  contains ‘wealth lotteries’, and if the risk is measured in wealth itself, then risk aversion means that any risky wealth lottery  $a \in A$  is worse than getting the expected wealth  $\bar{a} = \sum_{x \in X} an(x)x$  for sure. This sort of risk-averse preferences could be vNM preferences, in which case the vNM utility is a concave function of wealth, or nonvNM preferences, as in Yaari’s (1987) model. If instead, as we assume, risk aversion is defined w.r.t. *the value* of the outcome (here: wealth), then the ‘expectation test is performed, not on wealth levels, but on their values. This sort of risk-averse preferences could once again be either vNM preferences, in which case the vNM utility of wealth is concave in the value of wealth, or nonvNM preferences, in which case the vNM utility does not exist. This value-based notion of risk keeps the phenomenon of risk aversion distinct from the phenomenon of diminishing marginal value of wealth. For example, most people would rather have an astronomic amount of wealth  $x$  than facing a wealth lottery that produces wealth 0 or wealth  $2x$  equiprobably – *because* the decreasing marginal value of wealth makes the difference in value between  $x$  and  $2x$  small compared to that between 0 and  $x$ . If risk attitudes were defined with wealth rather than the value of wealth, this preference would be incompatible with risk-neutrality or risk-proneness.

<sup>4</sup>The term ‘risk-impartiality’ is not meant to imply giving equal importance to the risk attitudes of all valuations in  $\mathcal{V}$ , an implausible requirement under unequal credences (whereas Harsanyi’s impartial observer gives equal importance to all individuals).



are risk-attitudinally undecided, e.g., have non-zero credence both in a risk-averse valuation and a risk-neutral valuation. In our example, decision-makers are certain that risk-aversion is correct, as  $v$  and  $v'$  are both risk-averse. Here a risk-impartial meta-theory is risk-averse.<sup>5</sup>

## 11.2 The Risk Attitudes of Valuations

Section 11.2 defines the risk attitudes of the valuations.

What are the risk attitudes of normative theories? Risk analysis has a long tradition in decision theory, where the bearers of risk attitudes are usually individuals, not normative theories (e.g., Weirich (1986), Weirich (2004), Buchak (2013), Stefánsson and Bradley (2019), Baccelli (2018)).

By risk we mean risk about the resulting value, such as (in our example) the risk of achieving value 4 or 0. Such a risk can have an empirical or normative origin: it can stem from an uncertain outcome (empirical uncertainty), an uncertain value of the outcome (normative uncertainty), or even a combination. A (meta-)theory is risk-averse if its evaluation of options contains a risk penalty, that is, falls below the value achieved in expectation. The theory is risk-neutral if the risk is not penalized.

Risk attitudes are often defined by comparing the evaluation of risky objects with certain expectational evaluations. We adopt this approach to the realm of ethics and normative uncertainty. So we compare the value  $v(a)$  of a given option  $a$  under a given theory  $v$  with the expected value of the resulting

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<sup>5</sup>Risk attitudes have been analyzed extensively in the different contexts of purely empirical uncertainty. For different accounts, see Weirich (1986), Buchak (2013), Bradley and Stefánsson (2017), and Baccelli (2018).

world,  $\sum_{x \in X} a(x)v(x)$ . Depending on whether  $v(a)$  matches, exceeds or falls below that expectation, the evaluation of  $a$  is risk neutral, prone, or averse.

Formally:

**Definition 20 (The Risk Aversion of Valuations)**

A valuation  $v$  in  $\mathcal{V}$  is **risk-neutral** (**-averse**, **-prone**) towards option  $a \in A$  if it evaluates  $a$  at (below, above) the expected value across worlds, i.e.,

$$v(a) = (<, >) \sum_{x \in X} a(x)v(x).$$

This definition owes its plausibility to the assumption that theories in  $\mathcal{V}$  measure value on an absolute scale. Accordingly, comparing value differences is meaningful: a rise in value from 0 to 1 represents the same gain from 100 to 101. By contrast, a von Neumann-Morgenstern function does not measure value on an absolute scale. There is intuitive compatibility between risk-*aversion* and evaluating lotteries by *expectation* of a von Neumann-Morgenstern function. Indeed, in economic theory, one often interprets agents as risk-averse if they evaluate money lotteries by the expectation of a concave von Neumann-Morgenstern function.

**Definition 21 (The Risk Premium of Valuations)**

The **risk premium** for  $a$  or **degree of risk-aversion** towards  $a$  is the amount  $prem_v(a)$  by which  $a$ 's value falls below  $a$ 's expected resulting value:

$$prem_v(a) = \sum_{x \in X} a(x)v(x) - v(a).$$

A risk premium is a value discount due to risk. Its sign indicates whether there is risk aversion, neutrality, or proneness.

## 11.3 The Risk Attitudes of Meta-Valuations

Section 11.3 defines the risk attitudes of meta-evaluations.

Risk attitudes of *meta*-theories can be defined similarly, except that we must incorporate normative uncertainty by forming the expectation not just over the worlds (empirical uncertainty), but also over the valuations (normative uncertainty). Formally:

### Definition 22 (The Risk Aversion of Meta-Valuations)

A meta-valuation  $V$  is **risk-neutral** (*-averse*, *-prone*) towards an option  $a \in A$  if it evaluates  $a$  at (below, above) the expected value across worlds and valuations, i.e.,

$$V(a) = (<, >) FEV(a) = \sum_{(x,v) \in X \times \mathcal{V}} \underbrace{a(x)Pr(v)}_{\text{prob. of } (x,v)} v(x).$$

### Definition 23 (The Risk Premium of Meta-Valuations)

The **risk premium** for  $a$  or *degree of risk aversion* towards  $a$  is the amount by which  $a$ 's value falls below  $a$ 's fully expectational value:

$$Prem_V(a) = FEV(a) - V(a).$$

## 11.4 The Risk Premium for Value Prospects

**Section 11.4** defines the concept of *risk premium for value prospects*.

In principle, a valuation or meta-valuation could be risk-averse towards some options and risk-neutral or prone towards others. If such jumps are absent, we can talk of risk aversion, neutrality, or proneness *simpliciter*: A theory  $v$  in  $\mathcal{V}$  or meta-theory  $V$  is **risk-neutral (-averse, -prone)** if it is risk-neutral (-averse, -prone) towards all options with risky value prospects.

By the value prospect of an option  $a$  we here mean the theory-specific value prospect  $p_{a,v}$  in the case of a first-order theory  $v$  in  $\mathcal{V}$ , and the unconditional value prospect  $p_a$  in the case of a meta-theory.

Why does 11.4 exclude options with the riskless value prospect from its quantification? Requiring nonzero risk premia for essentially riskless options (i.e., requiring risk aversion or proneness towards such options) would be implausible, even for intuitively risk-averse or prone theories.

Just as we can apply valuations in  $\mathcal{V}$  to value prospects rather than options, we can apply risk premia to value prospects rather than options.

### **Definition 24 (The Risk Premium for Value Prospects)**

*Given a valuation  $v$  in  $\mathcal{V}$ , the **risk premium for a value prospect  $p$**  or **degree of risk aversion towards  $p$** , denoted  $\text{prem}_v(p)$ , is the risk premium for options  $a$  with value prospect  $p_{a,v} = p$ .*

As a remark,  $prem_v(p)$  can be expressed as the amount by which  $p$ 's value falls below  $p$ 's expectation:

$$prem_v(p) = Exp(p) - v(p) = \sum_{k \in \mathbb{R}} p(k)k - v(p).$$

## 11.5 The Risk-Attitudinal Unanimity Principle

**Section 11.5** formally states the *risk-attitudinal unanimity principle*.

We now formally state the Risk-Attitudinal Unanimity Principle. We state the principle in two versions, depending on whether we consider the risk attitude a qualitative or quantitative concept.

**Definition 25 (Qualitative Risk-Attitudinal Unanimity Principle)**

*If all  $v \in \mathcal{V}$  of non-zero correctness probability  $Pr(v)$  are risk-neutral (-averse, -prone), then the meta-theory  $V$  is also risk neutral (averse, prone).*

**Definition 26 (Quantitative Risk-Attitudinal Unanimity Principle)**

*For all options  $a \in A$ , if all  $v \in \mathcal{V}$  of nonzero correctness probability  $Pr(v)$  assign the same risk premium  $prem_v(p_a) = r$  to the  $a$ ' value prospect  $p_a$ , then the meta-theory assigns the same risk premium to  $a$ , that is,  $Prem_V(a) = r$ .*

Why does the quantitative principle assume a unanimous risk premium for  $a$ 's value prospect  $p_a$  rather than for  $a$ ? The reason is simple: the  $prem_v(a)$ 's

$(v \in \mathcal{V})$  are premia only for the empirical risk in  $a$ , while the  $prem_v(p_a)$ 's  $(v \in \mathcal{V})$  are premia also for normative risk, since  $a$ 's value prospect  $p_a$  also captures normative risk. By contrast, at the meta-level the principle uses the *option-level* risk premium  $Prem_v(a)$ , as  $Prem_v(a)$  is already a premium for both types of risk, by being formed under normative uncertainty.

Stating the principle using option-level risk premia at both levels – first-order and meta – would have been implausible: it would have required that a unanimous premium for *empirical* risk be adopted as the meta-theoretic premium for *empirical and normative* risk.

The point becomes obvious if  $a$  is empirically riskless, i.e., yields a sure world: then  $a$ 's first-order risk premia  $prem_v(a)$  ( $v$  in  $\mathcal{V}$ ) are unanimously zero, yet a non-zero meta-theoretic premium may be justified by normative uncertainty.

## 11.6 Illustration of The Risk-Attitudes

**Section 11.6** illustrate the different risk attitudes of the four expectational theories introduced in the previous chapter.

Which risk attitudes do our four theories have? As summarized in Table **11.1**, one is risk-neutral (no penalty for risk), one is risk-impartial (deference to risk-attitudinal judgments), and two have hybrid risk-attitudes, i.e., are risk-neutral or risk-impartial depending on the origin of risk.

To explain why, we use our example, in which all valuations are risk-averse, so that risk-impartiality becomes risk-aversion.

	Neutral to Normative Risk	Impartial relative to Normative Risk
Neutral to Empirical Risk	<i>Ex-Post Expectationalism</i>	<i>Reverse Expectationalism</i>
Impartial relative to Empirical Risk	<i>Standard Expectationalism</i>	<i>Ex-Ante Expectationalism</i>

Table 11.1: **THE RISK ATTITUDES OF THE FOUR EXPECTATIONAL THEORIES WITH RISK-AVERSE VALUATIONS**

Firstly, *Standard Expectationalism* applies the valuations  $v$  and  $v'$  to the option, which captures only empirical risk. This leads (by risk aversion of  $v$  and  $v'$ ) to a penalty or discount for empirical risk only: the theory is averse to empirical risk but neutral to normative risk. This explains why in Table 12.1 the normatively risky option 1 receives the undiscounted value of 2, while the empirically risky option 2 gets the discounted value of 1.

Secondly, *Post-Expand Expectationalism* applies the two valuations to the outcome, which captures no risk. So, no risk is penalized: the theory is globally risk neutral. This explains why both options in Table 12.1 get the undiscounted value of 2.

Third, *Ex Ante Expectationalism* applies the two valuations to the ex ante value prospect, which captures the risk of both origins. So all risk is penalized: The theory is globally risk-averse. This explains why both options in Table 12.1 get the discounted value of 1.

Fourthly, *Reverse Expectationalism* applies the two valuations to the empirically ex-post value prospect, which captures only normative risk. So the only normative risk is penalized: the theory is averse only to normative risk. This explains why in Table 12.1 only the normatively risky option gets the discounted value of 1.

## 11.7 Unified Representation of Expectational Theories

Section 11.7 starts by the less general unification of the four expectational theories through *the value prospects*.

Before doing so, it is worth resuming the four expectational theories. Hence, we have:

Information Type	Normatively Ex-Post	Normatively Ex-Ante
Empirically Ex-Post	<i>Ex-Post Expectationalism</i>	<i>Reverse Expectationalism</i>
Empirically Ex-Ante	<i>Standard Expectationalism</i>	<i>Ex-Ante Expectationalism</i>

Table 11.2: **THE FOUR EXPECTATIONAL THEORIES AND THEIR EVALUATION MODES**

The following theorem re-expresses the four theories in a comparable format, showing that they only differ in the locus of expectation-taking, i.e., in the sort of prospect whose expected value they maximize.



**Theorem 1 (UNIFICATION WITH VALUE PROSPECTS)**

Each expectational theory  $V \in \{EV_{ante}, EV_{post}, EV_{stan}, EV_{rev}\}$  evaluates any option  $a \in A$  by the expected value of a specific value prospect, i.e.,

$$V(a) = \sum_{(x,v) \in X \times \mathcal{V}} \underbrace{a(x)Pr(v)}_{\text{prob. of } (x,v)} v(p),$$

where ' $p$ ' stands for the:

- ex-ante value prospect  $p_a$  if  $V = EV_{ante}$
- ex-post value prospect  $p_{x,v}$  if  $V = EV_{post}$
- normatively ex-post value prospect  $p_{a,v}$  if  $V = EV_{stan}$
- empirically ex-post value prospect  $p_x$  if  $V = EV_{rev}$

## Chapter 12

# A Defense of Ex-Ante Expectationalism

In [Chapter 12](#), we defend a particular theory within this *Expectationalism* framework, the *Impartial Value Theory*, which avoids both limits expected value theory suffers. [Section 12.1](#) shows that the impartial value theory relies only on ex-ante value prospects. [Section 12.2](#) shows that the impartial value theory respects normative risk-attitudinal judgments. [Section 12.3](#) anticipates a criticism that one might have against the linearity of the impartial value theory: its linearity does not cause any neutrality to be a normative or empirical risk.

## 12.1 The Unique Dependence On Ex-Ante Value Prospects

Section 12.1 shows that the impartial value theory relies only on ex-ante value prospects.

Consider our leading example, with its two risk-averse valuations  $v$  and  $v'$  of correctness probability  $\frac{1}{2}$  each. The riskless option  $b$  of redistributing the medicine to Bob and Claire produces a certain world  $x$ ; it is indicated by  $x_{100\%}$ . As its value is 4 under  $v$  and 0 under  $v'$ ; its value prospect is denoted  $4_{50\%}0_{50\%}$ . Its overall value according to expected value theory is  $\frac{1}{2}4 + \frac{1}{2}0 = 2$  – something we have criticized for being neutral to normative risk, although  $v$  and  $v'$  are risk-averse.

Attempting to repair expected value theory by aggregating the possible values 4 and 0 ‘non-expectationally’ – into some overall value below 2 – is a non-starter, as shown earlier. We should aggregate other information than the first-order option values. *What* other information?

Let us discuss the two main approaches. To illustrate them, consider the risky option  $c$  of curing Bob with a different medicine that has either no side effect (the ‘positive’ world  $y$ , of probability 50%) or a severe side effect (the ‘negative’ world  $z$ , of probability 50%); formally,  $c = y_{50\%}z_{50\%}$ . Both  $v$  and  $v'$  assign value 4 to  $y$  and value 0 to  $z$ ; so  $c$ ’s value prospect is  $4_{50\%}0_{50\%}$ . Being risk-averse,  $v$  and  $v'$  both evaluate  $c$  at 1, below the expected value of 2.

Although both options  $b$  and  $c$  have the same value prospect, the source of uncertainty is normative for  $b$  and empirical for  $c$ .

option	value prospect of option			evaluation of option by			
	under $v$	under $v'$	overall	$v$	$v'$	$EV$	$IV$
$b = x_{100\%}$	$4_{100\%}$	$0_{100\%}$	$4_{50\%}0_{50\%}$	4	0	2	2
$c = y_{50\%}z_{50\%}$	$4_{50\%}0_{50\%}$	$4_{50\%}0_{50\%}$	$4_{50\%}0_{50\%}$	1	1	1	2

Table 12.1: EV AND IV IN THE HEALTH ETHICS EXAMPLE

Table 12.1 shows how  $b$  and  $c$  are evaluated by EV and IV. That object – called the ‘focus of evaluation’ – differs.

On the one hand, the evaluation focus for EV is the option itself. It turns out that the overall value of an option is the average value of that option itself, i.e.,  $\frac{1}{2}4 + \frac{1}{2}0 = 2$  or  $\frac{1}{2}1 + \frac{1}{2}1 = 1$ , respectively. Here the focus of evaluation – the option – captures empirical risk by being a lottery over the worlds but captures no normative risk. Through applying the (risk-averse) valuations in  $\mathcal{V}$  to options,  $EV$  discounts for empirical risk, not for normative risk: it is averse to empirical risk only. Options without empirical risk like  $b$  are evaluated without discount, which explains why  $b$  gets a higher value than  $c$

On the other hand, the focus of the IV evaluation is the prospect of the option value, which is  $4_{50\%}0_{50\%}$  both times, which captures both empirical and normative risk. So we must calculate how the value prospect  $4_{50\%}0_{50\%}$  is evaluated on average by  $v$  and  $v'$ . But first, how does a valuation ( $v$  or  $v'$ ) evaluate value prospects rather than options? Value prospects are evaluated like their corresponding options:  $v$  takes  $4_{50\%}0_{50\%}$  to be the value prospect of option  $y_{50\%}z_{50\%}$ , so that  $v(4_{50\%}0_{50\%})$  reduces to  $v(y_{50\%}z_{50\%}) = 1$ ; and  $v'$  also takes  $4_{50\%}0_{50\%}$  to be the value prospect of  $y_{50\%}z_{50\%}$ , so that  $v'(4_{50\%}0_{50\%})$  reduces to  $v'(y_{50\%}z_{50\%}) = 1$ . So the average value of  $4_{50\%}0_{50\%}$  is

$\frac{1}{2}v(4_{50\%}0_{50\%}) + \frac{1}{2}v'(4_{50\%}0_{50\%}) = \frac{1}{2}1 + \frac{1}{2}1 = 1$ . The ‘impartial value’ is the average value of the value prospect.

## 12.2 The Respect of Normative Risk-Attitudinal Judgments

Section 12.2 shows that the theory of impartial value respects normative judgments about attitudinal risk.

One might feel uncomfortable with imposing a particular risk attitude on meta-evaluation: where would the justification come from?

An interesting alternative to imposition is to adopt whatever risk attitude decision makers believe to be correct for first-order valuations: if they are certain of a particular risk attitude such as risk-aversion, i.e., hold positive credence only in valuations with that risk attitude, then their metaevaluations adopt that same risk attitude.

We call this *risk impartiality* because your metalevel risk attitude defers to your risk-attitudinal judgments. In our example from Section XX, decision makers are certain that risk aversion is correct, as they are certain that one of the risk aversion valuations  $v$  and  $v'$  is correct; so a risk-impartial theory is risk averse. As seen in Section XX, risk-impartiality seems to be a natural default, at least in the absence of a convincing argument for any particular metalevel risk attitudes.

**Respecting Homogeneous Normative Risk-Attitudes.** Of the four meta-theories, only the impartial value theory respects the unanimity principle defined in Section XX as Theorem 4 below shows.

**Theorem 2 (IMPARTIAL VALUE THEORY SATISFIES RISK-ATTITUDINAL PRINCIPLE)**

The Risk-Attitudinal Unanimity Principle, in its qualitative or quantitative version, is satisfied by the theory of impartial value *IV*, but can be violated by *EV*.

Intuitively, the expected value theory violates it by respecting the first-order risk attitudes w.r.t. just empirical risk (*EV*) or just normative risk; and the impartial value theory satisfies it by subjecting all risk to the valuations in  $\mathcal{V}$ .

**Respecting Heterogeneous Normative Risk-Attitudes.** Often there is risk-attitudinal uncertainty, i.e., heterogeneity in the risk attitudes across first-order valuations. In this heterogeneous case, the impartial value theory forms a linear compromise between the competing first-order risk attitudes.

**Theorem 3 (IMPARTIAL VALUE THEORY IS RISK-IMPARTIAL)**

The degree of risk aversion of the impartial value theory  $IV$  towards an option  $a \in A$  is the expected ('average') degree of risk aversion towards  $a$ 's value prospect:

$$Prem_{IV}(a) = \sum_{v \in \mathcal{V}} Pr(v) prem_v(p_a).$$

Intuitively,  $IV$  has an impartial risk attitude in the sense of a linear compromise between first-order risk attitudes.  $IV$  thus satisfies Section ??'s Risk-Attitudinal Impartiality Principle, *provided* that principles are given a suitable linear interpretation.

The meta-theoretic risk premium  $Prem_{IV}(a)$  is a compromise between the prospect-level risk premia  $prem_v(p_a)$  ( $v \in V$ ), not the option-level risk premia  $prem_v(a)$  ( $v \in V$ ). This is a desirable feature, not a bug, because each  $prem_v(a)$  only accounts for the empirical risk in  $a$ , while each  $prem_v(p_a)$  also accounts for the normative risk.

## 12.3 Impartial Value Theory: Linearity Versus Nonlinearity

Section 12.3 anticipates a criticism that one might have against the linearity of impartial value theory: its linearity does not cause any neutrality to be a normative or empirical risk.

The impartial value theory (*IV*) has something in common with the classic expected value theory (*EV*): the expectational or linear form. Indeed, *IV* builds a linear average of the  $v(p_a)$ 's ( $v \in \mathcal{V}$ ), not any geometric average or other nonlinear compromise.

While *EV*'s linearity causes the questionable neutrality to the normative risk, *IV*'s linearity does not cause any neutrality to be a normative or empirical risk. *IV* globally respects risk-attitudinal judgments, as established formally later.

Aggregating the  $v(p_a)$ 's in some nonlinear way – in an attempt to (even better) respect risk-attitudinal judgments – could have the converse effect of ‘overshooting’ the risk attitude because of double-risk discounting. Why? Assume that all  $v \in \mathcal{V}$  are risk-averse and suppose that in response the  $v(p_a)$ 's ( $v \in \mathcal{V}$ ) were aggregated sublinearly, into some overall value  $IV^*(a) < IV(a)$ . The meta-theory  $IV^*$  can be more risk-averse than all valuations  $v \in \mathcal{V}$ . Each value  $v(p_a)$  ( $v \in \mathcal{V}$ ) already contains a risk premium for all risk in  $a$ , empirical and normative, and hence so does  $IV(a)$ . Reducing  $IV(a)$  further to  $IV^*(a)$  imposes another risk premium, a second one. One becomes more risk-averse at the metalevel than is certainly correct at the first-order level. On the contrary, correcting the classic expected value  $EV(a)$  by subtracting a risk premium does not need to lead to double risk discounting because  $EV(a)$  does not yet contain any premium for normative risk. Nevertheless, a nonlinear aggregation of the  $v(a)$ 's has different problems, explained in Section ??.

This said we do not categorically insist on linearity. We insist on aggregating the  $v(p_a)$ 's ( $v \in \mathcal{V}$ ) rather than the  $v(a)$ 's ( $v \in \mathcal{V}$ ), but we only



propose a weighted linear average as the the most natural approach. Other approaches might be defensible if they somehow avoid double-risk-discounting.

One might more explicitly call  $IV$  the '*linear* impartial value theory', which falls into the class of '*generalized* impartial value theories', i.e., of meta-theories  $IV^*$  which define the overall value of options  $a$  by aggregating the  $v(p_a)$ 's in *some* (possibly non-linear) way. Formally,  $IV^*(a) = F(v(p_a))_{v \in \mathcal{V}}$  for all  $a \in A$ , for some fixed aggregation function  $F$  from  $\mathbb{R}^{\mathcal{V}}$  to  $\mathbb{R}$  (on which one might impose regularity conditions, such as increasingness).

## Chapter 13

# A Taxonomy of Information Under Complex Uncertainty

In [Chapter 13](#), we propose a taxonomy of information concepts to build a general account of *experimentalism under normative uncertainty*, going from the less general unification to the most general unification.

[Section 13.1](#) introduces a first new concept, necessary for the more general unification: information as a complex event. [Section 13.2](#) builds on the previous section to define the second necessary concept for the generalization: information-based value prospect. [Section 13.3](#) pursues the generalization by defining the general value prospects. [Section 13.4](#) defines the last concept necessary for generalization: information partition.

## 13.1 Information as a Complex Event

Section 13.1 introduces a first new concept, necessary for the more general unification: *information as a complex event*.

To introduce a single generic expectational theory, of which our four earlier theories are nothing but special cases as in Section XX, we first need to introduce a parameter on which such a generic theory depends. This parameter determines the evaluation mode, i.e. the extent of ex-postness. Particular choices of this parameter yield our four special expectational theories and all other expectational theories. There are not just four expectational theories, but a large and unified class of expectational theories.

The parameter determining the expectational theory is the type of *information* relative to which evaluation is ex-post:

- Full information yields *Ex-Post Expectationalism*
- No information yields *Ex-Ante Expectationalism*
- Purely normative information yields *Standard Expectationalism*
- Purely empirical information yields *Reverse Expectationalism*

Nevertheless, other types of information mixture yield other expectational theories.

We model an information by an *empirical-normative event*  $I \subseteq X \times \mathcal{V}$ , containing the empirical-normative worlds  $(x, v)$  which are consistent with the information:

- The information of a full empirical-normative world  $(x, v)$  is  $I = \{(x, v)\}$ , containing just one world; the vacuous or tautological information is  $I = X \times \mathcal{V}$ , containing all worlds;
- The information of a valuation  $v$  is  $I = X \times \{v\}$ , containing worlds of type  $(*, v)$ ;
- The information of an outcome  $x$  is  $I = \{x\} \times \mathcal{V}$ , containing worlds of type  $(x, *)$ .

Recall that each option  $a$  generates a world prospect, i.e., a probability function over worlds. Let us denote it by  $P_a$ . The probability of a world  $(x, v)$  is  $P_a(x, v) = a(x)Pr(v)$ , the product of the probabilities of  $x$  and  $v$ .

## 13.2 Information-Based Value Prospects

**Section 13.2** builds on the previous section to define the second necessary concept for generalization: *information-based value prospect*.

To define our general expectational theory, we need a general notion of value prospect, which has an arbitrary degree of ex post-ness, that is, conditionalizes on arbitrary information  $I$ . We call it the ‘ex- $I$  value prospect’ is the value prospect from the perspective of  $I$ . Now we define it formally.

**Definition 27 (The Ex-I Value Prospect)**

For any option  $a \in X$  and information  $I \subseteq X \times \mathcal{V}$  (of non-zero probability  $P_a(I)$ ), the ex-I value prospect of  $a$  is the value prospect  $p_{a,I}$  such that the probability of a value level  $k \in \mathbb{R}$  is the probability that  $a$  results in value  $k$  given  $I$ :

$$\begin{aligned} p_{a,I}(k) &= \text{probability of final value } k \text{ given } I = \frac{\text{prob. of } [I \text{ \& final value } k]}{\text{prob. of } I} \\ &= \frac{P_a(\{(x, v) \in I : v(x) = k\})}{P_a(I)}. \end{aligned}$$

### 13.3 General Value Prospects

**Section 13.3** pursues generalization by defining *general value prospects*.

This general notion of value prospect encompasses our four earlier notions:

**Proposition 1 (Unifications of Value Prospects With The Ex-I Prospect)**

The ex-I value prospect  $p_{a,I}$  of an option  $a \in A$  given an information  $I \subseteq X \times \mathcal{V}$  (of non-zero probability  $P_a(I)$ ) coincides with the

- ex-ante value prospect  $p_a$  if  $I = X \times \mathcal{V}$  (no information)
- ex-post value prospect  $p_{x,v}$  if  $I = \{(x, v)\}$  (information of a full world  $(x, v)$ )
- normatively ex-post value prospect  $p_{a,v}$  if  $I = X \times \{v\}$  (information of a valuation  $v$ )
- empirically ex-post value prospect  $p_x$  if  $I = \{x\} \times \mathcal{V}$  (information of an empirical outcome  $x$ )

Recall that each valuation  $v$  in  $\mathcal{V}$  can evaluate not just options, but also value prospects. So we can form  $v(p_{a,I})$ , which tells how valuable  $v$  finds the prospect of option  $a$  given  $I$ . We call  $v(p_{a,I})$   $a$ 's *ex- $I$  value of  $a$* , according to  $v$ .

## 13.4 Information Partition

Section 13.4 defines the last concept necessary for generalization:

*information partition.*

In the next chapter, we will provide and discuss such a generalization. An expectational theory reasons ex-post w.r.t. some information. A type of information is represented by an *information partition*: a partition of the set  $X \times \mathcal{V}$  of empirical-normative worlds.  $\mathcal{I}$  contains the information  $I$  on which the reasoner conditionalizes when conceptualizing options as prospects.

As such,  $\mathcal{I}$  defines a degree of ex post-ness of evaluation:

- Fully ex-post evaluation is defined by the finest information partition  $\mathcal{I} = \{\{(x, v)\} : (x, v) \in X \times \mathcal{V}\}$ ; fully ex-ante evaluation by the coarsest partition  $\mathcal{I} = \{X \times \mathcal{V}\}$ ;
- Normatively ex-post evaluation by the partition  $\mathcal{I} = \{X \times \{v\} : v \in \mathcal{V}\}$  into 'valuation events';
- Empirically ex-post evaluation by the partition  $\mathcal{I} = \{\{x\} \times \mathcal{V} : x \in X\}$  into 'outcome events';
- Other hybrid evaluation modes by other partitions.

## Chapter 14

# General Expectationalism under Complex Uncertainty

In [Chapter 14](#), using the concepts introduced in the previous chapter, we generalize the evaluation modes and propose a general theory under complex uncertainty: *General Expectationalism*. This general framework comes into two types. [Section 14.1](#) presents the *information partition-based* Expectationalism. [Section 14.1](#) presents the *information partition type-based* Expectationalism. [Section 14.3](#) shows how we can reduce General Expectationalism to Standard Expectationalism introduced in [Chapter 8](#).

## 14.1 Information Partition-Based General Expectationalism

Section 14.1 presents the *information partition-based* Expectationalism.

An information partition  $\mathcal{I}$  – a degree of ex-post-ness – determines an expectational theory, which evaluates options by the expected value (across empirical-normative worlds) of the prospect w.r.t.  $\mathcal{I}$ . We can now formally define Ex- $\mathcal{I}$  Expectationalism, noted ‘ $EV_{\mathcal{I}}$ ’ as follows:

### Definition 28 (Ex- $\mathcal{I}$ Expectationalism)

The meta-value of an option  $a \in A$  is the expected value of the ex- $\mathcal{I}$  prospect:<sup>a</sup>

$$EV_{\mathcal{I}}(a) = \sum_{(x,v) \in X \times \mathcal{V}} \underbrace{a(x)Pr(v)}_{\text{prob. of } (x,v)} v(p_{a,\mathcal{I}(x,v)}) \text{ ('expected ex-}\mathcal{I}\text{ value')}$$

where  $\mathcal{I}(x, v)$  is the information in empirical-normative world  $(x, v)$   
i.e., the  $I \in \mathcal{I}$  containing  $(x, v)$ .

<sup>a</sup>Although  $p_{a,\mathcal{I}(x,v)}$  becomes undefined in the zero-probability case  $P_a(\mathcal{I}(x, v)) = 0$ , no ambiguity arises. Whenever  $p_{a,\mathcal{I}(x,v)}$  is undefined, the value  $v(p_{a,\mathcal{I}(x,v)})$  can be interpreted arbitrarily, as it is multiplied by 0 ( $= P_a(x, v) = a(x)Pr(v)$ ) and so has no effect.

## 14.2 information partition type-based General Expectationalism

Section 14.2 presents the *information partition type-based* Expectationalism.



We can now define ‘Expectationalism’ as a general framework for evaluation and making decisions under normative-empirical uncertainty : the meta-value is given by *some* expectational theory, i.e., by Ex- $\mathcal{I}$  *Expectationalism for some* information type  $\mathcal{I}$  some partition of  $X \times \mathcal{V}$ . Hence, our four earlier theories are special cases, obtained by plugging in certain information types, i.e., certain degrees of ex-post evaluation:

**Theorem 4 (UNIFICATION WITH EX- $\mathcal{I}$  INFORMATION)**

Ex- $\mathcal{I}$  Expectationalism coincides with

- Ex-Ante Expectationalism if  $\mathcal{I} = \{X \times \mathcal{V}\}$  (no information)
- Ex-Post Expectationalism if  $\mathcal{I} = \{(x, v) : (x, v) \in X \times \mathcal{V}\}$  (full information)
- Standard Expectationalism if  $\mathcal{I} = \{X \times \{v\} : v \in \mathcal{V}\}$  (normative information)
- Reverse Expectationalism if  $\mathcal{I} = \{\{x\} \times \mathcal{V} : x \in X\}$  (empirical information)

## 14.3 Implications of The $vNM$ Hypothesis

Section 14.3 shows how we can reduce General Expectationalism to Standard Expectationalism introduced in Chapter 8.

Are there any circumstances under which it becomes irrelevant how decision-makers reason? That is, can it happen that all degrees of ex-post evaluation extensionally yield the same expectational theory, hence the same evaluative judgments, albeit through different procedures? This

question matters. If all evaluation modes were extensionally equivalent, decision-makers could reason as they wish or find easiest.

The question has a sharp answer. The evaluation mode is irrelevant *if and only if* you have full credence in the *vNM* Hypothesis, i.e., assign zero probability to all valuations in  $\mathcal{V}$  that are not *vNM* ('von-Neumann-Morgenstern'). Recall that *vNM* valuations  $v$  evaluate options  $a$  in  $A$  by the expected value of the outcome:  $v(a) = \sum_{x \in X} a(x)v(x)$ . See Section ?? for discussion.

**Theorem 5 (REDUCTION OF EXPECTATIONALISM GIVEN THE *vNM* HYPOTHESIS)**

All expectational theories  $EV_I$  coincide (i.e., the evaluation mode has no effect) if and only if you are certain of the *vNM* hypothesis, i.e.,  $Pr(v) = 0$  for all valuations  $v$  in  $\mathcal{V}$  that are not *vNM*.

Some scholars have defended the *vNM* hypothesis (and many have assumed it to simplify models). However, few of them would go so far as to be utterly certain of that hypothesis. These few people can safely reason as they wish: their evaluation mode has no effect by Theorem 5. All others, who doubt the *vNM* hypothesis, face the hard choice between evaluation modes, i.e., between expectational theories.

## **Part IV**

# **MEASURING EVALUATIONS UNDER NORMATIVE UNCERTAINTY**

## Abstract

In **Part IV**, we explore how, by developing novel interdisciplinary survey methods, we can establish the empirical legitimacy of normative uncertainty and provide large representative evidence of its existence as an empirical fact. **Chapter 15** introduces the *Normative Uncertainty Survey*. **Chapter 16** elaborates in more detail the different objects of evaluations over which we measure the normative uncertainty. **Chapter 17** elaborates in more detail on the different scales that we use to measure normative uncertainty. **Chapter 18** presents evidence of normative uncertainty from a representative sample from the United States.

# Chapter 15

## The NUS Design: An Interdisciplinary Approach to Surveys

In [Chapter 15](#), we introduce the Normative Uncertainty Survey (NUS). [Section 15.1](#) presents the different goals and the NUS targets for the different audiences. [Section 15.2](#) presents the NUS's two-stage methodology. The first stage elicits the evaluations through different modules, and the second stage measures normative uncertainty over them through different scales. [Section 15.3](#) describes the different groups, differentiated by the different scales of normative uncertainty. [Section 15.4](#) discusses the specific pre-launch strategy that we use to design the survey: one-to-one pre-launch interviews with experts and policy makers, interdisciplinary academic pre-launch workshops with philosophers, psychologists, and economists, and civil society focus groups.

## 15.1 Aims and Audiences

Section 15.1 presents the different audiences the NUS targets.

The NUS aims to establish normative uncertainty as an empirical fact.

Normative uncertainty should exist not only as an ontological fact<sup>1</sup> but also as an empirical fact to be relevant for social sciences and operational research in applied ethics. Establishing the empirical dimension of the concept through experimental and survey methods becomes relevant from a collective or societal perspective. The way in which we establish the empirical legitimacy of a concept is three-fold. First, we establish it relative to a given set of *evaluative objects*. Second, we establish it relative to a given population. Third, we establish it given specific empirical methods. The more robust the techniques we use, the more relevant the concept empirically.

With these three constraints in mind, we have developed the NUS. First, we establish normative uncertainty within a wide range of practical contexts going from economic preferences to social preferences, passing through several other evaluative attitudes such as social value judgments, moral preferences, political opinions, and policy preferences deemed important by civil society and public decision makers. Each attitude refers to the specific academic literature in social sciences that we will review in the next chapter. Second, we establish it relative to a large and representative US population<sup>2</sup>, which avoids several criticisms directed to the use of student

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<sup>1</sup>See our companion manuscript, *The Experience of Normative Uncertainty*.

<sup>2</sup>The main reasons for why we went relative to an American population are the following. First, most empirical social sciences have been established in relation to a similar population.

lab samples (in particular, the criticisms of internal validity). Third, we used an underestimated mixed qualitative-quantitative technique to establish this empirical fact.

On the one hand, we rely on an interdisciplinary approach, mixing philosophy, and survey methodology to design and justify the wordings of each item. We use interviews and focus groups with civil society, policy makers, and experts to select the evaluation objects and adjust the survey items' wordings. On the other hand, we develop a two-stage methodology, aiming to approximate the concept of normative uncertainty as follows. We interpret it through different meta-ethical positions<sup>3</sup> by developing associated psychological scales that we present in the next chapter. It turns out that the NUS provides the first data set on normative uncertainty and the largest in terms of population size and correlated attitudes.

Given these three constraints, the NUS aims to be useful to three audiences who have participated in producing it: social scientists, public decision makers, and civil society.

As we describe in the next sections, to address such a diverse audience, we develop a 'top-down' criterion in selecting issues and evaluations relative to

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It would allow more easily to insert the NUS within this history and make comparisons. Second, the entire thesis has been written, developed with and presented to English-speaking citizens and academic experts, and launching it relative to a non-American population would imply the same efforts in terms of interviews and focus groups, which was not possible to do within this limited amount of time and for a one-person job. However, with a larger grant and team, launching the NUS relative to a global population, as done for the Global Preferences Survey effort led by Armin Falk (Falk et al. (2018)) could consist of interesting post-doc research.

<sup>3</sup>See the introduction of our doctoral thesis.

which we measure normative uncertainty. Before getting into more details of such a criterion, let us first describe the structure of this methodology.

## 15.2 A Two-Stage Methodology

**Section 15.2** presents the NUS's two-stage methodology. The first stage elicits the evaluations through different modules, and the second stage measures normative uncertainty over them through different scales.

We design the NUS as follows. Apart from containing a series of sociodemographic and political ideology questions, it contains two main kinds of survey items. The first type of item consists of the elicitations of the evaluation on a specific type of object<sup>4</sup>

## 15.3 Groups and Randomization

**Section 15.3** describes the groups determined by different scales of normative uncertainty.

**Four groups.** We subdivide the total population of participants into four subgroups of equal size. Each group faces all the modules described as two of four scales of normative uncertainty, one direct scale and one indirect scale. Each time, the direct scale comes first, followed by the indirect scale. We do so to describe not only normative uncertainty *per se* but the accompanying psychological proxy attitudes (i.e., the experiences of difficulty and ambivalence).

The four groups are described as follows:



- Group A faces the objective scale and the ambivalence scale.
- Group B faces the objective scale and the difficulty scale.
- Group C faces the subjective scale and the ambivalence scale.
- Group D faces the subjective scale and the difficulty scale.

**Three levels of randomization.** Participants are randomly assigned to one of the four groups described above. The randomization is processed as follows:

- **Random-level 1:** Participants are randomly assigned to one of the four groups (A, B, C, D).
- **Random-level 2:** Participants are randomly assigned to a different ordering of first-stage blocks.
- **Random-level 3 :** Participants are randomly assigned to a different ordering of elements within each first-stage block.

## 15.4 Anthropologic Pre-Launch Plan

**Section 15.4** discusses the specific pre-launch qualitative strategy we use to design the survey. Such a strategy consists of pre-launch one-to-one interviews with experts and policy makers, pre-launch workshops with interdisciplinary academics (philosophers, psychologists, and economists), and civil society.

At the outset, what we call “Pre-Launch Plan” (PLS) should not be confused with “Pre-Analysis Plan” (PAP), which requires researchers to register the specific statistical hypothesis they want to test before they collect their data

on a public website.<sup>5</sup> Most of the time, surveys like ours aim to describe a new phenomenon rather than testing a specific hypothesis.

PLP includes pre-launch focus groups and one-to-one interviews. Both have been widely used in other social sciences as stressed by Briggs (1986), in particular in sociology (see Kvale and Brinkmann (2009)) and in management sciences and marketing as stressed by Cox et al. (1976) and Rowley (2012) for example. Although it has been underestimated in economics until recently, it seems to be more considered.<sup>6</sup> We ran several pre-launch focus workshops and conducted several interviews to adjust the usefulness, comprehension, and relevance of our survey items for each audience. They enable increasing the data collection quality by improving the survey design dimensions as follows.

First, they help to check the relevance of the survey to policy making and civil society (Kahan (2001)) and build with them relevant survey items in case some are missing. Second, it permits better certifying that participants would understand the purpose of the survey and its elements (O'Brien (1993)). Third, they help to work on clarity, precision, but also adequacy in the real world and the psychological effects of the wording on the participants (Wolff et al. (1993)). Fourth, it enables one to check the

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<sup>5</sup>In economics, see the *AEA RCT Registry*. Most often, such PAP is ethically desirable for development economists launching “Randomized Control Trials”, which involves the implementation of concrete policies affecting participants’ lives (see Banerjee et al. (2020)) but less concerned for surveys about attitudes as ours.

<sup>6</sup>For instance, one can refer to the recent global survey on economic preferences by Falk et al. (2018) launched over 80 countries, where the authors used professional translators and translation focus groups to make sure that the translation of the survey items from one language to another was to minimize possible loss of meaning. In our case, we only launch the NUS on the American population, so we do not need professional translators and translation focus groups, but will use them if we launch it on another population.

robustness of the survey methodology (Morgan et al. (1993)). Fifth, to understand, from the ground, the constraints public decision makers create when elaborating and making policy decisions (Reeve et al. (2013)) and, more generally, the population we study.<sup>7</sup>

In the following, we describe the prelaunch focus groups and interviews.

### 15.4.1 Interviews With Experts And Policy-Makers

Let us start with the one-to-one interviews we conduct with experts and policy makers.

There are three types of interviews used in social sciences: unstructured, semistructured, and structured (Berg et al. (2012)). Our interviews are *semi-structured*. That is to say, we target the same predefined objectives with all our interviews and the same questions, but the way we ask them differs, mainly due to time and space constraints. As such, they differ from *unstructured interviews* which are “discovery discussions”, led differently and with different objectives given the interview and from *structured interviews*, led in the same way, with the same time constraints and with the same questions / objectives and language.

We briefly present the purpose of our interviews. Then we will discuss how we conduct them and whom we interview. Finally, we resume the main results of these interviews and for which part of our survey design they contribute to improving.

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<sup>7</sup>For instance, see Williams and Parang (1997) for a specific study on librarian agents.

**Objectives of the interviews.** We have three objectives with the interviews with experts and policy makers. First, we aim to better understand how and when ethical considerations are taken into account by policy cabinet members and public offices ethical considerations, prior decision-making, and which “ethical expert”, if anyone, is consulted at short notice before the decision or not. Second, we aim to explore which measures the cabinet takes when policy decisions conflict with the population’s expectations. Third, our objective is to know whether this survey on normative uncertainty would just be considered as another “academic” exercise, without any concrete public policy application, or it could leverage public debate and help to improve the ethical transparency of public decision-making.

**How we conduct the interviews.** I conducted about twenty interviews with 20 public decision makers, and economic advisers between May 2018 and May 2019 were conducted in person or by telephone. Most interviews last to a maximum of 30 minutes, dedicating 20 minutes for the three questions described in the previous paragraph and saving a margin of 10 minutes if the expert had to leave earlier or wanted to add a random point of precise one of the three questions.

**Who is interviewed.** This sample respects the anonymity required by the interviewees. However, we can say that it includes a broad scope of a dozen policy makers and experts, ranging from national to international levels. At the national level, we interview the following experts and policy makers: a member of the current cabinet of the French Minister of the Economy and Finance; an economic advisor to the previous the French

Minister of Culture; a member of the cabinet of the previous French President; two economists of the French Economic Ministry; a long-standing previous chief economist to the Israeli Economic Ministry; a long-standing economic advisor to the previous US government. At the international level, the following experts and policy makers: an economist advisor to Gallup; an economist advisor to a renowned French poll company; another economist advisor to the OECD; a chief of staff at the IMF; a previous president of the World Bank; several policy-makers at Brookings; several policy-makers at the PIIE Institute.

**Main results of the interviews.** We highlight the main results of the interview and the specific changes in the survey design that it led me to implement. First, there seems to be a consensus about time constraints. We must keep it concise if we want to implement such an NUS survey on policy makers and expert populations due to their time constraints. This led me to design specific independent modules so that researchers could launch specific parts conditional on the policy they assess and their time budget. Second, most prefer to see more “concrete” policy dilemmas than “abstract” questions about social values in the survey, which led us to design Module 3. Third, experts and policy-makers do act upon their subjective values or, based on brief discussions with their cabinet members and counselors, in case they have to decide quickly between two options. However, if they had the possibility of just “plugging-in” their values or their citizens’ in a simple model to take more global decisions reflecting in a coherent way pluralist

views and being more transparent with their ethical communication, then they would be keen on to rely on such a decision rule.<sup>8</sup>

### 15.4.2 Focus Group With Social and Human Scientists

We conduct two different focus groups with academics. We have different aims: the Princeton Focus Group with researchers in social sciences and the Oxford Focus Group with researchers in humanities.

This first focus group was held in March and April 2019. I co-organized the weekly interdisciplinary “Social Ethics Discussion Seminar” at the University Center for Human Values and the Princeton School of Public and International Affairs during my Research Collaborator fellowship. There were three sessions of two hours each of the Seminar dedicated to the Normative Uncertainty Survey.<sup>9</sup>

**Objectives of The Princeton Focus Group.** The objective of this focus group is two-fold. First, we receive feedback about the concepts of our “modules” and make sure that they are chosen from the most relevant literature in the social sciences. Second, to receive feedback on our scales of normative uncertainty and to ensure that they capture precisely enough the as complete as possible psychological aspects of “beliefs”, introduced in our first part.<sup>10</sup>

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<sup>8</sup>Which we propose in ?? as a study case.

<sup>9</sup>I am grateful to my host and co-supervisor, Marc Fleurbaey, with whom I co-organized the Seminar and both institutions for their hospitality and to all the participants in this focus group.

<sup>10</sup>See in particular [Section 7.4](#).

**Participants of The Princeton Focus Group.** There are fifteen participants in such a group, composed as follows: seven economic philosophers working and (or) familiar with formal works at the frontier in economics and philosophy; five economists, working and (or) familiar with empirical work and identification issues; three psychologists working on or familiar with survey and experimental work in cognitive psychology.

**Main Results of The Princeton Focus Group.** Regarding the first objective, this focus group helped us clarify the language of the main modules to minimize as much as possible any linguistic ambiguity used to describe situations that could be interpreted as “empirical uncertainty” by the participants.<sup>11</sup> Moreover, it led to substantial literature recommendations that helped us insert the normative uncertainty survey into an existing body of literature of social sciences. As such, our empirical work is useful and relevant to explore normative uncertainty in these close research fields. We present such results in the paragraphs entitled “wording relation to the literature” in Chapter 13. Regarding the second objective, it helped to design the structure of the survey, the groups, and how to develop and associate the different scales with each other in a psychologically meaningful way. We have presented these results in Section 12.2 ??.

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<sup>11</sup>We decided to not include the following question in our survey: “would you need more details about the situation to able to answer such a question?” (where “such a question” refers to the scale of normative uncertainty). The main reason is that it seems to us that there would be too much demand for more “empirical information” and too little space and time in a survey to accommodate such a demand.

### 15.4.3 Focus Group With US Citizens

This second focus group was held on 9 May 2019. It was organized and generously sponsored by the Princeton Survey Research Center.<sup>12</sup>

**Objectives of the civil society focus group.** The objective of this focus group is three-fold. First, make sure that our survey points out relevant issues for citizens. Second, we make sure that our survey wordings are understandable by the largest number and not only academics researchers highly specialized. Third, making sure that our choices of survey items and the wording of our questions are *perceived* as ideologically neutral and not leaning towards the conservative or progressive wings of American politics.<sup>13</sup>

**Participants to the civil society focus group.** There are fifteen US citizens in such a group; For this workshop, citizens were financially compensated for their participation on top of material benefits (foods and drinks).

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<sup>12</sup>I am grateful to PSR Director Ed Friedman and the PSR Assistant Director, Naila Rahman, for their constant support in my project and in particular for accessing survey software and this highly valuable focus group. I am also grateful to all these anonymous citizens who participated voluntarily in the survey.

<sup>13</sup>The ideal of axiological neutrality, defined by Weber in his *Politics as Vocation* (Weber (2013)) as a methodological position for all researchers in social sciences is one of the influences which motivated me to focus on introducing normative uncertainty into social sciences. Although this epistemological ideal cannot be achieved for operational research and for conducting economic policies, as shown in ??, it seems nevertheless important to put all possible efforts to direct oneself towards it as the gain of ideological transparency in social sciences is already non-negligent. Therefore, as it is well known that university researchers are often criticized for favoring one or the other political wing, and since I want the NUS to be representative of society as a whole and useful to all citizens of our democracies, I initiated this focus group to involve citizens of all boards in choosing the elements of the NUS and designing their language.



**Main results of the civil society focus group.** The results are multiple. First, several language items were not comprehensible enough due to their complexity. Second, several formulations were not politically neutral enough<sup>14</sup>. This led us to rework the survey items and motivated us to work even more closely with philosophers (see the Oxford Focus Group below) to make even more explicit the ethics<sup>15</sup> behind each semantics See the added paragraphs entitled “Wording’s relation to the literature” in Chapter 13.. Third, some parts of our survey were too long or too ‘wordy, thus diminishing the attention of the citizens. This led us to dedicate more effort to make all survey wordings understandable and concise. Fourth, some interesting policy problems were missing according to the citizens, and we added them.<sup>16</sup>

#### 15.4.4 Focus Group With Philosophers

This third focus group was held through June and July 2019 during my Early Career Conference Program and the Global Priorities Fellowship run by the Forethought Foundation and the Global Priorities Institute at Oxford University. This focus group lasted two hours, followed by several small informal group discussions during my two-month stay there.<sup>17</sup>

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<sup>14</sup>For instance, during our debrief, some participants had the impression the first time that answering questions about the climate was politically sensitive due to their initial phrasing. They responded to this concern, according to them, for the final version of the survey

<sup>15</sup>Or, as said in the introduction of our doctoral thesis, equivalently the ‘ideology.’

<sup>16</sup>for instance, the intragenerational justice in climate changes.

<sup>17</sup>I am grateful to my hosts, William MacAskill and Rossa O’Keeffe-O’Donovan, and the institution for their hospitality and to all the participants in this focus group and the follow-up discussions, in particular: Aaron Valinder, Christian Tarsney, **to complete**

**Objectives of the Oxford Focus Group.** The objective of this focus group is also two-fold. First, we elaborate and check each module's wording and make sure they represent respectfully the very specific ethical view targeted by each of them. Second, check the wording of each normative uncertainty scale and make sure that they represent respectfully and at best the very specific metaethical view targeted by each of them.

**Participants to The Oxford Focus Group.** There are fifteen participants in such a group, all philosophers coming from different subfields: ethics, metaethics, practical ethics, philosophy of language, decision theory, and working on topics closely related to those covered in the NUS.

**Main Results of The Oxford Focus Group.** Regarding the first objective, the results led to the specific formulations of all the survey items, weighted. We received useful recommendations to relate our wording to relevant academic literature on ethical, political philosophy. We present these results in the next chapter. Regarding the second objective, the results led to specific recommendations regarding how we could relate normative uncertainty scales with metaethical positions.

## Chapter 16

# The Objects of Evaluations And Their Elicitations

In [Chapter 16](#), we elaborate in more detail the different objects of evaluations over which we measure normative uncertainty. We classify these into seven survey modules. [Section 16.1](#) describes Module 1, which elicits the absolute importance of social values for a good society. [Section 16.2](#) describes Module 2, which elicits the relative importance of social values for a good society. [Section 16.3](#) describes Module 3, which seeks social evaluations in the context of social dilemmas. [Section 16.4](#) describes Module 4, eliciting moral judgments in the context of moral dilemmas. [Section 16.5](#) describes Module 5, which solicits public opinions on political issues. [Section 16.6](#) describes Module 6, which elicits risk attitudes in the context of monetary decisions. [Section 16.7](#) describes Module 7, which induces attitudes of ambiguity in the context of monetary decisions.

## 16.1 Social Values and Absolute Value Judgments

Section 16.1 describes Module ABSOLUTE SOCIAL IMPORTANCE, which raises the absolute importance of social values for a good society. In Section 16.1.1, we start by specifying how we design Module ABSOLUTE SOCIAL IMPORTANCE and what we mean by "social values for a good society" based on social progress. In section 16.1.2 we flesh out precisely the meaning of their scale of "absolute importance". In section 16.1.3, we provide the formulations of social values and their justification based on different literature in social sciences.

### 16.1.1 The Choice Of Social Values: Revisiting the IPSP

In Section 16.1.1, we start by specifying how we design Module ABSOLUTE SOCIAL IMPORTANCE, what we mean by "social values for a good society".

We design six main social value items based on the widest consensus formed so far in social sciences, the International Panel on Social Progress (IPSP (2018)). This panel consists of more than 300 researchers from all different social sciences (economics, sociology, history, law, psychology) and humanities (religious studies, philosophy).<sup>1</sup> We follow their definition of "a good society"<sup>2</sup> as a society that promotes individual and collective social and economic values in a way that goes beyond the traditional political

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<sup>1</sup>My stimulating work as a research assistant for Marc Fleurbaey on the IPSP back in 2017-2018 at the beginning of my Ph.D. has been crucial for the development of the NUS, which hopefully extends the scope of the Social Progress to this normative uncertainty issue.

<sup>2</sup>Or "social justice" and "social progress" as they use these terms interchangeably.

divide between left-wing and right-wing<sup>3</sup>. After deciding which values we chose in line with the IPSP, we designed and revised the language of these survey items through the 2017 - 2019 academic years by conducting one-to-one interviews and through the focus groups<sup>4</sup>, following the 'two-pole strategy we define in Section ??.

We have several reasons to use the IPSP to define our values.

As stressed in the IPSP, it is hard to define what is meant by "a good society"<sup>5</sup> and for reaching a consensus on which social values are the most important to define such a good society. Not only the disagreement between academics is too severe, but also people around the world seem to hold widely different beliefs on what social justice means<sup>6</sup>. This tension has been established in former empirical works in economics where researchers find heterogeneous social and economic preferences for the population or between economists themselves. For instance, the reader might want to look at the pioneering work by Maya Bar-Hillel; see [Yaari and Bar-Hillel \(1984\)](#) and other seminal works by Alan Krueger ([Fuchs et al. \(1997\)](#)) but also by Alberto Alesina ([Alesina and Angeletos \(2005\)](#)), and John List and his co-authors (see [Levitt and List \(2007\)](#), [List \(2009\)](#)). More recently in economics, such facts have been found on larger survey scales (see [Falk et](#)

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<sup>3</sup>For a synthesis of their work, the reader might consult their synthesis presented as a manifesto ([Fleurbaey et al. \(2018\)](#)).

<sup>4</sup>For purposes of clarity, we do not discuss all the revisions we made on the definitions in the main text but put available the "logfile," in the appendices.

<sup>5</sup>A concern shared by the literature in economic philosophy but as well in normative ethics (see, for example, [Harman \(2014\)](#) and the seminal work by John Broome in [Broome \(2017\)](#)). I am grateful to John Broome for his insightful discussion on this point

<sup>6</sup>On this point, see in particular the Online Appendix section 8.1 of IPSP's Chapter 8, available [here](#).

al. (2018), and in the launch this year of the “Social Economics Lab” by Stephanie Stantcheva dedicated to launch survey on very related topics – see Kuziemko et al. (2015), Alesina et al. (2018), Alesina et al. (2020)<sup>7</sup>.

In the face of such a wide landscape of empirical research done on welfare and social justice, by a concern to develop meaningful metrics, we choose to restrict the measure of normative uncertainty on what the IPSP calls the ‘nonderivative values’<sup>8</sup>. These values are fundamental because they seek for themselves and nothing outside them, in contrast to ‘derivative values, which seek for something else than themselves. Let us illustrate our point using the example found in the IPSP<sup>9</sup>. When policy makers seek to increase the gross domestic product per head, it is not for the sake of GDP itself,, but rather because they are concerned for individual well being. This example shows that GDP is the derivative value and well-being is the nonderivative one.

Besides, while we use less non-derivative values than present in the IPSP, we carefully choose their composition such that they still form coherent and meaningful metrics of social progress. This scale aims to synthesize all the fundamental value information that matters for citizens in society and, as such, aims to be useful for policy makers and social debates. Based on this scale, governments will measure more inclusively different parameters that are considered fundamental for a "good society." Apart from these inclusive characteristics, this scale is also different from other well-known political

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<sup>7</sup>See their other work-in-progress directly on the Social Economics Lab website, [here](#).

<sup>8</sup>They also call them ‘basic values.’

<sup>9</sup>see Chapter 2 of IPSP.

values scales(Ortoleva and Snowberg (2015)) as it allows one to go beyond the traditional political distinction between left-wing values and right-wing values<sup>10</sup>. Finally, it can play an accompanying role in the new individual moral value scales set up by moral psychologists, in particular John Haidt and his colleagues (see Haidt et al. (2009), Graham et al. (2013), Graham et al. (2009), Graham et al. (2011)<sup>11</sup> which lack the social dimension of moral values<sup>12</sup>.

As the IPSP invites the reader, it is quite possible to support the idea of 'social progress, but to interpret it differently than the way proposed in the IPSP and our thesis. As such, if asked, a citizen could "be skeptical about the extent to which current conditions constitute improvements over past conditions. She may also disagree with others about progress consisting of"<sup>13</sup>. Within this context, we find it relevant to push further this questioning opened by the IPSP and imagine that a citizen could be normatively uncertain whether the social progress should be defined as such or such because she is normatively uncertain about the importance that a particular social value, given its specific definition, should play in defining a "good society" or "social progress." It seems interesting to note that even the UN General Assembly recognizes this. In 1969, the UN General Assembly

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<sup>10</sup>See the comparative results in our Appendix.

<sup>11</sup>See the dedicated website directly to the Moral Foundation Theory for more related works, [here](#).

<sup>12</sup>Until very recently, in the Moral Foundation Theory, the only moral values appealing to a social perspective is "altruism," see Graham et al. (2013)

<sup>13</sup>See Chapter 2, IPSP.

stressed that "each Government had the primary role and ultimate responsibility of ensuring the social progress and well-being of its people".<sup>14</sup>

### 16.1.2 The Scales of Absolute Value Judgments

In Section 16.1.2 we make precise the meaning of their scale "absolute importance".

This specific wording is: "According to you, how important is this value for a good society?" Participants must select one degree of importance among five, from the lowest degree to the highest: "not important"; "slightly important", "moderately important", "important", and "very important". The expression of 'good society' aims to capture in a simpler language the idea of 'social progress' that we describe in the next paragraph.

### 16.1.3 The Justification of Social Values' Wordings

In Section 16.1.3, we provide the language of the social values and discuss them in relation to the literature.

#### 16.1.3.1 Security

**Social value wording.**

*Suppose security means that citizens do not fear for their lives and properties.*

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<sup>14</sup>Declarations on Social Progress and Development, Article 8, 1969, see [here](#). See also the Declaration on the Right to Development, [here](#).



**Wording's justification.** Our wording aims to capture the following collective and individual dimensions of security. As stressed by the IPSP, not being vulnerable and securing important goods is a value recognized as a basic value by the overwhelming of national and international institutions and philosophers and social scientists beyond the traditional left-right political value spectrum. Hence, the Human Security Report 2005 highlighted at length the importance of security of the "responsibility to protect" [Centre \(2005\)](#). Individually speaking, Amartya Sen and Martha Nussbaum influentially stressed its importance through their theory of capabilities ([Sen et al. \(1999\)](#), [Nussbaum \(2003\)](#), [Nussbaum \(2006\)](#)). This notion of security theorized through the capabilities has been applied in concrete applied cases, for instance, in the security of women's bodies ([Nussbaum \(2005\)](#)), food security ([Burchi and De Muro \(2016\)](#)) and water security for citizens ([Jepson et al. \(2017\)](#)).

### 16.1.3.2 Freedom

#### **Social value wording.**

*Suppose freedom means that people have the possibility of expressing themselves and pursuing their desires.*

**Wording's justification.** Our wording aims to capture three dimensions as stressed by the IPSP. First, it aims to capture its connection with the capabilities approach: since people value the goods they achieve and the freedom they experience while doing so. Hence, the wording "having the possibility of" refers to the material pre-condition necessary to perform one's freedom ([Pettit \(2001\)](#)). Second, we rely on Berlin's distinction

between "positive freedom" and "negative freedom" (Berlin (1958)), and we aim to capture both. As such, we aim to overcome the critics that Berlin's definition has suffered. For instance, the fact that the negative conception is too 'thin', otherwise, too 'thick' (Taylor and Charles (1985)). By using the wording "having the possibility of", we refer simultaneously to the negative conception, as 'being free from' from external coercion and lack of capacities and as well to the positive conception, as 'being to' perform considered essential for individual self-determination and self-realization, captured by "expressing themselves and pursuing their desires" (by desires we mean "authentic desires" as stressed by Taylor and Charles (1985)<sup>15</sup>. Third, it is worth noting that the realization of freedom is the normative core of modern societies whether from a more political 'socialist' perspective (see for instance Jakobsen and Lysaker (15 Jan. 2015), Honneth (2014)) or from a more 'liberal' perspective (see for instance, Hayek (2020), Hayek (1978), Friedman (2020)).

### 16.1.3.3 Nature-Friendliness

#### **Social value wording.**

*Suppose being nature-friendly means that one seeks to protect the natural environment.*

**Wording's justification.** Our wording aims to capture a conception of environmental protection similar to the IPSP's one, which goes beyond the traditional anthropocentric approach, i.e., protecting the environment to serve human well-being or interests (Attfield (1998)). Hence, if we were to

<sup>15</sup>See in particular p.15-17 and p.42-44.

conceive environmental protection through the lens of this latter conception, we would treat such a value as "derivative value" and not as "nonderivative value", which explains our wording: it stresses that one should protect the environment for its own sake. There are different contemporary nonanthropocentric theories of environmental protection (Rolston III (1988)), each of them emphasizing a different set of reasons for being nonanthropocentric. First, intersubjectivists (holists) emphasize that one is doing an ethically right environmentally if it contributes to preserving the stability of the biotic community (Callicott et al. (1989)). Second, ecocentrists claim that morality extends to all natural entities (Attfield (2011)). Third, objectivists argue that species and ecosystems have intrinsic aesthetic values (e.g., Rolston (2002)). Our language cannot distinguish between those different theories in so few words but regroup what is common to them: the idea that being nature-friendly cannot go without a *prima facie* duty to protect (or at least not destroy) the environment (O'Neill (1992), O'Neill (2002), O'Neill et al. (2008)). We aimed to keep the definition short to be accessible to all of our participants.

#### 16.1.3.4 Equality

**Social value wording.**

*Suppose equality means that everyone is given an equal chance.*

**Wording's justification.** Our language aims to capture a standard perspective of "equality", namely "equality of condition" (Arneson (1989a)) and is broadly regarded in moral philosophy as "luck egalitarianism"

(Arneson (2004)). According to this approach, competition between individuals is considered fair as long as their actions' outcomes have equal chances to come, in so far, these latter are caused by an event out of the individual's control (circumstances and born entitlements) and only the product of the individual's exercise of autonomy and responsibility. On the contrary, outcomes are considered unfair if circumstances or endowments cause differences between two individuals' outcomes. There are many more (conflicting) definitions of equality given a particular theory of distributive justice<sup>16</sup>. In addition, there are more complex philosophical theories, aiming to reconcile different definitions of equality altogether<sup>17</sup>, but its meaning would be too difficult to communicate to participants in a very concise way<sup>18</sup>, as we aim. Finally, it seems interesting to note that by stressing such a conception of equality, our definition is in line with a consensus among all different conceptions of equality. Consequently, no one should be discriminated against and denied access to vital and social resources – education, job, health care, political participation – based on their particular biographical characteristics, for example, sample, ethnic origin, gender,

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<sup>16</sup>For an introduction to such a taxonomy, see the seminal paper of Amartya Sen, "Equality of What?" (Sen (1979)). One might also consult the prevalent different forms of equality so far as synthesized by Gosepath (2021) : Libertarianism (see Nozick and Williams (2014), Hayek (2011)), Utilitarianism (see Hare et al. (1981), Hare (1984), Kymlicka (1993)), Equality of resources (see Dworkin (1981b), Rawls (1971a)), Equality of welfare (see Dworkin (1981a)), Luck Egalitarianism (see Temkin (1993), Cohen (1989a)), Opportunity Equality (Arneson (1989b), Arneson (1990)), Capabilities (Sen (1992), Nussbaum (1992), Nussbaum (1992), ?), Relational Equality (Pettit (2001), Fraser and Honneth (2001)).

<sup>17</sup>For instance, one might consult the theory of distributive justice developed by Marc Fleurbaey, which conciliates considerations for fairness, responsibility, and luck but also equality of welfare (Fleurbaey et al. (2008)).

<sup>18</sup>After our focus group with the US civil society and our discussion of these results with different expert focus groups, we gave up the idea of merging different perspectives of equality as it was deemed too complex to understand by participants.

sexual orientation, social origins (Anderson (1999), Scheffler (2003), Cohen (1989b), Dworkin (2003)).

### 16.1.3.5 Prosperity

#### **Social value wording.**

*Suppose prosperity means that people are financially comfortable and enjoy material well-being.*

**Wording's justification.** Our language aims to capture one specific type of several theories of "individual welfare" (Fleurbaey (1996)). What dimensions of well-being should be included in our well-being analysis once we grant a distinction between how the concept functions for an individual and how it is to be used for social assessment? The capability approach "concentrates on the capabilities of people to do things and the freedom to live lives that they have reason to value" (see p.85, Sen et al. (1999)). But what are the capabilities? Consider how proponents of this approach answer this question. Nussbaum proposes as universally valid a list of ten "central capabilities" (Nussbaum (2000), Nussbaum (2006)). On the other hand, Sen argues that the list should not be defined by theoreticians, but should be drawn up in a participatory process through public reasoning (Sen et al. (1999), Sen (2009)).

A difficult question is about the relationship among the different dimensions. Should they be seen as incommensurable, or is it possible to aggregate them into one measure of individual well-being? If one takes the former position, how should one handle interpersonal comparisons

involving a trade-off between variables? How should the aggregation across dimensions be conceived if one takes the latter position?

Some argue that if all relevant commodities could be bought on the market, giving people equal resources would give them equal opportunities for well-being, while leaving them the freedom to use these resources as they choose. There are a few difficulties with this equation of resources and well-being. In the first place, not all relevant dimensions of well-being can be bought on the market: think about health or the quality of the natural environment. Second, differences among people will mean that the same level of resources will not provide the same opportunity for well-being. For example, how well-nourished people depend not only on how much they eat but also on the varying characteristics of their bodies and activities. Providing someone with serious disabilities with the same resources as someone without those disabilities is unlikely to result in equal opportunity for well-being.

### 16.1.3.6 Cultural Diversity

#### **Social value wording.**

*Suppose cultural diversity describes the presence of groups with different backgrounds in society.*

**Wording's justification.** There are different accounts of “cultural diversity”, depending on how we define the specific notion of “background”<sup>19</sup> (Nagel (1995), Rawls (2005), Maclure and Taylor (2011)).

Within the traditional spectrum of political values in democratic societies,

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<sup>19</sup>Hence, the notion “group” here refers to members sharing a same “background” given a specific definition of this latter.

the latter has mainly referred to social, economic, and religious backgrounds (Young (2011)). Due to a sharp turn in contemporary political philosophy within globalization since the 1980s and the emergence of “multiculturalism” and its associated “politics of difference” also known as “identity politics” (Gutmann (1994), Gutmann (2009)), we now additionally count, at least, ethnic and gender backgrounds (Taylor (1994), Benhabib (2018)).

Due to our time constraints and the complexity of this definition, our wording “background”, derives its meaning from the context within which we launch the survey: we launch it on an American population in the early 21st Century. It refers to the new political spectrum: social, economic, religious, ethnic, and gender backgrounds.

Despite the limits of our definition, we would like to stress the more fundamental meta-reading that one can have of our wording. Following Rawls (see p.14, Rawls (2005)), in democracies, there is pluralism of moral and political ideologies<sup>20</sup> that define the different backgrounds and groups. This is what Rawls calls “background culture”. The diversity derives from the fact that those ideologies are plural, incompatible, and nonreducible one to each other and yet to be respected by all for being reasonable<sup>21</sup>. These ideologies are expressed within the different cultural practices and entities<sup>22</sup>.

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<sup>20</sup>We consider “moral and political ideologies” and “moral and political beliefs” to be synonyms here.

<sup>21</sup>Rawls here does not precise much of what is meant by “reasonable”. However, one can easily think of public debates, via media or not to reach a consensus within society on what should count or not as a reasonable ideology (Habermas (1991), Richardson (2002)).

<sup>22</sup>Such as associations, universities, religious places.

Our wording of the definition of "cultural diversity" implicitly implies that if participants in this survey favor cultural diversity as a social value, they promote a tolerant attitude towards such different ideologies and their respective cultural practices and entities. It is important to emphasize that tolerating someone's ideology means recognizing that such an ideology has no less "social value" than ours (Forst (2013)).

## 16.2 Social Trade-Offs and Relative Value Judgments

Section 16.2 describes Module RELATIVE SOCIAL IMPORTANCE, which elicits the judgments of the relative importance of social values for a good society. In Section 16.2.1, we start by specifying how we design Module RELATIVE SOCIAL IMPORTANCE and what we mean by "social trade-offs" based on social progress. In section 16.2.2, we spell out the meaning of their scale "relative importance". In section 16.2.3, we provide the social trade-offs' wordings and their justification based on the different literature across social sciences.

### 16.2.1 The Choice of Social Trade-Offs

Our way of defining these trade-offs allows us to distinguish our survey from the standard ones in the literature, where the focus is usually on political values. In our case, we design three types of social trade-off across the US political spectrum differently. By doing so and controlling for the political views of each participant (in the demographics module and the



political module 6), we can measure normative uncertainty over distinct and meaningful social values.

The first trade-off opposes one social value, which is located more on the left of the political spectrum, and one social value, which is located more on the right. In particular, we oppose *Nature-friendliness* with *Prosperity*. The second trade-off opposes two social values from the left wing spectrum: *Cultural Diversity* with *Equity*. The third trade-off opposes two social values in the right-wing spectrum: *Freedom* with *Security*.

### 16.2.2 The Scales of Relative Value Judgments

We design the scale for value judgments about the relative importance of one value compared to another. "How important is one compared to the other?" [Slider: -4;4; 1point-increment].

### 16.2.3 The Justification of Social Trade-offs' Choices

#### 16.2.3.1 Nature-friendliness Versus Prosperity

##### Trade-off wording.

*As a reminder, nature-friendly means that one cares to protect the natural environment, and prosperity means that people enjoy material well-being and financial flexibility. Compare both values. How important is one to the other?*

**Trade-off's justification.** Both social values have been opposed since the 70s in operational research engineering departments, in particular with the famous "The Limits of Growth" published in 1972 by MIT scientists

(Meadows et al. (1972), Meadows et al. (1974)) but also in economics (Nordhaus (1977), Stern (2008)) with the 2018 Nobel Prize won by William Nordhaus covering such a trade-off at length<sup>23</sup> and the famous Stern Report (Stern and Stern (2007), Weitzman (2007)). But it has also triggered even more interest across social and life sciences departments since the beginning (Fankhauser and Tol (2005), Hepburn and Bowen (2013)). This trade-off seems even more relevant today if one looks at the policy media coverage it has received so far<sup>24</sup> and also the wider media coverage<sup>25</sup>

### 16.2.3.2 Cultural Diversity Versus Equality

#### **Trade-off wording.**

*As a reminder, cultural diversity describes the presence of groups with different backgrounds in society, and equality means that everyone is given an equal chance. Compare both values. How important is one to the other?*

**Trade-off's justification.** Both social values have been opposed since the emergence of globalization and its cultural effects in the 1990s and the shift of political values from what we can label “socioeconomic politics” toward “identity politics” (Benhabib (2018)), as debated and critically discussed by scholars in all social sciences, from anthropology (Jindra (2014)) to political philosophy and political science ((Kymlicka (1995), Kymlicka (2010), Barry

<sup>23</sup>See his Nobel Prize discourse [here](#).

<sup>24</sup>For instance, see this very recent Bruegel working paper [here](#) and this Brookings article [here](#).

<sup>25</sup>For instance, see these very recent media articles [here](#), but also [here](#).

(2002)) but also sociology (Kelly (2001)). Amid the various ways of opposition between both values, we can highlight the following ones as covered by Will Kymlicka (Kymlicka (1995)). First, increasing cultural diversity may increase inequalities of luck, since the former increases the chances of being born into economically poor or culturally minority families, decreasing economic success. Second, despite respecting the diversity of languages, the school operates on the dominant language. Hence, increasing cultural diversity raises new questions about reducing academic inequalities for children from minority language families within one country. Third, public holidays are designed according to the “dominant” culture and religion’s inheritance of one country, and hence increasing cultural diversity also puts pressure on how to accommodate the specific calendars of each subculture concerning their religious practice. Overall, these three points highlight that increasing cultural diversity also increases the inequalities of “conditions” that luck egalitarianism aims to tackle. This is why, in part, cultural diversity has been seen as a serious challenge for liberal egalitarian democracies (Barry (2002)).

### 16.2.3.3 Freedom Versus Security

#### **Trade-off wording.**

*As a reminder, freedom means that people have the possibility of expressing themselves and pursuing their desires, and security means that citizens live safe lives. Compare both values. How important is one to the other?*

**Trade-off's justification.** Both social values have formed a traditional opposition in political philosophy for several centuries ([Hobbes \(1651\)](#), [Locke \(1824\)](#), [De Toqueville \(1835\)](#)) that has regained a contemporary interest in economic philosophy ([Sen \(1990\)](#)) but also policy within the scope of liberal democracies and globalization ([Ferge \(1996\)](#), [Balzacq \(2016\)](#)). Amid several interpretations of this value conflict, one might relate to the very recent pandemic, where the dilemma between both values has been covered at length in public debates and media coverage: Should policy makers reduce individual freedoms to maximize citizen health (also known as “COVID security”<sup>26</sup>) or not?<sup>27</sup>

## 16.3 Social Dilemmas and Social Preferences

[Section 16.3](#) describes Module SOCIAL DILEMMAS, which generates social preferences for social dilemmas. In [Section 16.3.1](#), we start by specifying how we design Module SOCIAL DILEMMAS, what we mean by “social dilemmas” based on the concept of social progress. In [section 16.3.2](#) we clarify the meaning of their scale “social evaluations”. In [section 16.3.3](#), we provide the social dilemma’s wordings and provide their justification based on the different literature across social sciences.

### 16.3.1 The Choice of Social Dilemmas

It is important to have within one survey about normative uncertainty, different types of elicitations, individual value judgments about social

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<sup>26</sup>See [here](#).

<sup>27</sup>For instance, see these media coverages [here](#), [here](#) and [there](#).

values and individual evaluations about social dilemmas choices to see how normative uncertainty varies from pure opinions to hypothetical actions<sup>28</sup>. The values involved in this module are not necessarily connected to the first two modules, as we want to see how subjects behave under “new”<sup>29</sup> social justice situations.

We control for this novelty by asking subjects to report whether they had already encountered this type of social problem before this survey or not. This question allows us to see whether normative uncertainty is an empirical phenomenon that is more likely to appear for new moral problems or not (and thus to argue for its importance for the future of humanity studies).

We consider four social dilemmas in line with the pressing issues explored by the IPSP. We now turn to their presentation. Together, [Section 16.1](#), [Section 16.2](#), and this [Section 16.3](#) form the three survey modules covering the “social value” perspective of the NUS.

### 16.3.2 The Scales of Social Preferences

We measure social preferences with two types of scales: a slider measuring the gradual preference for the chosen policy option, and a binary choice measuring the binary preference for a policy. Each measure type refers to a particular type of policy choice: binary choice where the budget is already

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<sup>28</sup>In a lab or field experiment we could go further by measuring normative uncertainty over (incentivized or not) actual choices.

<sup>29</sup>By “new” we mean value conflicts participants did not necessarily encounter in a previous life or survey experience. We check this by asking them explicitly the following question: “Have you ever encountered such a similar question?”

decided for each policy option and gradual choice where the budget is not yet decided for each policy option.

### 16.3.3 The Justification of Social Dilemmas' Choices

#### 16.3.3.1 Objective versus Subjective Well-being Dilemma

##### **Social dilemma wording.**

*Consider a society with two groups of citizens. Group 1 members are very rich, but feel sad and depressed and could receive support in the form of psychological therapy. Group 2 members are very happy but they are poor and could receive support in the form of social benefits. Which group should the government prioritize?" [Slider: -5;5; 1point-increment].*

**Social dilemma's justification.** This first dilemma, labeled "Objective versus Subjective Wellbeing Dilemma", asks subjects to make a hypothetical choice between a social policy promoting subjective well-being (opting to help Group 1) and a social policy promoting objective well-being (opting to help Group 2). In general, this dilemma appears in long-standing debates in welfare economics, public economics, philosophy of science, moral psychology, policy and empirical methods about which welfare<sup>30</sup> criterion should be used in the design of public policies (philosophical debate) and how we should measure such a criterion (scientific debate). In particular, this dilemma refers to the first debate. On the one hand, "subjective wellbeing" generally refers to satisfaction with one's life (Sumner (1996)).

<sup>30</sup>We use this word as a synonym to wellbeing

This satisfaction can be interpreted in two main ways:<sup>31</sup> either through a hedonist-based theory as the experience of happiness (Feldman (2004), Feldman (2002)) or through a desire-based theory as the satisfaction of one’s preference (Benjamin et al. (2014)).<sup>32</sup> On the other hand, “objective wellbeing” generally refers to lists of items deemed to be good regardless of people’s opinions (Fletcher (2013)). Such items refer generally to values (Knowledge, Virtue, Freedom, Prosperity) but also to goods, services, or social situations, carefully defined by discursive (formal and informal) analysis. Amid the numerous theories of fairness and welfare that exist, our dilemma refers directly to egalitarianism and the prioritarianist.<sup>33</sup>

### 16.3.3.2 Free Market versus State Dilemma

#### Social dilemma wording.

*On internet platforms, individuals can agree to make bets with their money. According to you, to what extent should your government regulate these betting platforms to limit losses?” [Slider: -5;5; 1point-increment].*

<sup>31</sup>In our dilemma, our wording, in this constraint of conciseness and avoiding too much complexity as resulted from our focus with the citizen focus group (see section...) about subjective wellbeing do not distinguish between both theories.

<sup>32</sup>This second theory, even now revisited by Benjamin et al. cited here, has been the basis for defining most, if not all, welfare criteria in microeconomics and standard welfare economics (see Varian (2014), Varian (1973)). This expression of “welfare economics” should not be confused with the more general interdisciplinary field of normative economics, also sometimes named, by abuse of language, “welfare economics”, which questions this choice of desire-based theory as the sole basis for economics – qualified as “welfarism” – and aims in proposing alternatives (“objective”) welfare criteria based on ethical, analytical arguments (at this point, see Varian (1976), Fleurbaey and Maniquet (2011)).

<sup>33</sup>While being aware of the difference between both approaches, the wording does not precisely distinguish them, which is why we regroup them here.

**Social dilemma’s justification.** This second dilemma labeled “Free Market versus State Dilemma,” asks subjects to make a hypothetical choice between a more or less interventionist policy related to online gambles. This dilemma refers to the long-standing philosophical debate between socialism and liberalism.

### 16.3.3.3 Intragenerational Ethical Dilemma in Climate Change

#### **Social dilemma wording.**

*Consider the following scenario. Suppose there has been a catastrophic event and two farmers have lost their entire livelihood. A relief agency has arrived to help restore the farmers’ land. However, its budget is limited, and one farm is harder to rehabilitate than the other due to the landscape. The agency has to decide whom to help and considers two different options:*

*Option A: spending the same amount of money on both farms, which will result in more rehabilitated land for farmer 1 (80 restored acres) than for farmer 2 (20 restored acres).*

*Option B: restore the same amount of land for both farmers (40 acres restored for each farmer), resulting in less restored land overall (80 acres in total).*

*What options would you choose?*

**Social dilemma’s justification.** This third dilemma labeled “Intragenerational Ethics Dilemma in Climate Change” asks subjects to



make a hypothetical choice between a climate mitigation policy and a poverty mitigation policy.

#### 16.3.3.4 Intergenerational Ethical Dilemma in Climate Change

##### **Social dilemma wording.**

*Consider the following scenario. Suppose the government of a flood-prone region has allocated a certain amount of money for disaster prevention. The government has to decide which mitigation policy to implement and is considering these two options:*

*Option A: investing in short-term mitigation policies, which will save 100 people from drowning this year.*

*Option B: investing in long-term mitigation policies that will prevent 200 people from drowning 50 years from now.*

*What options would you choose?*

**Social dilemma’s justification.** This fourth dilemma labeled “Intergenerational Ethical Dilemma in Climate Change” asks subjects to make a hypothetical choice between a short-term climate mitigation policy and a long-term climate mitigation policy.

## 16.4 Moral Dilemmas and Risk Attitudes

Section 16.4 describes Module MORAL RISK, eliciting moral judgments in the context of moral dilemmas. In Section 16.4.1, we start by specifying how we design Module MORAL RISK, what we mean by “moral dilemmas” to our first

part. In the next sections, we then provide the moral dilemmas' wordings and their justification based on the different literature across social sciences.

### **16.4.1 The Choice of Moral Dilemmas**

We design our moral dilemmas based on the pressing issues covered by behavioral scientists and philosophers working in the following fields: ethics and behavioral sciences, philosophy and public affairs, business ethics, health ethics, and the economics of catastrophe. These dilemmas involve a thought experiment in which survey participants must make their hypothetical decisions (i.e., their attitudes).

### **16.4.2 The Scales of Risk Attitudes**

All Moral dilemmas have the three same options, defined by a ratio between cost (degree of risk) and benefits (expected pay-offs) structure, to be able to their 'moral responses across the different 'moral contexts.

- Option A is risk-free (100% chances to lead to a positive outcome) but implies a low pay-off.
- Option B is a risky option (50% of chances to lead to the positive outcome) but leads to a higher expected pay-off than Option A.
- Option C is an ambiguous option (unknown probability of success and failure), which leads to the highest expected pay-off, compared to both other options.

### 16.4.3 The Justification of Moral Dilemmas' Wordings

#### 16.4.3.1 Social Norms and Business Ethics Dilemma

##### **Moral dilemma wording.**

*Consider the following scenario. Suppose that you are a risk manager at an international pension fund, responsible for approving or disapproving investment proposals submitted to you by traders of your company. Your role is to manage your pension funds prudently (your clients' savings) face in investing in more or less risky investments to make sure that your clients, once retired, receive promised economic and welfare benefits. The risk of an investment increases as the environment becomes more risky. In your situation, since the last four years, you have been evolving in the most benign risk environment that your company has seen in the last 20 years: low interest rates, zero defaults in your investment portfolios, and historically low volatility levels. You receive three investment requests at your desk. You have to approve one and refuse the two others. Here are the three available investments:*

- *Option A: This investment of \$1 million is in U.S. Treasury securities, which are safe bonds emitted by the U.S. government. The U.S. government is noted triple-A which means that the risk of this investment is null. This investment leads for sure to a welfare increase for your clients, once retired, of 3%.*
- *Option B: This investment of \$1 million is in real estate. There is a 50% chance this leads a welfare increase of 6% for your clients, once retired, and 50% chance to a welfare increase of 1%.*
- *Option C: This investment of \$1 million is in a new promising tech company, totally unknown to the markets. Either the start-up flourishes and your investment leads to a welfare increase of 20% for your clients once retired, or the start-up perishes and your investment leads to no welfare increase at 0%.*

*Which options would you choose?"*

### 16.4.3.2 Cultural Catastrophe and Public Affairs Dilemma

#### **Moral dilemma wording.**

*Consider the following scenario. Suppose that a catastrophe occurs in your society and destroys its most historically prestigious public edifice. As a motivated citizen ready to help rebuild this edifice, you have to decide between three ways to contribute to this common good:*

- *Option A: You contribute to a well-known architecture charity who is in charge of finding the best architects to rebuild the edifice. Your participation contributes for sure to a welfare level in your society of 40 (a rather medium level of social welfare).*
- *Option B: You contribute to a governmental institution in charge of leading the reconstruction to a large extent (funding and supervising the work of the best architects, the most talented workers, and all the advisory scientists and communicating to project to the society).*
- *Option C: You pay taxes to the state of your country. Either your contribution is used perfectly by the government, and thus it promotes a welfare level in your society of 100 (a very high level of social welfare), or it is not used adequately, and thus it promotes a welfare level of 20 (a poor level of social welfare).*

*What options would you choose?"*

#### **Elicitation's justification.**

### 16.4.3.3 Health Ethics Dilemma

#### Moral dilemma wording.

*Consider the following scenario. Suppose that Ann will go completely blind unless she is treated. If she goes blind, she will have a lifetime health well-being of 10 (very poor quality of health). If she is fully cured, she will have a lifetime health well-being of 100 (very good quality of health). She can be partially cured and she can have a lifetime health well-being varying between 11 and 99, depending on how partially cured she turns out to be. Suppose that you are her doctor and you have to decide the treatment for her. Three treatments are at your disposal:*

- Option A: This treatment is very well known to all doctors and certain. It partially cures Ann, and she will have a lifetime health well-being of 40 (moderate quality of life).
- Option B: This treatment is very well known to all doctors and is risky. It leads to a 50% chance of partially curing her to give her a lifetime health well-being of 60 (a good quality of life) and 50% chance of partially curing Ann and thus leading her to a lifetime health well-being of 20 (poor quality of life).
- Option C: This treatment is new and its chances of success are completely uncertain for all doctors. Either it leads to fully curing Ann, and thus she will have a lifetime health will-being of 100 (very good quality of life), or it has no effect on her, thus leading her to a lifetime health well-being of 10 (very poor quality of life).

What options would you choose?"

## 16.5 Societal Issues and Political Opinions

Section 16.5 describes Module POLITICAL OPINIONS, which is aimed at obtaining opinions on political issues.

## 16.5.1 The Justification of Societal Issues' Wordings

### 16.5.1.1 Immigration Issue

**Societal issue wording.**

*On the whole, do you think immigration is a good thing or a bad thing for the United States of America?*

### 16.5.1.2 Artificial Intelligence Issue

**Societal issue wording.**

*On the whole, do you think AI is a good thing or a bad thing for the United States of America?*

**Wording's relation to the literature.** This wording refers particularly to the wide global survey conducted by Northwestern University and Gallup in 2017 (Aoun (2018)). This survey shows how important this AI issue is for the US.

## 16.6 Risky Economic Decisions and Attitudes

Section 16.6 describes Module ECONOMIC RISK, which elicits risk attitudes in the context of monetary decisions.

## 16.6.1 The Justification of Monetary Risky Decisions' Wordings

### 16.6.1.1 Qualitative Risky Economic Elicitation

#### Elicitation wording.

*How willing are you to take risks, in general? [Slider from 0 "no willingness at all" to 10 "totally willing", 1pt increment]*

**Elicitation's justification in relation to the literature.** This wording refers particularly to the self-report elicitation proposed by [Dohmen et al. \(2010\)](#). It is worth noting that, despite being not incentive compatible, it has made its way to become a standard measure of risk attitudes not only in experimental and behavioral economics ([Snowberg and Yariv \(2021\)](#)) but also in financial economics ([Van Rooij et al. \(2011\)](#), [Christelis et al. \(2010\)](#)), labor economics ([Marianne \(2011\)](#)), and other subfields of economics and cognitive psychology ([Almlund et al. \(2011\)](#), [Benjamin et al. \(2013\)](#), [Heckman and Mosso \(2014\)](#)).

### 16.6.1.2 Risky Project Elicitation

#### **Elicitation wording.**

*Consider the following scenario. Suppose you are given 100 cents, and you are asked how much you would be willing to bet in a lottery and how much you would be willing to keep for you. You can bet from 0 to 100 cents.*

*You have a chance of  $2/3$  (67%) to lose the amount you bet and a chance of  $1/3$  (33%) to win two and a half times the amount you bet". ["I bet in the lottery the following amount of cents": scale from 0 to 100].*

**Elicitation's justification.** This wording refers to the now classic survey elicitation proposed [Gneezy and Potters \(1997\)](#). Most prominent experiments in economics, neuroeconomics, psychology, behavioral sciences and management sciences rely on such a item ([Snowberg and Yariv \(2021\)](#), [Loewenstein et al. \(2001\)](#), [Camerer et al. \(2005\)](#), [Barberis and Thaler \(2005\)](#), [Charness and Gneezy \(2012\)](#)).



### 16.6.1.3 Multiple Price List Elicitation

**Elicitation wording.**

*Consider the following scenario. Suppose you have presented a series of the bet between two lotteries. You are asked to decide which lottery you choose for each bet. Once you have decided the lottery for each bet, one of these bets will be chosen randomly, and you will be paid the amount of the prize accordingly if you win it.*

**Elicitation's justification.** This wording refers to the Multiple Price List (MPL), a standard method used in experimental economics to elicit risk-attitudes (Andersen et al. (2006), Charness et al. (2013), Harrison and Rutström (2008)). It asks participants to choose between a lottery and sure amounts. The lottery pays off if a ball of the color the participant chose is drawn (Snowberg and Yariv (2021)).

## 16.7 Economic Ambiguity Decisions and Attitudes

Section 16.7 describes Module AMBIGUITY ATTITUDE, eliciting ambiguous attitudes in monetary decisions.

## 16.7.1 The Justification of Monetary Ambiguous Decisions' Wordings

### 16.7.1.1 Classical Ambiguity Attitudes: Ellsberg Paradox

#### **One-Ball Paradox wording.**

*Consider the following scenario. Suppose that you were invited to play the following game. There are two different urns, each containing 100 balls. The balls are red or black. In one urn, called the "Known Urn", there are 50 red and 50 black balls. In the other urn, called the "Unknown Urn", you do not know the exact composition of the red and black balls. The game consists of drawing one ball from an urn. You win the game if you pick a black ball. In this case, you win \$100. You have two options:*

- *Option K: you draw a ball from the Known Urn.*
- *Option U: you draw a ball from the Unknown Urn.*

#### **Wording's relation to the economics and philosophy literature.**

This wording refers to the well-known and now classic "Ellsberg Paradox" proposed by Daniel Ellsberg (Ellsberg (1961)), which has put into question one of the main axiom of expected utility theory, the sure-thing principle (Bradley (2017b)).

### 16.7.1.2 Ambiguity Attitudes Revisited: A Two-Ball Ellsberg Paradox

#### **Two-Ball Paradox wording.**

*Consider the following scenario. Suppose that you are invited to play the following game. Two different urns contain every 100 balls. The balls are red or black. In one urn, called Known Urn, there are 50 red and 50 black balls. In the other urn, called Unknown Urn, you do not know the exact composition of red and black balls. The game consists of the following Two-Ball procedure. You have to decide on the choices simultaneously. You draw one ball from one urn and then put it back. You draw a ball again from one urn and put it back. You win the game only if you draw two balls of the same color. To be explicit, you win the game if you draw a red ball (or a black ball) and you also draw a red ball (or black). The reward of the game is in tokens. 100 tokens equal \$2. The amount of tokens you can win depends on the combination of the different types of urn from which you draw a ball.*

*Here are the following options you can choose:*

- *Option KK: you draw a ball from the Known Urn and you draw again a ball from the Known Urn. If you draw two balls of the same color, you will earn 50 tokens.*
- *Option UU: you draw a ball from the Unknown Urn, and you draw again a ball from the Unknown Urn. If you draw two balls of the same color, then you earn 100 tokens.*

**Wording's relation to the economics and philosophy literature.** I build the Two-Ball Ellsberg paradox<sup>34</sup> in the framework by Fleurbaey (2017)<sup>35</sup>. Compared to the original Ellsberg thought experiment, I propose to double each option, but keep the choice simultaneous. Hence, the option “ambiguous” becomes “ambiguous and ambiguous,” and “risky” becomes “risky and risky. It is a fundamental difference since it seems not intuitively straightforward to realize in two seconds after being asked which option is the best that “ambiguous and ambiguous” is the best option and in particular a better option, no matter what, than “risky and risky” in terms of prospects of success. In fact, the former has its success prospects minimally bounded at  $\frac{1}{2}$  whereas the latter has its success prospects maximally bounded at  $\frac{1}{2}$ : the best case scenario of “risky and risky” corresponds to the worst case scenario of “ambiguous and ambiguous”.

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<sup>34</sup>s/o to Daniel Ellsberg, a mensch.

<sup>35</sup>The full discussion of my choice problem which turned out as a paradox can be found in the invited PEA Soup [here](#). I am grateful to the editors and Alex Voorhoeve and Thomas Voorhoeve for their invitation. I am grateful to Marc Fleurbaey for providing access to his unpublished manuscript. The original winning-matching mechanism with two balls was originally proposed by [Epstein and Halevy \(2019\)](#) in their 2013's working paper version. I am grateful to Yoram Halevy for pointing out this reference.

## Chapter 17

# Normative Uncertainty Scales

In [Chapter 17](#), we elaborate in more detail on the different scales that we use to measure normative uncertainty. There are four different scales, differentiated in two dimensions. The first dimension refers to the type of metaethical view - cognitivist, noncognitivist, or hybrid views – the scales aim to capture. The second dimension refers to the type of observation, direct or indirect, of the normative uncertainty phenomenon that the scales aim to capture. [Section 17.1](#) introduces the objective scale, which is a direct measurement scale particularly compatible with moral objective realism. [Section 17.2](#) introduces the subjective scale, which is a direct measurement scale, particularly compatible with subjectivism. [Section 17.3](#) introduces the ambivalence scale, which is an indirect measurement scale, particularly compatible with Humeanism. [Section 17.4](#) introduces the difficulty scale, which is an indirect measurement scale, particularly compatible with psychological non-cognitivism.

## 17.1 The Objective Scales

**Section 17.1** introduces the objective scale, which is a direct measurement scale that is particularly compatible with moral objective realism.

### 17.1.1 Two Versions: Binary and Graded Scales

This scale comes in two versions: binary and graded. We start by providing the wording of each version, but overall, when we use the expression “The Objective Scale,” we refer to the graded version. Then, we describe its relation to the metaethics literature. Finally, we describe its relation to the psychology and economics literature.

First, participants see this binary question:

**Scale I wording.**

*Are you certain you got your previous answer right?*

*[Yes; No]*

Second, participants see this graded question:

**Scale II wording.**

*Please tell us how likely it is that you got that answer right  
(in %).*

*[“Completely Unlikely”, “Rather Unlikely”, “Rather Likely”, “Com-  
pletely Likely”].*

**Wording's relation to the psychology and economics literature.** The best literature available in these fields to capture within a survey item, the notion of “fact” as we aim to do with this scale<sup>1</sup> is the one dealing with “predictions” and “forecasts” dealing with “objective economic facts” (Elliott and Timmermann (2008), Elliott and Timmermann (2013)). In particular, the formulation of the economic outlook from the University of Chicago<sup>2</sup> has been particularly inspiring to design this scale.

### 17.1.2 The Compatibility With Moral Objective Realism

**Wording's justification.** This scale aims to capture the more objective and cognitive dimension of normative uncertainty. This is a measurement particularly compatible with moral objective realism (Railton (1986), Pölzler (2018)).

## 17.2 The Subjective Scales

Section 17.2 introduces the subjective scale, which is a direct measurement scale, particularly compatible with subjectivism.

### 17.2.1 Two Versions: Binary and Graded Scales

This scale comes in two versions: binary and graded. We start by providing the wording of each version but overall when we use the expression “The Subjective Scale” we refer to the graded version. We start by providing the

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<sup>1</sup>Since we consider here normative uncertainty as a moral fact.

<sup>2</sup>See their methodology [here](#). I am grateful to Agnès Bénassy-Quéré for directing me to this source.

scale wording. Then, we describe its relation to the meta-ethics literature. Finally, we describe its relation to the psychology and economics literature.

First, participants see this binary question:

**Scale I wording.**

*Are you certain about your previous answer?*

*[Yes; No].*

Second, participants see this graded question:

**Scale II wording.**

*Please tell us how certain you are about your previous answer.*

*[Completely Uncertain; Rather Uncertain; Rather Certain; Completely Certain].*

**Wording's relation to the psychology and economics literature.**

This wording captures the standard measure in economics and psychology of “subjective beliefs” as described in decision theory (Savage (1954), Bradley (2018)) and cognitive psychology, where subjective normative uncertainty is known as “internal uncertainty” (Kahneman and Tversky (1972), Kahneman (2011b)). The main differences between our scale and the one in circulation are that we do not rely on a continuous space<sup>3</sup>. This scale will be interpreted as a subjective probability.

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<sup>3</sup>We opted for a discrete scaling after our several pre-analysis workshops pointed out that subjects didn't perceive the differential meaning between precise probabilities.



### 17.2.2 The Compatibility With Moral Subjective Realism

**Wording’s justification.** This scale aims to capture the more subjective and cognitive dimension of normative uncertainty. This is a measurement particularly compatible with moral subjective realism, “subjectivism” (Railton (1986), Pözlner (2018)).

## 17.3 The Ambivalence Scales

Section 17.3 introduces the ambivalence scale, which is an indirect measurement scale, particularly compatible with Humeanism.

### 17.3.1 Two Versions: Binary and Graded Scales

This scale comes in two versions: binary and graded. We start by providing the wording of each version, but overall, when we use the expression “The Ambivalence Scale” we refer to the graded version. We start by providing the scale wording. Then, we describe its relation to the meta-ethics literature. Finally, we describe its relation to the psychology and economics literature.

First, participants see this binary question:

**Scale I wording.**

*Are you ambivalent about your previous answer?*

*[Yes; No].*

Second, participants see this graded question:

**Scale II wording.**

*Please tell us how ambivalent your feelings were when answering that question.*

*[Completely Unambivalent; Rather Unambivalent; Rather Ambivalent; Completely Ambivalent].*

**Wording's relation to the psychology and economics literature.**

Standard measure in psychology (Kaplan (1972)), and revival today, improving and extending the ambivalence measure to new "attitudinal-objects" (van Harreveld et al. (2015), Schneider and Schwarz (2017)), which motivated us to pursue this extension to the case of what we can call here "attitudinal-value-objects", where the mixed feelings derived from ambivalence apply to different social, moral, political, or economic values, rather than empirical objects as described generally in this cognitive psychology literature (see for instance van Harreveld et al. (2015)).

**17.3.2 The Compatibility With Humeanism**

**Wording's justification.** This scale aims to capture the more phenomenological and emotional dimension of normative uncertainty. This is a measurement particularly compatible with Humeanism (Smith (1994)).

**17.4 The Difficulty Scales**

**Section 17.4** introduces the difficulty scale, which is an indirect measurement scale, particularly compatible with psychological non-cognitivism.

### 17.4.1 Two Versions: Binary and Graded Scales

This scale comes in two-measure versions: binary and graded. We start by providing the wording of each version but, overall, when we use the expression “The Difficulty Scale”, we refer to the graded version. We start by providing the scale wording. Then, we describe its relation to the metaethics literature. Finally, we describe its relation to the psychology and economics literature.

First, participants see this binary question:

**Scale I wording.**

*Did you find difficult to answer the previous question?*

*[Yes; No].*

Second, participants see this graded question:

**Scale II wording.**

*Please tell us how difficult you found it to answer that question.*

*[Completely Easy; Rather Easy; Rather Difficult; Completely Difficult].*

**Wording’s relation to the psychology and economics literature.**

This phenomenon of difficulty to make up one’s mind, pointed out by psychologists (Van Harreveld et al. (2014), Appel et al. (2021)), has been recently theorized in microeconomics as “hard choices” and modeled

through different models of incomplete preferences (Eliaz and Ok (2006), Nishimura and Ok (2018)).

### 17.4.2 The Compatibility With Non-Cognitivism

**Wording's justification.** This scale aims to capture the more psychological and non-cognitivist dimensions of normative uncertainty. In meta-ethics, this is a measurement particularly compatible with psychological non-cognitivism.

# Chapter 18

## Evidence From a Large US Representative Sample

In [Chapter 18](#), we present evidence of normative uncertainty from a representative sample of the US. [Section 18.1](#) describe the characteristics of our data set. [Section 18.2](#) presents the main results of our survey.

## 18.1 General Data Characteristics

Section 18.1 describe the characteristics of our data set.

### 18.1.1 Why Panel Data

The main reason why we need to go with a panel firm is to obtain a representative data set from the US. The other fundamental reasons are presented below.

An important part of our work aims to describe behavior (do people have normative uncertainty?), valid externally speaking. For descriptive work, it is better to obtain data from a recruited sample than from an “opt-in” sample. The recruitment phase aims to screen for participants’ motivation, trying to detect potential fraudulent behaviors. Only panel firms recruit participants, which is the main difference from online opt-in platforms like mTurk. One advantage of recruitment, for instance, is to be more ensured about the respondents’ motivation and their understanding that the survey aims to elicit first-order attitudes and uncertainty over them. Both aims are equally important to researchers. Standard surveys generally focus on eliciting an outcome (first-order attitudes, such as social preferences in taxation), but not eliciting a process (internal uncertainty). Respondents have been used to the former but not to the latter. Panel firms can ensure that respondents understand this letter in their recruitment procedure (during their face-to-face interviews).

### 18.1.2 Data Collection and Survey Representativeness

We collected data through Qualtrics after being granted Princeton IRB approval.<sup>1</sup> Based on our contract with Qualtrics, this is the representativeness that we were contractually guaranteed and delivered.

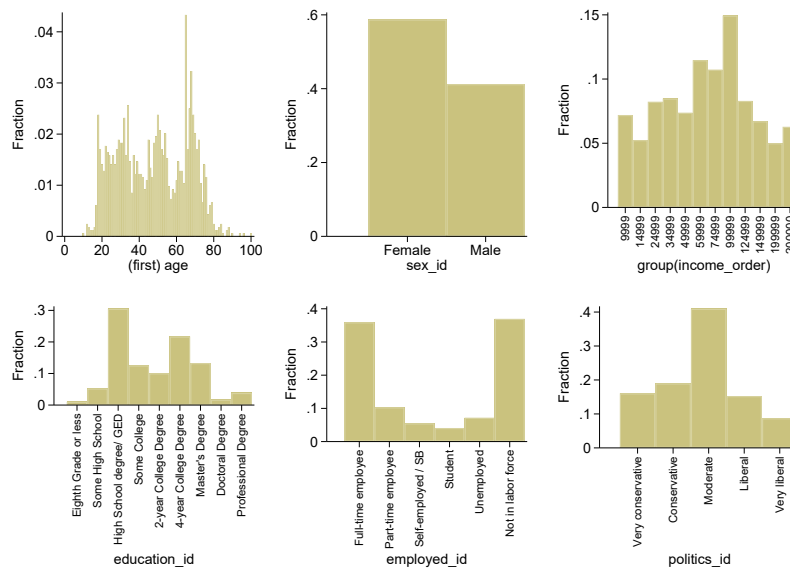


Figure 18.1: **CONTRACTUAL REPRESENTATIVENESS OF THE NUS**

We collected  $N = 1,700$  subjects and, after passing attention screening as standard in the survey literature, we ended up with  $N = 1,393$ . All participants could not be exposed to all evaluation objects and normative uncertainty scales due to time limitations and cognitive fatigue. However, participants were randomly assigned to a specific pair of scales and a certain set of evaluation objects. Due to this randomization, it will not be problematic to compare groups of different numbers of participants (min  $N = 150$ ).

<sup>1</sup>See Appendix for the approval letter.

## 18.2 Main Results

[Section 18.2](#) describe the main results of our survey.

We find three main results. First, in [Section 18.2.1](#), we show that the general subjects exhibit normative uncertainty over the different modules of [Chapter 16](#). Second, in [Section 18.2.2](#), we explore how normative uncertainty varies across heterogeneous attitudes (about the different evaluation objects). Third, in [Section 18.2.3](#), we explore how normative uncertainty is related to the different demographic and cognitive traits of our population.

### 18.2.1 Subjects Do Exhibit Normative Uncertainty

Our analysis in [Section 18.2](#) is based on the combination of the subjective normative uncertainty scale introduced in [Section 17.2](#) and the objective normative uncertainty scale introduced in [Section 17.1](#). We end with four levels of normative uncertainty: *completely uncertain*, *rather uncertain*, *rather certain*, *completely certain*.

Our main result is that subjects exhibit normative uncertainty: On average, 55% of the entire sample is not completely sure about their attitudes over the different sets of evaluation objects. In other words, they exhibit a certain level of normative uncertainty. As decomposed in [Figure 18.2](#), among those normatively uncertain participants, on average, 38% are rather certain, 12% are rather uncertain, and 5% are completely uncertain.



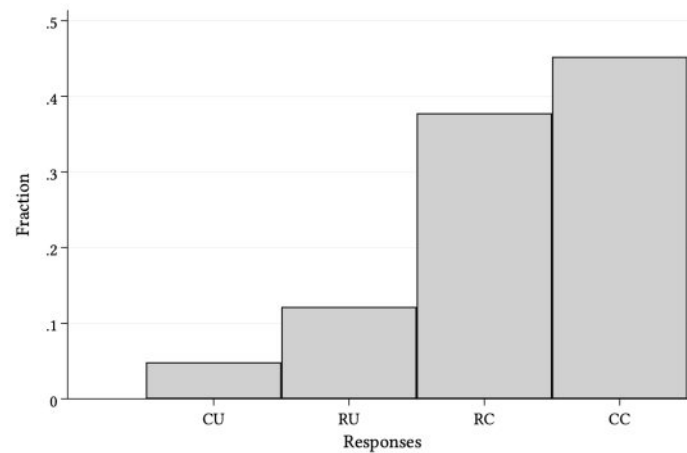


Figure 18.2: **OVERALL NORMATIVE UNCERTAINTY OVER OVERALL EVALUATION OBJECTS**

## 18.2.2 Normative Uncertainty Varies Given Evaluation Objects

It is interesting to explore this result further, particularly to see how normative uncertainty varies between the different attitudes about evaluation objects. Before discussing these results, the reader can refer to [Table 18.1](#). This table describes the name of the variable, its summary and the specific section of [Chapter 16](#), which details how each variable is designed.

NAME	SUMMARY	REFERENCE
ap	hypothetical ambiguous choices in the context of the two-ball Ellsberg paradox	Module <b>AMBIGUITY ATTITUDE</b> , <a href="#">Section 16.7</a>
up	hypothetical ambiguous choices in the context of the one-ball Ellsberg paradox	Module <b>AMBIGUITY ATTITUDE</b> , <a href="#">Section 16.7</a>
pcyp	aggregated hypothetical social choices in the context of social dilemmas	Module <b>SOCIAL DILEMMAS</b> , <a href="#">Section 16.3</a>
polp	aggregated political attitudes in the context of the two political polls	Module <b>POLITICAL OPINIONS</b> , <a href="#">Section 16.5</a>
rp	aggregated hypothetical economic risk attitudes in the context of the three risk elicitation	Module <b>ECONOMIC RISK ATTITUDES</b> , <a href="#">Section 16.6</a>
sp	aggregated social preferences in the context of the relative importance of social values for a good society	Module <b>RELATIVE SOCIAL IMPORTANCE</b> , <a href="#">Section 16.2</a>
svp	aggregated social preferences in the context of the absolute importance of social values for a good society	Module <b>ABSOLUTE SOCIAL IMPORTANCE</b> , <a href="#">Section 16.1</a>
mp	aggregated hypothetical moral risk-attitudes in the context of the three moral dilemmas	Module <b>MORAL RISK</b> , <a href="#">Section 16.4</a>

Table 18.1: **VARIABLE DICTIONARY**

We would like to make two remarks regarding the specific variables in this table. First, we divided Module **AMBIGUITY ATTITUDE** into two distinct variables,  $ap$  and  $up$ , since the one-ball Ellsberg paradox and the two-ball Ellsberg paradox approach ambiguity in a radically different way. Second, we provide a correlation analysis between the three risky elicitation in the Appendix.

Let us now turn to an analysis of this decomposition. As shown in [Figure 18.3](#), we can observe that the distribution of normative uncertainty varies between the different modules.

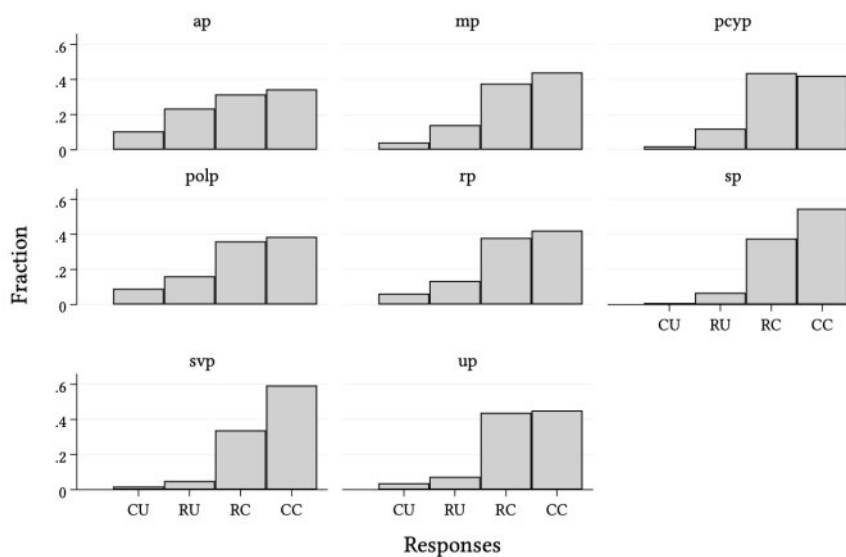


Figure 18.3: **DECOMPOSED NORMATIVE UNCERTAINTY BY EVALUATION OBJECTS**

First, we observe that the result of the overall normative uncertainty presented in the previous section decomposes itself as an evenly distributed normative uncertainty across heterogeneous attitudes. In general, we observe that, on average, at least 40% of the population is not *completely*

*certain* for almost all modules. However, we can notice two outliers: normative uncertainty about ambiguity (in the two-ball Ellsberg paradox) is evenly distributed amid the four levels of normative uncertainty. On the contrary, the normative uncertainty about absolute social values is unevenly distributed toward the *completely certain* level.

Second, we remark that the modules **ABSOLUTE SOCIAL VALUES**, **RELATIVE SOCIAL VALUES**, **SOCIAL DILEMMAS** embodying the same social values and the same definition do not lead to the same distribution of normative uncertainty. We observe that Module **SOCIAL DILEMMAS** displays more normative uncertainty than **RELATIVE SOCIAL VALUES**, which, in turn, displays slightly more normative uncertainty than **ABSOLUTE SOCIAL VALUES**. This difference might suggest that the more complex the question of social values becomes, the more subjects exhibit normative uncertainty. Indeed, when presented individually and no choice is required between them, it seems easy to make up one's mind. However, when an 'abstract arbitrage' between two social values is asked, it might become slightly more complex. Still, since the trade-off remains virtual (without any consequences), it remains relatively easy to make up one's mind. On the contrary, when such a trade-off is embodied in a fully described empirical context, with hypothetical consequences in terms of policy choices as in Module **SOCIAL DILEMMAS**, it becomes harder to identify which social values underlie each binary policy option. Besides, it might become harder to make up one's mind due to the potential consequences underlying each policy option.

Third, interestingly enough, subjects exhibit normative uncertainty about their political attitudes (about AI and immigration). This might suggest some incomplete knowledge about the issue at hand, in particular, digital issues, as extensively documented in the large US representative survey ( $N = 4,000$ ) by Pew Research [Vogels and Anderson \(2019\)](#).

### **18.2.3 Normative Uncertainty, Demographic and Cognitive Traits**

It also seems interesting to explore how normative uncertainty might be explained or not in terms of demographic and cognitive traits.

	Internal Uncertainty	
	(1)	(2)
Sex	0.363***	
	(0.097)	
Employed	-0.00290	
	(0.104)	
Political View	0.416***	
	(0.121)	
Income	0.0465	
	(0.101)	
Education	0.0205	
	(0.102)	
Age	0.254*	
	(0.112)	
Raven		0.0579
		(0.143)
CRT		0.0693
		(0.110)
Reading		0.0576
		(0.144)
N	1,393	344
Pseudo R-sq	0.004	0.000

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Overall normative uncertainty seems to be explainable, to some extent, by demographic traits. First, women seem to be more likely to exhibit normative uncertainty about their first-order attitudes than men. Second, younger participants, 40 years or under, seem more likely to exhibit normative uncertainty about their first-order attitudes than older participants.

In contrast, cognitive sophistication (“intelligence level”), as captured by standard metrics from cognitive psychology, does not explain the chances of exhibiting more or less normative uncertainty. This result is interesting as it anticipates and answers potential critics against using NUS in policy settings as being “too complicated” due to the presence of a “second-order question”.

# **General Conclusion**



## **Abstract**

In this general conclusion, in [Chapter 19](#), we resume the main results of our thesis, and, in [Chapter 20](#), we suggest future philosophy research directions for unresolved problems or questions in this dissertation.

# Chapter 19

## Main Contributions of The Thesis

In this philosophy thesis, we have defined a framework for conducting operational research on normative uncertainty within humanities and interdisciplinary research. [Section 19.1](#) summarizes the main perspective of the Introduction. [Section 19.2](#) summarizes the main results of Part I. ?? summarizes the main results of Part II. [Section 19.3](#) summarizes the main results of Part III.

### 19.1 Main Perspectives of the Introduction

The main contributions of our introduction are the following points. First, we argue and propose to consider the deliberation under normative uncertainty as an operational alternative, à la Sen [Sen \(2009\)](#), to the ideal deliberation under the veil of ignorance à la [Rawls \(1971a\)](#). Second, we

designed a global and detailed operational approach, à la Bridgman (Bridgman et al. (1927), from the decision and social theory of normative uncertainty to its observation through a mixed method survey research approach. Third, we propose some taxonomy to clear potential confusion within this emergent philosophical literature. We propose labeling the fact of being uncertain about the conception of value “right” and morally uncertain about moral theories, *normative uncertainty*. Furthermore, we propose to label the fact of facing moral or normative uncertainty and empirical uncertainty together as *complex uncertainty*.

## 19.2 Main Contributions of Part I

The main contributions of Part III, in the theory of individual philosophical choice, are the following two points.

First, we provide a global treatment of moral uncertainty alongside two intertwined dimensions. On the one hand, we open and formalize a conception of the “value” beyond its standard consequentialist approach based on expected utility theory. Doing so allows a larger set of first-order value theories,  $\mathcal{V}$  (which now include nonconsequentialist theories), to be faithfully represented and integrated within decision making under *normative uncertainty*. On the other hand, we integrate the treatment of empirical uncertainty alongside moral or normative uncertainty, *complex uncertainty*. Hence, by doing so, when complex uncertainty is composed of normative uncertainty, then the decision problem becomes much more complex than simply relying on the Expected Choiceworthiness Theory à la MacAskill (2014). We propose to approach this by using the following

framework. First, we define an information parameter,  $\mathcal{I}$ , that captures the degree of available information alongside empirical uncertainty and normative uncertainty. Second, based on this information parameter, we derive four decision-making rules under complex uncertainty, behaving in the ex ante and ex post approaches to risky prospects in economics and philosophy literature. We gather these rules under the term *Expectationalism*.

Second, we propose a sophisticated definition and taxonomy of first-order value theories,  $\mathcal{V}$ , by focusing on their risk attitudes towards empirical and moral prospects. By doing so, we highlight and discuss the following implicit hypothesis in circulation in this literature: the attitude towards moral risk that should govern the meta-decision rule. In contrast with the standard approach as in [MacAskill \(2014\)](#), which suggests being morally risk-neutral, we show the limits of this approach and propose to import *endogeneously* the first-order risk attitudes in the second-order level. Hence, instead of relying on the imposition of a benevolent and arbitrary risk-neutral risk attitude at the second-order level, we naturally respect the chosen risk attitudes *encoded* within the first-order moral theories.

### 19.3 Main Contributions of Part II

The main contributions of [Part IV](#) are the following points.

First, we proposed the first and most comprehensive survey design to explore empirically normative uncertainty over a wide range of first-order attitudes studied across large and different academic literature from humanities to social sciences. Our design is simple enough to be portable

and applied to different first-order attitudes. Our design is based on a two-step approach where we elicit the first-order attitudes, and then we elicit normative uncertainty. Besides its simplicity, such a design is fully compatible, to a technical extent, with an incentive-based approach as used in the experimental economic literature. In particular, it is possible to replace self-report scales measuring first-order attitudes with incentivized choices (using a choice procedure or MPL for economic choices). The fact that the second order is not incentivized compatible limits the study of normative uncertainty through experiments. To overcome such a limit, we imagined a coherent second-step design aiming at capturing normative uncertainty through different related psychological phenomena (difficulty, ambivalence), which might act as proxies for normative uncertainty. Furthermore, we used different scale metrics (ranging from binary to graded scales), which, by studying the correlation between the different scales, helped overcome the issues of measurement errors, often suffered by survey methods.

Second, we contribute to developing an integrated approach to survey methodology by involving techniques underestimated by the standard survey methodology in social sciences (particularly in economics as in [Stantcheva \(2022\)](#)). First, we rely on philosophy and an extensive broad literature review to define as clearly as possible qualitative survey items (“social values”, “social trade-offs”, “social dilemmas” and others). By doing so, we aim to anticipate and potentially reduce measurement error due to “semantical measurement error” rather than “statistical measurement error”. Second, we conducted interviews and focus groups with heterogeneous targeted audiences to design our survey and its elements: policy makers,

(pluri and interdisciplinary) researchers, and civil society. By doing so, we could not only check the relevance of our survey and its different items, but also adjust its length and design to anticipate different “behavioral measurement errors” (for example, keeping the questions very short because policy makers have no time to answer them and civil society in general can display cognitive fatigue online). We recorded the two civil society focus groups, transcribed them, and qualitatively analyzed the data. We summarized the main takeaways from policy makers’ interviews and focus groups with researchers. We signaled explicitly which methodological choices specific elements of such interviews and all focus groups led us to make.

Third, we show the first and largest evidence of normative uncertainty on various evaluation objects and normative uncertainty scales. Almost half of our population exhibits normative uncertainty. Besides, such normative uncertainty does vary conditional on the different evaluation objects at hand: When confronted with ambiguous choices, challenging social dilemma choices, and topics requiring advanced knowledge (such as a political opinion about AI or immigration), subjects seem to display the most normative uncertainty. Finally, the overall normative uncertainty seems to be explainable, to some extent, by demographic traits. For example, women seem more likely to exhibit normative uncertainty about their first-order attitudes than men. Furthermore, older participants, 40 years or under, appear to be more likely to exhibit normative uncertainty about their first-order attitudes than older participants. Cognitive sophistication (“intelligence level”), as captured by standard metrics from cognitive psychology, does not explain the chances of exhibiting more or

less normative uncertainty. This result is interesting, as it anticipates and answers potential critics against using NUS in policy settings as being "too complicated" due to the presence of a "second-order question".

# Chapter 20

## Future Philosophical Work

### 20.1 Future Work Based on Part I

**Open Research Questions.** First, we assume a strong commensurability of the values (cardinality) to represent the values  $v \in \mathcal{V}$ . We have established a clear direction for retrieving some information that makes up such cardinality from the coding  $v$  through their risk attitudes. This is an interesting step towards a more potentially applied work. However, one could explore the different taxonomy of decision rules when one varies the commensurability assumption.

Second, we assume that probabilities represent moral beliefs about moral theories. Even stronger, we rely on precise probabilities, as if assigning credence to a moral theory was a “risky event”. This is questionable. One could easily use imprecise probabilities to answer this challenge as if assigning such credence was an “ambiguous event”. But more radically, one could question using plain and simple probabilities to represent moral



beliefs. One could explore which decision rules become available when the use of probabilities is removed from the design.

**Manuscripts.** Part I has led to three manuscripts:

- Based on [Chapter 7](#), [Chapter 9](#), [Chapter 10](#), [Chapter 13](#), [Chapter 14](#): “Decision Under Normative Uncertainty”, co-authored with Franz Dietrich, published at *Economics and Philosophy*. The ungated version is accessible [here](#).
- Based on [Chapter 8](#), [Chapter 11](#), [Chapter 12](#): “The Risk Attitude Under Normative Uncertainty”, co-authored with Franz Dietrich, a workable document available on demand.
- Exploring further axiomatic frameworks for individual decision making under normative uncertainty, “Axiomatic Foundations of Normative Uncertainty” co-authored with Franz Dietrich, a working paper available on demand.

## 20.2 Future Work Based on Part II

**Open Research Questions.** The point of this part III was rather to show how one can use philosophy and humanities in general in addition to more standard statistical and coding techniques to design a survey and build its related data set. In addition, it was to establish normative uncertainty as an empirical fact. However, there are many open interesting questions to exploit this data set as a fully empirical fine-grained data analysis project. First, one might run different correlation analyzes between normative uncertainty about the different first-order attitudes. Second, one might fully

exploit all the different scales of normative uncertainty and see how the results vary conditional on the scale used and how the scales correlate with each other. Third, a more ambitious survey could be implemented using the NUS: translating the survey items and launching a worldwide analysis of normative uncertainty across different countries à la [Falk et al. \(2018\)](#).

**Manuscripts.** Part III has led to one manuscript and a current work in discussion:

- Based on [Part IV](#): “The Normative Uncertainty Survey: Design and evidence”, a solo author work, available on demand. This paper introduces the NUS and preliminary results.
- Based on [Section 16.1](#), [Section 16.2](#), [Section 16.3](#), [Section 15.3](#) and [Chapter 17](#): ” Test Normative Uncertainty: Social Values and Heterogeneous Scales”, a work in progress with Marc Fleurbaey and Franz Dietrich, design clear tests of normative uncertainty using the full set of different binary and gradual scales of normative uncertainty.

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# Appendices



# Appendix A

## Appendix for Part I

### A.1 Proof of Theorem 1

Let  $a \in X$ .  
Firstly,

$$\begin{aligned} EV_{ante}(a) &= \sum_{v \in \mathcal{V}} Pr(v)v(p_a) \\ &= \sum_{v \in \mathcal{V}} Pr(v)v(p_a) \sum_{x \in X} a(x) \\ &= \sum_{(x,v) \in X \times \mathcal{V}} a(x)Pr(v)v(p_a), \end{aligned}$$

where the second equality holds as  $\sum_{x \in X} a(x) = 1$ .

Secondly,

$$\begin{aligned} EV_{stan}(a) &= \sum_{v \in \mathcal{V}} Pr(v)v(a) = \sum_{v \in \mathcal{V}} Pr(v)v(p_{a,v}) \\ &= \sum_{v \in \mathcal{V}} Pr(v)v(p_{a,v}) \sum_{x \in X} a(x) = \sum_{(x,v) \in X \times \mathcal{V}} a(x)Pr(v)v(p_{a,v}), \end{aligned}$$

where the second equality holds because  $v(p_{a,x}) = v(a)$ , and the third because  $\sum_{x \in X} a(x) = 1$ .

Thirdly, the expression for  $EV_{rev}(a)$  holds by definition.

Finally,

$$EV_{post}(a) = \sum_{(x,v) \in X \times \mathcal{V}} a(x)Pr(v) \underbrace{v(x)}_{=v(p_{x,v})} = \sum_{(x,v) \in X \times \mathcal{V}} a(x)Pr(v)v(p_{x,v}). \quad 299$$

■

## A.2 Proof of Proposition 1

Consider an option  $a \in A$  and an information  $I \subseteq X \times \mathcal{V}$  such that  $P_a(I) \neq 0$ .

As our definitions easily imply, if  $I = X \times \mathcal{V}$  then  $p_{a,I} = p_a$ , while if  $I = \{(x, v)\}$  where  $(x, v) \in X \times \mathcal{V}$  then  $p_{a,I} = p_{x,v}$ . If  $I = X \times \{v\}$  where  $v \in \mathcal{V}$ , then  $p_{a,I} = p_{a,v}$  because for all  $k \in \mathbb{R}$

$$\begin{aligned} p_{a,I}(k) &= \frac{P_a(\{x \in X : v(x) = k\} \times \{v\})}{Pr(v)} = \frac{a(\{x \in X : v(x) = k\})Pr(v)}{Pr(v)} \\ &= a(\{x \in X : v(x) = k\}) = \sum_{x \in X : v(x)=k} a(x) = p_{a,v}(k). \end{aligned}$$

Finally, if  $I = \{x\} \times \mathcal{V}$  where  $x \in X$ , then  $p_{a,I} = p_x$  because for all  $k \in \mathbb{R}$

$$\begin{aligned} p_{a,I}(k) &= \frac{P_a(\{x\} \times \{v \in \mathcal{V} : v(x) = k\})}{a(x)} = \frac{a(x)Pr(\{v \in \mathcal{V} : v(x) = k\})}{a(x)} \\ &= Pr(\{v \in \mathcal{V} : v(x) = k\}) = \sum_{v \in \mathcal{V} : v(x)=k} Pr(v) = p_x(k). \end{aligned}$$

■



## A.3 Proof of Theorem 2

Regarding  $EV_{ante}$ , for each option  $a \in A$

$$EV_{ante}(a) = \sum_{(x,v) \in X \times \mathcal{V}} a(x)Pr(v)v(p_a) = EV_I(a) \text{ for } I = \{X \times \mathcal{V}\}.$$

where the first identity holds by Theorem ?? and the second identity holds because by Proposition ?? we can replace  $p_a$  by  $p_{a, X \times \mathcal{V}} = p_{a, I(x,v)}$ .

Analogously, for each  $a \in A$

$$EV_{stan}(a) = \sum_{(x,v) \in X \times \mathcal{V}} a(x)Pr(v)v(\underbrace{p_a}_{p_{a, X \times \{v\}}}) = EV_I(a) \text{ for } I = \{X \times \{v\} : v \in \mathcal{V}\}$$

$$EV_{rev}(a) = \sum_{(x,v) \in X \times \mathcal{V}} a(x)Pr(v)v(\underbrace{p_x}_{p_{a, \{x\} \times \mathcal{V}}}) = EV_I(a) \text{ for } I = \{\{x\} \times \mathcal{V} : x \in X\}$$

$$EV_{post}(a) = \sum_{(x,v) \in X \times \mathcal{V}} a(x)Pr(v)v(\underbrace{p_{x,v}}_{p_{a, \{(x,v)\}}}) = EV_I(a) \text{ for } I = \{\{(x,v)\} : (x,v) \in X \times \mathcal{V}\},$$

where on each line the two identities use Theorem ?? and Proposition ??, respectively.

■

## A.4 Proof of Theorem 3

The proof of Theorem 3 begins with a lemma.

Lemma.

A valuation  $v \in \mathcal{V}$  is vNM if and only if it evaluates value prospects by their expectation, i.e.,  $v(p) = Exp(p) (= \sum_{k \in \mathbb{R}} p(k)k)$  for all value prospects  $p$ .

Proof of Lemma.

First, let  $v \in \mathcal{V}$  be vNM. We fix a value prospect  $p$  and prove that  $v(p) = \text{Exp}(p)$ . Pick an option  $a \in A$  such that  $p_{a,v} = p$ . We have

$$\text{Exp}(p) = \sum_{k \in \mathbb{R}} k p(k) = \sum_{k \in \mathbb{R}} k \sum_{x \in X: v(x)=k} a(x) = \sum_{k \in \mathbb{R}} \sum_{x \in X: v(x)=k} a(x) k = \sum_{x \in X} a(x) v(x),$$

where the second equality uses that  $p(k) = p_{a,v}(k) = \sum_{x \in X: v(x)=k} a(x)$ , and the third and fourth equalities follow by reordering terms. The last expression equals  $v(a)$  as  $v$  is vNM, which equals  $v(p)$  by choice of  $a$ .

Conversely, assume  $v(p) = \text{Exp}(p)$  for all value prospects  $p$ . We let  $a \in A$  and show  $v(a) = \sum_{x \in X} a(x) v(x)$ . Defining  $p$  as  $p_{a,v}$ , we have  $\text{Exp}(p) = \sum_{x \in X} a(x) v(x)$ , as in part 1 of the proof. So it remains to show  $v(a) = \text{Exp}(p)$ . This holds because  $v(a) = v(p)$  (as  $p = p_{a,v}$ ) and  $v(p) = \text{Exp}(p)$  (by hypothesis).

Proof of Theorem 3. We shall use standard measure-theoretic arguments. We prove it in two steps.

1. Assume  $Pr(v) = 0$  for all non-vNM valuations  $v \in \mathcal{V}$ . Fix an option  $a \in A$ . We show that  $EV_{\mathcal{I}}(a)$  is independent of the information partition  $\mathcal{I}$ . On the set of worlds  $X \times \mathcal{V}$ , consider the probability distribution  $P_a$  (the world prospect of  $a$ ) and the random variables  $\mathbf{x} : X \times \mathcal{V} \rightarrow X, (x, v) \mapsto x$  and  $\mathbf{v} : X \times \mathcal{V} \rightarrow \mathcal{V}, (x, v) \mapsto v$ . Combining these variables yields a third variable,  $\mathbf{v}(\mathbf{x})$ , given by  $X \times \mathcal{V} \rightarrow \mathcal{V}, (x, v) \mapsto v(x)$  and representing resulting value. The value prospect  $p_a$  equals the distribution of the variable  $\mathbf{v}(\mathbf{x})$ , and so its expectation is  $Exp(p_a) = Exp_{P_a}(\mathbf{v}(\mathbf{x}))$ . More generally, for any information  $I \subseteq X \times \mathcal{V}$  (such that  $P_a(I) \neq 0$ ), the value prospect  $p_{a,I}$  equals the distribution of  $\mathbf{v}(\mathbf{x})$  conditional on  $I$ , and so  $Exp(p_{a,I}) = Exp_{P_a}(\mathbf{v}(\mathbf{x})|I)$ . Now for any information partition  $\mathcal{I}$  (identifiable with the variable mapping  $(x, v)$  to  $\mathcal{I}(x, v)$ ),

$$\begin{aligned}
 EV_{\mathcal{I}}(a) &= Exp_{P_a}(\mathbf{v}(p_{a,\mathcal{I}})) && \text{by definition} \\
 &= Exp_{P_a}(Exp(p_{a,\mathcal{I}})) && \text{by Lemma A.4} \\
 &= Exp_{P_a}(Exp_{P_a}(\mathbf{v}(\mathbf{x})|\mathcal{I})) && \text{as } Exp(p_{a,\mathcal{I}}) = Exp_{P_a}(\mathbf{v}(\mathbf{x})|\mathcal{I}) \\
 &= Exp_{P_a}(\mathbf{v}(\mathbf{x})) && \text{by the law of iterated expectations,}
 \end{aligned}$$

where Lemma A.4 is applicable as valuations generated by  $\mathbf{v}$  (with non-zero probability) are vNM. The last expression for  $EV_{\mathcal{I}}(a)$  shows that  $EV_{\mathcal{I}}(a)$  is independent of  $\mathcal{I}$ .

2. Conversely, let  $\mathcal{V}$  contain a non-vNM valuation  $\tilde{v}$  of probability  $Pr(\tilde{v}) \neq 0$ . As  $\tilde{v}$  is non-vNM, we may pick an option  $a \in A$  such that  $\tilde{v}(a) \neq \sum_{x \in X} a(x)\tilde{v}(x)$ . Denote the information of valuation  $\tilde{v}$  by  $I = X \times \{\tilde{v}\}$ . We construct two information partitions  $\mathcal{I}_1$  and  $\mathcal{I}_2$  for which  $EV_{\mathcal{I}_1}(a) \neq EV_{\mathcal{I}_2}(a)$ . Let  $\mathcal{I}_1$  and  $\mathcal{I}_2$  coincide outside  $I$  and be, respectively, maximally coarse or maximally fine within  $I$ . So  $\mathcal{I}_1 = \mathcal{I}_0 \cup \{I\}$  and  $\mathcal{I}_2 = \mathcal{I}_0 \cup \{(x, v) : (x, v) \in I\}$ , for some partition  $\mathcal{I}_0$  of  $(X \times \mathcal{V}) \setminus I$ . Thus  $EV_{\mathcal{I}_1}(a) = S + S_1$  and  $EV_{\mathcal{I}_2}(a) = S + S_2$  where

$$\begin{aligned} S &= \sum_{(x,v) \in (X \times \mathcal{V}) \setminus I} a(x)Pr(v)v(p_{a, \mathcal{I}_0(x,v)}) \\ S_1 &= \sum_{(x,v) \in I} a(x)Pr(v)v(p_{a, \mathcal{I}_1(x,v)}) = \sum_{x \in X} a(x)Pr(\tilde{v})\tilde{v}(p_{a, I}) \\ S_2 &= \sum_{(x,v) \in I} a(x)Pr(v)v(p_{a, \mathcal{I}_2(x,v)}) = \sum_{x \in X} a(x)Pr(\tilde{v})\tilde{v}(p_{a, \{(x, \tilde{v})\}}). \end{aligned}$$

By Proposition ??,  $p_{a, I} = p_{a, \tilde{v}}$  and  $p_{a, \{(x, \tilde{v})\}} = p_{x, \tilde{v}}$ . So  $\tilde{v}(p_{a, I}) = \tilde{v}(p_{a, \tilde{v}}) = \tilde{v}(a)$  and  $\tilde{v}(p_{a, \{(x, \tilde{v})\}}) = \tilde{v}(p_{x, \tilde{v}}) = \tilde{v}(x)$ . Thus

$$\begin{aligned} S_1 &= \sum_{x \in X} a(x)Pr(\tilde{v})\tilde{v}(a) = Pr(\tilde{v})\tilde{v}(a) \sum_{x \in X} a(x) = Pr(\tilde{v})\tilde{v}(a) \\ S_2 &= \sum_{x \in X} a(x)Pr(\tilde{v})\tilde{v}(x) = Pr(\tilde{v}) \sum_{x \in X} a(x)\tilde{v}(x). \end{aligned}$$

So

$$EV_{\mathcal{I}_1}(a) - EV_{\mathcal{I}_2}(a) = S_1 - S_2 = Pr(\tilde{v}) \left( \tilde{v}(a) - \sum_{x \in X} a(x)\tilde{v}(x) \right).$$

As  $Pr(\tilde{v}) \neq 0$  and  $\tilde{v}(a) \neq \sum_{x \in X} a(x)\tilde{v}(x)$ , we deduce  $EV_{\mathcal{I}_1}(a) \neq EV_{\mathcal{I}_2}(a)$ . ■

## A.5 Proof of Theorem 4

Write  $RU_{\text{qual}}$  and  $RU_{\text{quan}}$  for the qualitative and quantitative versions of the Risk-Attitudinal Unanimity Principle. Let  $\tilde{\mathcal{V}} = \{v \in \mathcal{V} : Pr(v) \neq 0\}$ . We prove it in 7 claims.

*Claim 1:*  $IV$  satisfies  $RU_{\text{qual}}$ .

Assume all  $v \in \tilde{\mathcal{V}}$  are risk-averse; the proof is analogous for risk-neutrality or -proneness. Consider any  $a \in A$  with risky value prospect  $p_a$ . We must show that  $IV$  is risk-averse towards  $a$ , i.e., that  $IV(a) < FEV(a)$ . Note

$$IV(a) = \sum_{v \in \tilde{\mathcal{V}}} Pr(v)v(p_a) = \sum_{v \in \tilde{\mathcal{V}}} Pr(v)v(p_a).$$

In the last expression, each  $v(p_a)$  is below  $Exp(p_a)$  by  $v$ 's risk-aversion and Lemma ??.

So

$$IV(a) < \sum_{v \in \tilde{\mathcal{V}}} Pr(v)Exp(p_a) = Exp(p_a) \sum_{v \in \tilde{\mathcal{V}}} Pr(v) = Exp(p_a) \times 1 = FEV(a),$$

where the last equality uses Lemma A.4. This proves  $IV(a) < FEV(a)$ .

*Claim 2:*  $IV$  satisfies  $RU_{\text{quan}}$ .

This claim is a special case of Theorem 3, proved above.

*Claim 3:*  $FEV$  can violate  $RU_{\text{qual}}$  and  $RU_{\text{quan}}$ .

This claim is trivial. Just choose  $X, A, \mathcal{V}$  and  $Pr$  such that the  $v \in \tilde{\mathcal{V}}$  are all risk-averse (or all risk-prone); as  $FEV$  is risk-neutral,  $RU_{\text{qual}}$  is violated. If we moreover let all  $v \in \tilde{\mathcal{V}}$  have same non-zero degree of risk aversion  $prem_v(p_a)$  towards the value prospect  $p_a$  of some option  $a \in A$  – e.g., by letting  $\tilde{\mathcal{V}}$  be singleton – then  $RU_{\text{quan}}$  is also violated, because  $Prem_{FEV}(a) = 0$ .

*Claim 4:*  $EV$  can violate  $RU_{\text{qual}}$ .

Choose any  $X, A, \mathcal{V}$  and  $Pr$  such that (i) all  $v \in \tilde{\mathcal{V}}$  are risk-averse, and (ii) some world  $y \in X$  is evaluated differently by at least two valuations in  $\tilde{\mathcal{V}}$ . We prove that  $EV$  is not risk-averse. Let  $a$  be the option which certainly yields  $y$ . So  $a(x) = 1(0)$  if  $x = (\neq)y$ .

Hence,

$$\sum_{x \in X} a(x)v(x) = v(y) = v(a) \text{ for all } v \in \mathcal{V}. \quad (\text{A.1})$$

Now

$$\begin{aligned} EV(a) &= \sum_{v \in \mathcal{V}} Pr(v)v(a) = \sum_{v \in \mathcal{V}} Pr(v) \sum_{x \in X} a(x)v(x) \text{ (by (A.4))} \\ &= \sum_{(x,v) \in X \times \mathcal{V}} a(x)Pr(v)v(x) = FEV(a). \end{aligned}$$

As  $EV(a) = FEV(a)$ ,  $EV$  is risk-neutral towards  $a$ . So  $EV$  is not globally risk averse, noting that  $a$ 's value prospect  $p_a$  is risky as  $a$  (i.e., the world  $y$ ) is evaluated differently by different valuations in  $\tilde{\mathcal{V}}$ .

*Claim 5: EV can violate  $RU_{\text{quan}}$ .*

Choose any  $X, A, \mathcal{V}$  and  $Pr$  such that there is a world  $y \in X$  for which (i)  $v(y)$  is not the same for all  $v \in \tilde{\mathcal{V}}$ , and (ii) all  $v \in \tilde{\mathcal{V}}$  assign the same risk premium to  $y$ 's value prospect, denoted  $prem_v(p_y) \equiv prem(p_y)$ . Such a choice is possible, namely by constructing a set of valuations  $\mathcal{V}$  in three steps (and letting  $Pr(v) \neq 0$  for all  $v \in \mathcal{V}$ ): first, fix a  $y \in X$  and fix how the  $v \in \mathcal{V}$  evaluate worlds (riskless options), taking care that  $y$  is evaluated differently; second, fix a function  $prem$  of value prospects  $p$ , where  $prem(p)$  is zero if and only if  $p$  is riskless ( $prem(p)$  will become the risk premium for  $p$ ); third, extend each  $v \in \mathcal{V}$  to risky options  $a$  by defining  $v(a)$  as

$$v(a) = \sum_{x \in X} a(x)v(x) - prem(p_{a,v}) = Exp(p_{a,x}) - prem(p_{a,x}),$$

the difference between  $a$ 's expected world value and a premium for the empirical risk. Each  $v \in \mathcal{V}$  assigns to each value prospect  $p$  the value  $v(p) = Exp(p) - prem(p)$  and hence the risk premium  $prem_v(p) = Exp(p) - v(p) = prem(p)$  (which confirms the 'risk premium' interpretation given to the function  $prem$ ).

Now let  $a$  be the riskless option which surely yields  $y$ . By (i),  $a$ 's value prospect  $p_a$  is risky. Each  $prem_v(p_a)$  is the same for all  $v \in \mathcal{V}$ , namely  $prem(p_a)$ . So  $RU_{\text{quan}}$  would require that  $Prem_{EV}(a) = prem(p_a)$ . Yet  $Prem_{EV}(a) \neq prem(p_a)$ , because  $prem(p_a) \neq 0$  (as  $p_a$  is risky), while  $Prem_{EV}(a) = 0$  (as  $EV$  is risk-neutral towards empirical-riskless options like  $a$ , by Theorem ??(a)).

*Claim 6: DEV can violate  $RU_{\text{qual}}$ .*

Choose any  $X, A, \mathcal{V}$  and  $Pr$  such that some risk-averse  $\tilde{v} \in \mathcal{V}$  is surely correct:  $Pr(\tilde{v}) = 1$  (no normative uncertainty). So  $\tilde{\mathcal{V}} = \{\tilde{v}\}$ . Hence trivially all  $v \in \tilde{\mathcal{V}}$  are risk-averse. So  $RU_{\text{qual}}$  requires of  $DEV$  to be risk-averse. But by Theorem ??(a)  $DEV$  globally coincides with the risk-neutral meta-theory  $FEV$ , as  $A = A_{\text{no-n-risk}}$ .

*Claim 7: DEV can violate  $RU_{\text{quan}}$ .*

Choose  $X, A, \mathcal{V}$  and  $Pr$  just as in Claim 6's proof. To see why  $RU_{\text{quan}}$  is violated, pick any  $a \in A$  with risky value prospect  $p_a$ . As  $\tilde{\mathcal{V}} = \{\tilde{v}\}$ , trivially  $prem_v(p_a)$  is the same for all  $v \in \mathcal{V}$ . So  $RU_{\text{quan}}$  requires of  $DEV$  that  $Prem_{DEV}(a) = prem_{\tilde{v}}(p_a)$ . Yet  $prem_{\tilde{v}}(p_a) \neq 0$  (as  $\tilde{v}$  is risk-averse and  $p_a$  is risky) while  $Prem_{DEV}(a) = 0$  (as  $DEV$  is risk-neutral by the proof of Claim 6).



## A.6 Proof of Theorem 5

Consider an option  $a \in A$ . Using Lemma A.4,

$$FEV(a) = Exp(p_a) = Exp(p_a) \sum_{v \in \mathcal{V}} Pr(v) = \sum_{v \in \mathcal{V}} Pr(v) Exp(p_a).$$

Now

$$\begin{aligned} Prem_{IV}(a) &= FEV(a) - IV(a) = \sum_{v \in \mathcal{V}} Pr(v) Exp(p_a) - \sum_{v \in \mathcal{V}} Pr(v) v(p_a) \\ &= \sum_{v \in \mathcal{V}} Pr(v) [Exp(p_a) - v(p_a)] = \sum_{v \in \mathcal{V}} Pr(v) prem_v(p_a). \end{aligned}$$

## A.7 Proof of Theorem 6

**Proof of the ‘if’ claim of Theorem 1\***

Assume  $\succeq$  satisfies Axioms 1\*–6\*. By Axioms 1\*, 2\* and 4\*,  $\succeq$  is a continuous weak order, which is strongly separable by Axiom 5\*, and in which at least 3 dimensions are relevant. So, by Debreu’s Theorem (in Wakker’s strengthened version), there exists continuous functions  $f_i : \mathbb{R} \rightarrow \mathbb{R}$  ( $i = 1, \dots, n$ ) such that

$$a \succeq b \Leftrightarrow \sum_{i=1}^n f_i(a_i) \geq \sum_{i=1}^n f_i(b_i) \text{ for all } a, b \in \mathbb{R}^n. \quad (\text{A.2})$$

We can assume for all  $i$  that  $f_i(0) = 0$ , because the validity of (A.2) is not affected by replacing any  $f_i$  by subtracting the constant  $f_i(0)$ . We can also assume that no function  $f_i$  is constant. Why? To sketch the argument informally, assume for instance that  $f_n$  is constant while  $f_1, \dots, f_{n-1}$  are non-constant. Then by (A.2) the relation  $\succeq$  is independent of the value in dimension  $n$ . So we can regard  $\succeq$  as being essentially an order on the lower-dimensional space  $\mathbb{R}^{n-1}$ . If the ‘if’ claim of Theorem 1\* holds for this lower-dimensional case, then we obtain an expected-value representation whose probability function  $p$  is defined only on smaller set of dimensions  $\{1, \dots, n-1\}$ . Extending  $p$  to  $\{1, \dots, n\}$  by setting  $p(n) = 0$ , we obtain an expected-value representation on the full space  $\mathbb{R}^n$ .

In sum, each  $f_i$  ( $i = 1, \dots, n$ ) is non-constant with  $f_i(0) = 0$ .

At this stage, we need to prove 4 claims.

*Claim 1:* Each  $f_i$  ( $i = 1, \dots, n$ ) is (strictly) increasing.

*Proof of Claim 1.* We assume  $f_1$  is not strictly increasing, and show that is constant, a contradiction; the proof is analogous for  $f_2, \dots, f_n$ . By Axiom 3\*,  $f_1$  is weakly increasing (by Axiom 3\*), but not strictly increasing, we may pick  $x < y$  in  $\mathbb{R}$  such that  $f_1(x) = f_1(y)$ . Now take any  $z \in \mathbb{R} \setminus \{x, y\}$ ; we show that  $f_1(z)$  is the same as  $f_1(x) = f_1(y)$ .

- *Case 1:*  $z > x$ . As  $f_1(x) \geq f_1(y)$ ,  $(x, x, \dots, x) \succeq (y, x, \dots, x)$  by (A.2). So  $(x, x, \dots, x) \succeq (z, x, \dots, x)$ , applying Axiom 5\* with the increasing affine transformation mapping  $x$  to  $x$  and  $y$  to  $z$ . Hence  $f_1(x) \geq f_1(z)$  by (A.2), and thus  $f_1(x) = f_1(z)$  as  $x < z$  and as  $f_1$  is weakly increasing.
- *Case 2:*  $z < x$ . As  $f_1(x) = f_1(y)$ ,  $(x, y, \dots, y) \succeq (y, y, \dots, y)$  by (A.2). So  $(z, y, \dots, y) \succeq (y, y, \dots, y)$  by Axiom 5\* applied with the increasing affine transformation mapping  $x$  to  $z$  and  $y$  to  $y$ . So  $f_1(z) \geq f_1(y)$  by (A.2), and hence  $f_1(z) = f_1(y)$  since  $z < y$  and  $f_1$  is weakly increasing.

■

As each  $f_i$  is strictly increasing with  $f_i(0) = 0$ , each  $f_i$  satisfies  $f_i(t) > 0$  for  $t > 0$ . We may assume that each  $f_i$  satisfies  $f_i(t) \geq 1$  for some (sufficiently large)  $t$ , because otherwise we could use rescaled functions  $k f_i$  for any arbitrarily large scaling factor  $k > 0$  (where such rescaling is allowed as it preserves (A.2)). As each  $f_i$  is continuous and has 0 and a number of at least 1 in its range, it also has 1 in its range; so  $k_i = f_i^{-1}(1) (> 0)$  is well-defined. We now construct a new relation  $\succeq'$  on  $\mathbb{R}^n$  as follows:

$$a \succeq' b \Leftrightarrow (k_1 a_1, \dots, k_n a_n) \succeq (k_1 b_1, \dots, k_n b_n) \text{ for all } a, b \in \mathbb{R}^n. \quad (\text{A.3})$$

We also define new functions  $g_i : \mathbb{R} \rightarrow \mathbb{R}$  by  $g_i(t) = f_i(k_i t)$  ( $i = 1, \dots, n$ ). By definition of  $\succeq'$  and by (A.2),

$$a \succeq' b \Leftrightarrow \sum_{i=1}^n g_i(a_i) \geq \sum_{i=1}^n g_i(b_i) \text{ for all } a, b \in \mathbb{R}^n. \quad (\text{A.4})$$

*Claim 2:* All  $g_i$  ( $i = 1, \dots, n$ ) are the same function  $g$  which satisfies  $g(0) = 0$  and  $g(1) = 1$ .

*Proof of Claim 2.* Clearly, each  $g_i$  satisfies  $g_i(0) = f_i(0) = 0$  and  $g_i(1) = f_i(k_i) = 1$ . We show that  $g_1 = g_2$ ; the general proof is analogous. Let  $\lambda \in \mathbb{R}$ . We must show  $g_1(\lambda) = g_2(\lambda)$ .

- *Case 1:*  $\lambda = 0$ . Then  $g_1(\lambda) = g_2(\lambda) = 0$ .
- *Case 2:*  $\lambda > 0$ . By (A.4),  $(1, 0, \dots, 0) \sim' (0, 1, 0, \dots, 0)$ , as all  $g_i$  coincide at 1 (with  $g_i(1) = 1$ ) and coincide at 0 (with  $g_i(0) = 0$ ). So  $(\lambda, 0, \dots, 0) \sim' (0, \lambda, 0, \dots, 0)$ , by Axiom 5\* applied with the increasing affine transformation mapping 1 to  $\lambda$  and 0 to 0. Hence  $g_1(\lambda) = g_2(\lambda)$ , by (A.4) and the fact that all  $g_i$  coincide at 0.
- *Case 3:*  $\lambda < 0$ . By (A.4),  $(0, 1, \dots, 1) \sim' (1, 0, 1, \dots, 1)$ , as all  $g_i$  coincide at 1 and coincide at 0. So  $(\lambda, 0, \dots, 0) \sim' (0, \lambda, 0, \dots, 0)$ , by Axiom 5\* applied with the increasing affine transformation mapping 0 to  $\lambda$  and 1 to 0. Thus  $g_1(\lambda) = g_2(\lambda)$ , by (A.4) and the fact that all  $g_i$  coincide at 0.

■

*Claim 3:* A continuous increasing function  $g : \mathbb{R} \rightarrow \mathbb{R}$  is affine if the following invariance principle holds, where  $t \in (0, 1)$  is the number given by  $g(t) = \frac{1}{2}[g(0) + g(1)]$ :

$$g(\phi(t)) = \frac{1}{2}[g(\phi(0)) + g(\phi(1))] \text{ for all increasing affine } \phi : \mathbb{R} \rightarrow \mathbb{R}. \quad (\text{A.5})$$

*Proof of Claim 3.* This property is proved by Maskin (1978, p. 95–96), in an equivalent variant that assumes that  $g(0) = 0$  and  $g(1) = 1$  (and thus concludes that  $g$  is the identity function, i.e., the affine function satisfying  $g(0) = 0$  and  $g(1) = 1$ ).<sup>a</sup> ■

<sup>a</sup>To see why Maskin indeed proves our claim (in the mentioned variant), compare (A.5) to his condition (3), where  $t$  corresponds to his ‘ $u$ ’,  $\phi(0)$  to his ‘ $b$ ’,  $\phi(1)$  to his ‘ $a$ ’, and  $\phi$  to ‘his’ affine transformation  $x \mapsto (a - b)x + b$ . To be precise, this transformation is weakly increasing (as Maskin assumes  $a \geq b$ ) while our  $\phi$  is strictly increasing; but this difference is mathematically irrelevant.

*Claim 4:* Each function  $g_i$  ( $i = 1, \dots, n$ ) is the identity function.

*Proof of Claim 4.* By Claim 2, all  $g_i$  are the same function, say  $g$ . To show that  $g$  satisfies the premises of Claim 3, let  $t$  and  $\phi$  be as in Claim 3. By (A.4) and the fact that  $2g(t) = g(1) + g(0)$ ,  $(t, t, 0, \dots, 0) \sim' (1, 0, \dots, 0)$ . So by Axiom 5\*  $(\phi(t), \phi(t), \phi(0), \dots, \phi(0)) \sim' (\phi(1), \phi(0), \dots, \phi(0))$ . Thus, again by (A.4),  $2g(\phi(t)) = g(\phi(1)) + g(\phi(0))$ , i.e.,  $g(\phi(t)) = \frac{1}{2}[g(\phi(1)) + g(\phi(0))]$ . Having shown (A.5), Claim 3 implies that  $g$  is affine, hence is the identity function as it maps 0 to 0 and 1 to 1. ■

End of the proof of the ‘if’ claim of Theorem 1

## Completing the proof of Theorem 6

For each  $i$  and  $t \in \mathbb{R}$ ,  $f_i(t) = g_i(k_i^{-1}t) = k_i^{-1}t$ , using Claim 4. So (A.2) reduces to

$$a \succeq b \Leftrightarrow \sum_{i=1}^n k_i^{-1}a_i \geq \sum_{i=1}^n k_i^{-1}b_i \text{ for all } a, b \in \mathbb{R}^n.$$

Hence,  $\succeq$  maximizes expected value relative to the probability function  $p : \{1, \dots, n\} \rightarrow [0, 1]$  defined by  $p(i) = ck_i^{-1}$ , where  $c$  is the scaling factor ensuring that probabilities sum to 1 (formally,  $c = 1 / \sum_{i=1}^n k_i^{-1}$ ).

## A.8 Proof of Theorem 7

## **Appendix B**

### **Appendix for Part II**



## B.1 Additional Results

### B.1.1 Further Robustness Checks

	count	mean	sd	min	max	p10	p25	p50	p90	p95
Duration	35474	28.41	91.47	0.00	6073.22	3.37	7.34	11.56	61.80	93.13

Table B.1: **SUMMARY STATISTICS FOR THE DURATION OF EACH QUESTION**

### B.1.2 Analysis of Participants' Risk Profiles

#### B.1.2.1 Summary Statistics of Participants' Risk Profiles

	count	mean	sd	min	max	p10	p25	p50	p90	p95
Econ. Risk Profile	999	61.45	17.92	16.67	100.00	37.00	49.33	61.67	85.00	90.00

Table B.2: **SUMMARY STATISTICS FOR THE ECONOMIC RISK PROFILE**

	count	mean	sd	min	max	p10	p25	p50	p90	p95
Moral Risk Profile	796	75.53	16.64	33.33	100.00	55.56	66.67	77.78	100.00	100.00

Table B.3: **SUMMARY STATISTICS FOR THE MORAL RISK PROFILE**

	count	mean	sd	min	max	p10	p25	p50	p90	p95
Risky Project	1281	52.72	32.18	0.00	100.00	3.00	30.00	50.00	100.00	100.00

Table B.4: **SUMMARY STATISTICS FOR THE RISKY PROJECT**

### B.1.2.2 Correlation Between Types of Risk Attitudes

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(1)

	Econ. Risk Profile	Moral Risk Profile	Altruistic Profile
Econ. Risk Profile	1		
Moral Risk Profile	-0.0806*	1	
Altruistic Profile	0.462***	-0.00851	1

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\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table B.5: **CORRELATION BETWEEN EMPIRICAL, MORAL AND SOCIAL RISK ATTITUDES**

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(1)

	Risk Report	Risky Proj.	Risk Avers.
Risk Report	1		
Risky Proj.	0.474***	1	
Risk Avers.	0.0506	0.0527	1

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\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table B.6: **CORRELATION BETWEEN TYPES OF EMPIRICAL RISK ATTITUDES**

## B.2 US Citizens Focus Group Transcripts

### B.2.1 First Focus Group Transcript

## Focus Group1

Fri, 2/25 8:37AM + 47:05

## SUMMARY KEYWORDS

question, answer, people, political, thought, survey, student, money, feel, definition, values, society, skewed, conflicted, freedom, cultural diversity, issues, conflict, write, slide

Speaker 1 (00:13):

All right. First I just want to have everybody, if we could just go around the room, introduce themselves, just tell us your first name, little bit about yourself, a sentence or two. That would be great. Let's start with you.

Gail (00:26):

I'm Gail.

Speaker 1 (00:27):

Gail.

Gail (00:28):

And at one point I owned a business for 35 years, but I started as a teacher, went into business and then retired from business, went back to teaching in a non-school district school, which means we didn't get paid much. And now I just tutor and sort of substitute for no money.

Speaker 1 (01:01):

Okay. Great. Well we're glad you're here, John.

John (01:04):

Hi, John. I've been with the university employed for about 10 years doing financials for several departments. Prior to that I was in and out of 10 companies. So it's nice to have some stability here. I don't know.

Speaker 1 (01:24):

Okay. Yeah. In and out with money or...?

John (01:26):

In and out with some money.

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Speaker 1 (01:30):

Okay. All right, Charles.

Charles (01:35):

How are you? I'm Charles, I've been in this country for six years from West Africa, Ghana, and I'm still a student. I haven't had an interesting life, but I work as a temp guy in various department in Christian university. And I'm going back to school.

Speaker 1 (01:53):

Back to school as a...?

Charles (01:55):

As a biomedical biochemistry major.

Speaker 1 (01:59):

Pre-med right?

Charles (02:00):

Pre-med.

Speaker 1 (02:01):

All right. Excellent. All right. Lucille.

Lucille (02:03):

Yes. Hi. Well, on that note, I'm a former molecular biologist.

Speaker 1 (02:07):

Oh wow.

Lucille (02:08):

Yeah. Through post docs. And then I had my family and didn't quite jive with having three kids. So, I was an editor, I was a technical editor. I also did some proofreading. So that's what I was doing here. And recently I've been teaching in various capacities.

Speaker 1 (02:30):

Great. Welcome. Yes sir.

Jeffrey (02:32):

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My name's Jeffrey. I live in Plainsboro and I work part-time now and I love to travel whenever I can. Let's see, what other things people have been saying? Well, glad to be here. Never been in this building before, I learned something.

Speaker 1 (02:50):

All right. Good, good, welcome. Yes.

Rachel (02:53):

I'm Rachel. I'm a senior at Notre Dame high school and I plan on going to Pace university in Manhattan for psychology. And I actually work at one of the Princeton Eden clubs down the street, I work at the quad.

Speaker 1 (03:06):

Very good. All right.

Suzanne (03:06):

I'm Suzanne.

Speaker 1 (03:07):

Suzanne.

Suzanne (03:08):

I was a banker for 20 years, left when I had my kids, went back to school, became a teacher, and now I do that and referee, obviously, I came in the field.

Speaker 1 (03:20):

Very good. Yes.

Golan (03:21):

Hi, I'm Golan. I was born and raised in Israel. I'm a student right now. I go to SJU, St. Joseph University in Philadelphia and I'm an upcoming junior.

Speaker 1 (03:34):

Wonderful. Great. Yes.

Eileen (03:37):

My name is Eileen. I've been an art teacher with children for 30 years. And aside from what you heard, it is not a flippant profession. Art makes you smart, that's my saying. And I currently teach part-time.

Speaker 1 (03:53):

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Wonderful. Yes, John.

John (03:54):

I'm John Alloy. I'm from Trinidad and Tobago. I go to school right here at Princeton. That's about it.

Speaker 1 (04:00):

Okay. Nancy.

Nancy (04:01):

My name's Nancy. I taught for 37 years middle school, and I do a lot of volunteer work right now and I actually went back to sub also, that's about it.

Speaker 1 (04:13):

Okay. All right.

Nancy (04:14):

And my daughter went to St. Joe's also.

Speaker 1 (04:17):

All right. All right. About how long did it take to get through the survey?

Lucille (04:22):

I'm on the last question.

Speaker 1 (04:23):

You're on the last question. So about what? 10, 11 minutes? 12 minutes?

Nancy (04:30):

More than that. I think whenever we started, I don't remember when it was.

Speaker 1 (04:37):

Okay. All right. Good. All right. First impressions, Nancy.

Nancy (04:38):

Well, I thought it was a little confusing. Do you want to go through each of the questions? How are you...?

Speaker 1 (04:50):

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I don't know. I just wanted to start by getting a general impression. Do you think it's going to work for us? I mean, the objective [crosstalk 00:05:01] is we're asking people to weigh priorities between different values. Because sometimes in making a value choice we have to accept things that can be in conflict with one another. Right. So, it's great to have excellent art programs at our schools, but that means we have to pay more taxes. So, it's one thing weighed against another. So, in some sense the survey's trying to put you in kind of a situation where you've got to weigh one against another. We're trying to get a sense of how people prioritize different values. Yes.

Eileen (05:40):  
I just wanted more information, it was short and concise and I felt therefore, superficial. And I wanted more meat, well, what do you mean, blah, blah, blah and give me more information to base an answer on.

Gail (05:58):  
Or put a place where we could answer something that we think, because some of it was ambiguous. Some of it...

Eileen (06:07):  
Ambiguous.

Gail (06:08):  
Yeah. Some of it did not have real meaning.

Speaker 1 (06:15):  
Okay.

Gail (06:16):  
Okay.

Speaker 1 (06:17):  
So you mean an open ended question where you could yourself?

Gail (06:20):  
Well, some of the things, what your answers were didn't fit what my mind said.

Suzanne (06:27):  
I jotted that down, too. I don't know if you could come up with a different phrase, but, there's this, this, and then I don't know.

Gail (06:36):

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Yeah.

Suzanne (06:37):  
And I think the phrase, I don't know is misleading. Because it's not that you don't know it's that you're not... And no one likes to say they don't know. So, I think whatever the wording should be would be my choice, my thoughts are not present, or like she said.

John (06:52):  
Even other or something.

Suzanne (06:53):  
But I know for your tabulation and open-ended is a bugger for you to tabulate. So.

Golan (06:58):  
Yeah, of course.

Gail (07:00):  
Yeah. And I thought it was very political.

Speaker 1 (07:01):  
Really?

Gail (07:02):  
Yeah, yeah. Because right now that's what we're having in society [crosstalk 00:07:09].

Speaker 13 (07:12):  
What do you mean?

Eileen (07:12):  
The debate's political, but I don't think that it was skewed.

Nancy (07:12):  
Yeah I don't think it was skewed either.

Gail (07:14):  
No. It wasn't skewed to me, but it still was... I thought it was somebody in one of the political problems that we have now trying to see what the idea was amongst people here.

Jeffrey (07:32):

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I kind of go along with her. I mean, what she was saying, the top issues that at least some, I don't want to bring parties into it, but their point in society, they have this thing about global warming. You got to believe it's happening. And if you don't, you're not smart for some reason. And the idea of equality of some sort of distributing money, or we all have to have... We can't have poor people for some reason, or can't have somebody you can't bring themselves up, you have to bring them up, they can't do it. And these are things that are now.

Jeffrey (08:01):  
So these values or what you're saying is important is things that we're thinking about. And there might be other values that nobody's thinking about or is dead in society, maybe more concrete religious beliefs, or maybe something to do about maybe something to do with art. I don't know exactly, but these are things the survey really deals with a lot of things that's in the minds of the newspapers, the media, the public. So, and there could be a lot of other values out there. You know, we're not even... [crosstalk 00:08:28].

Gail (08:28):  
As far as religion, we have religion, but not all of us practice.

Speaker 1 (08:35):  
Okay.

Gail (08:35):  
So, whatever we answer it might be very misleading.

Speaker 13 (08:40):  
Oh.

Suzanne (08:40):  
That's true.

Speaker 13 (08:40):  
The demographics when asked religion...

Suzanne (08:42):  
Yes, because when you were asked the religion question, it's very straightforward, but you can be that, but not practicing.

Speaker 13 (08:48):  
Oh, I see.

Speaker 1 (08:49):

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John, what was your impression?

John (08:52):  
My impression was, I think it was certainly not biased, but it was definitely political in nature. Obviously you can answer them all and you can come away with a political bias and the answers are skewed one way or the other. I think it accomplished what it needed to. I think ranking your answer or going from not confident to totally confident. It seemed like there were three categories in the non-confident and only totally confident at the end. Am I correct?

Lucille (09:27):  
There was a mistake. There was a duplicate. Twice it said somewhat un-confident, it said no confidence, somewhat un-confident, somewhat un-confident repeated by mistake and then very confident so that was a mistake.

Charles (09:40):  
Oh, it was somewhat confident [crosstalk 00:09:40].

Lucille (09:47):  
I may have the first time I answered and I'm sorry to cut in...

Speaker 1 (09:48):  
That's okay. It's all relevant.

Suzanne (09:50):  
Yeah. And I think we all interpreted that question differently.

Lucille (09:53):  
The first time I answered it on my survey, I don't know if you're going to look at our answers or not.

Speaker 1 (09:58):  
Oh yeah we will.

Lucille (09:59):  
I may have seen somewhat un-confident, which really was somewhat confident.

Speaker 13 (10:08):  
Yeah, somewhat confident.

Speaker 1 (10:09):

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That's a label we got to fix.

Lucille (10:10):  
Like broke those barriers down I'm sorry.

Gail (10:13):  
And I don't think any of us would've hit that. She did. I don't think any of us would've hit it because I know I can read those things they always put in Facebook and all over with all the mistakes or even written sideways or backwards.

Speaker 1 (10:28):  
Yeah.

Gail (10:29):  
Because it depends upon how your brain thinks, and, I can always read them.

Suzanne (10:33):  
So what was your point for the question about the political? Because I hear that people interpreted it two different ways. Was it to be interpreted is obviously those questions are political. I mean, because that's... or was it skewed? And I think you could read that question two different ways.

Suzanne (10:51):  
Was the survey politically skewed? Like she said, a certain group trying to find out certain thoughts, or were the questions just by being asked, political in nature. And I think that's a very distinct difference. And you would answer it very differently because I answered it. Not, I think I answered it I did not think it was skewed. So that is a no, but yet...

Speaker 13 (11:18):  
Good.

Suzanne (11:18):  
The questions are very political. I didn't know which it was asking.

Speaker 13 (11:22):  
Good. Yeah. That's the second option that we want to go is like...

Suzanne (11:25):  
So maybe worded differently?

Speaker 13 (11:26):

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Yeah.

Suzanne (11:27):  
Depending on your goal.

Speaker 13 (11:28):  
I didn't think about the word skewed so...thank you.

Gail (11:31):  
Specifically the one where, what she's talking about.

Speaker 13 (11:35):  
Yeah.

Gail (11:35):  
Where we, you talked about the nature and finances. Well, there should have been something that not one or the other, some a middle ground.

Speaker 13 (11:50):  
Okay. Why not sure.

Speaker 1 (11:51):  
Part of the exercise though is to kind of push people to see where they're willing to go. Right?

Gail (11:56):  
Yeah.

Suzanne (11:56):  
Like a thinking question...

Speaker 1 (11:59):  
Now I got to ask related to this though [crosstalk 00:12:02]. We had questions in there that asked about how conflicted you were about your answer. Did you find, in some cases you felt conflicted about weighing one thing against another or...?

Eileen (12:14):  
Is that the sliding thing?

Nancy (12:15):  
Yeah.

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Speaker 1 (12:16):  
Yeah.

Eileen (12:17):  
I didn't, I didn't like that word conflict because a better word might have been maybe ambivalent.

Speaker 13 (12:23):  
Yeah. That's...I see.

Eileen (12:24):  
Instead of conflict. Well, I'm not conflicted, but I don't know if I have to go all the way, that way. Just a little that way. Like maybe I'm a little ambivalent, like, you know, you could maybe change my mind with a good argument.

Speaker 13 (12:36):  
No, no, that's perfect.

Eileen (12:37):  
So maybe not the word conflict, but a different adjective [crosstalk 00:12:40].

Speaker 13 (12:39):  
It just like ambivalence is like the broad category and within, there was one scale, which is a scale of conflicting. So actually we could just replace the word conflicting with ambivalent, with no problem or...

Eileen (12:51):  
Simpler ones that you get, in your email from, I don't know, dog food companies or something. It's like, I feel very strongly or I don't feel strong, but not conflict, a different word.

Speaker 13 (13:02):  
Thank you.

Speaker 1 (13:04):  
We also ask how confident are you of your answer to the question on the previous page.

Nancy (13:10):  
That makes it look like there's a right or wrong answer.

Speaker 1 (13:13):

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Really?

Nancy (13:14):  
I mean, I think so. When somebody says, how confident are you?

Speaker 1 (13:18):  
How confident you are in your answer.

Nancy (13:25):  
Yeah.

Gail (13:26):  
With that one conflicted would be in your fit in there too [crosstalk 00:13:27].

Speaker 1 (13:26):  
Means how much you think you're right?

Nancy (13:28):  
Yeah. But I think if you, I don't know, I felt like, then somebody's going to say there's a right answer or wrong answer.

Suzanne (13:33):  
I do think the way I, when I first started the answer...

Nancy (13:35):  
Yeah. But then I kind of moved on as I answered more the questions. I think

Suzanne (13:39):  
I think you got into how to slide it once you did a few [crosstalk 00:13:44].

Nancy (13:44):  
Right. Right, but one of the things you said was one of the questions about freedom and expressing yourself, which is more important or expressing yourselves and fulfilling your desires. I think that's not the same that's you were, or it seemed like you were explaining freedom that way. I don't think expressing yourself and fulfilling your desire is very different when you're trying to explain [crosstalk 00:14:10].

Speaker 13 (14:09):  
Oh, you mean I could have just said like expressing yourself.

Nancy (14:13):

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Yeah. Or a different definition of freedom. Fulfilling your desire isn't...

Speaker 1 (14:19):  
Freedom.

Nancy (14:19):  
You're the freedom to do what you want, but I don't know, expressing your desires to me is you can go out and do whatever you want. Yeah.

Speaker 13 (14:27):  
Yeah. Yeah.

Gail (14:27):  
Yeah. I was worried of that because...

Nancy (14:28):  
That didn't seem...it was fact conflicting there.

Gail (14:28):  
Yeah. Saying a guy could go out with the gun he's expressing himself.

Nancy (14:28):  
Yeah. Whatever your desires are looking at like a civil rights society. I don't know. I didn't...I didn't see that.

Speaker 13 (14:29):  
I just have a question...

Gail (14:42):  
Maybe you should have put within the law.

Lucille (14:44):  
Right, Right. Within society's norms or something like that.

Charles (14:46):  
The thing that I felt like the extent of these values in society [crosstalk 00:14:54].

Gail (14:54):  
Yeah, there were a couple like that.

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Speaker 1 (14:54):  
What about...

Gail (14:54):  
Yeah.

Charles (14:54):  
Like the extent of these values in society. So, what extent is freedom because somebody's freedom might not, might conflict and might... [crosstalk 00:15:01].

Gail (15:01):  
He's filling his desire to shoot, okay.

Eileen (15:02):  
It's funny how society's gotten us now.

Suzanne (15:10):  
Was there a typo in the first scenario? Because it said generation one is the current situation.

Speaker 1 (15:14):  
Maybe.

Lucille (15:16):  
The verb was missing.

Nancy (15:18):  
Yes, that was very confusing.

Suzanne (15:18):  
The current generation or something.

Lucille (15:21):  
It's an incomplete sentence.

Suzanne (15:22):  
Okay. That's what I thought as well.

Lucille (15:24):  
And I found that particular scenario.

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Nancy (15:27):  
Yes.

Lucille (15:27):  
To be the most challenging. And I don't know what demographics you're targeting, but if someone is not, literate, or very literate, they're going to really struggle.

Speaker 1 (15:35):  
Generation one, generation two.

Speaker 13 (15:35):  
Quantitatively challenging.

Nancy (15:37):  
You mean quantitatively challenging?

Suzanne (15:42):  
I found that the general population will have a problem reading that very first question.

Rachel (15:48):  
Didn't we all get same question first? Was it that one first?

Speaker 1 (15:52):  
No.

Rachel (15:52):  
Okay because I got that one first [crosstalk 00:15:55].

Suzanne (15:53):  
Actually, there's actually eight versions of that.

John (15:56):  
Oh okay.

Gail (15:57):  
You'll have to write down which one I got because...

Suzanne (16:00):  
That was the one with generation one as the current situation.

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Rachel (16:04):  
Because I wrote that one down and that was the first one that I got and I was, I didn't know what the survey was about from that. And I was confused. And it took me a couple tries to read it over and really understand what it was saying.

Speaker 13 (16:16):  
I see. I see.

Nancy (16:16):  
The thought isn't finished. It isn't very simple.

Rachel (16:16):  
Yeah.

Nancy (16:18):  
I always had to write it like a spreadsheet who was saying what [crosstalk 00:16:21].

Suzanne (16:20):  
A part of it was because it had the wrong word in there.

Rachel (16:24):  
Yeah, definitely [crosstalk 00:16:24].

Nancy (16:24):  
Should it not be die instead of dice?

Speaker 1 (16:26):  
Yes. Die is a single term.

Nancy (16:29):  
Yeah. I saw like where that had been done.

Speaker 1 (16:29):  
But I'm not sure. I'm not sure.

Suzanne (16:31):  
I don't know that the world is.

Lucille (16:32):  
Yeah most people wouldn't get it...

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Speaker 1 (16:32):  
Most people think of it as dice.

Suzanne (16:32):  
Only the teachers knew that.

Nancy (16:32):  
Don't say that or they'll die.

Rachel (16:33):  
Right?

Suzanne (16:41):  
Dice.

Speaker 13 (16:42):  
Nancy you said that...

Lucille (16:44):  
It's not a major thing, but there were a number of times that I thought certain things were written awkwardly.

Nancy (16:50):  
Yeah.

Speaker 1 (16:50):  
Okay.

Lucille (16:50):  
I wrote those down. I don't know that you want me to bring up tonight or not.

Speaker 1 (16:55):  
Let's have a look.

Suzanne (16:56):  
And I also...

Lucille (16:56):  
I don't remember what they are though, but I can still look at them.

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Nancy (17:01):  
Oh, I know one it was talent...oh she's still talking.

Lucille (17:07):  
Let me look for a second. Just a second... purpose of the research. For example, it's okay. To me and I'm not being insulting, but I felt, and I heard some actions there, that some of it that it was written by a non-native English speaker. And I thought I understood all of it.

Speaker 1 (17:22):  
Yeah. Right.

Lucille (17:22):  
But it's not the way I would write it or usually read it. So things like the research is aimed. So you would usually read the aim of the research.

Speaker 1 (17:33):  
Okay.

Lucille (17:33):  
Those are little things, but there were some others that were like...

Speaker 1 (17:36):  
So there's stylistic usages.

Lucille (17:38):  
Maybe stylistic, or it would, one of the answers that we could answer was very much, another one was much. So very much is a thing, but much is not a thing. Right? Alone. Things like that were a little awkward.

Lucille (17:52):  
Even though I knew the point, how hard did you find this question? You would say how difficult or how confident was your answer in the previous page? You would say on the previous page. These are little, little things that I might want to hear from you now, but there were a number of those throughout.

Jeffrey (18:13):  
Pretty smart lady. Who's that?

Lucille (18:13):  
I would normally retro as an editor, you know?

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Speaker 1 (18:14):  
Right. Yeah.

Lucille (18:14):  
Then I noticed the meeting and I noticed... [crosstalk 00:18:14]

Speaker 1 (18:14):  
Yeah, thank you very much.

Jeffrey (18:22):  
Very, very astute.

Speaker 1 (18:23):  
Yeah. Rachel, did you have any other spots that you wanted to mention?

Rachel (18:28):  
There was the one about the... I forget specifically what it was... But where it said safe life. It was...

Speaker 1 (18:34):  
Safe lives?

Rachel (18:37):  
I didn't know what you were deeming a safe life when it said...

Speaker 13 (18:41):  
Security.

Rachel (18:41):  
I don't know trying to remember that, oh yeah. Security. It was like, should everyone have a safe life? I wasn't sharing exactly what you were referring to. And then I just wrote some little things. I would've liked the questions to be numbered just because it just seems awkward to just have the question there and then the answers, and I don't really know where it's going and like how many more questions.

Speaker 13 (19:06):  
Are you like to have the total like say we are going to answer 70 questions and you are...?

Rachel (19:11):

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Yeah. Or you could do at the top corner you could do six out of 20 or something like that. And then... [crosstalk 00:19:17].

Speaker 1 (19:16):  
So show the progress?

Jeffrey (19:19):  
Yeah. In the middle somewhere, you said you're almost done.

Speaker 1 (19:21):  
Yeah. You come up...

Speaker 13 (19:22):  
You like this or not?

Jeffrey (19:23):  
Well, I agree with her.

Speaker 13 (19:25):  
I see.

Jeffrey (19:25):  
But in other words, I thought it was almost done and it wasn't, where it came up with me, I was like, wait a minute. It was not even half I think, or something. Maybe half. I can't remember.

Speaker 13 (19:36):  
Less than half.

Jeffrey (19:37):  
Yeah. See what I'm saying? So it was kind of like, wait a minute, if it was like two more questions. I could go along with it.

Speaker 1 (19:42):  
Golan, you had some notes?

Golan (19:44):  
Yeah. And for me the biggest thing was I feel like some of the definitions were too vague, I feel like they could have been more into them, to give a more understanding.

Speaker 1 (19:57):

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Is that related to the point that was made earlier about a little more I guess an additional sentence or so about what you're talking about. Okay. All right.

Golan (20:07):  
But yeah, that was basically what I thought was one of the biggest issues of it.

Speaker 13 (20:12):  
And would you prefer like very specific definitions and maybe that would go against yours or...?

Golan (20:22):  
Because I understood what was going on, but I feel like sometimes it could have been a little bit more that would have been added to make it even better for everyone to understand.

Charles (20:32):  
I see. Can we consider the idea of letting people provide the definitions themselves? Would you, would you like doing that?

John (20:40):  
Can you say that again?

Golan (20:40):  
That would be, yeah.

Charles (20:42):  
If people could provide definition themselves or provide more details about the definitions themselves.

Golan (20:47):  
Or maybe even pick the definition that they want, they'll make different definitions and then yeah but...

Speaker 13 (20:53):  
Give them several ones. Several ones and they pick one. How many people would you like these section? Like several one. Would you like?

Gail (20:57):  
What did they ever say?

Speaker 1 (20:57):

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We're trying to figure it out.

Speaker 13 (21:01):  
So Golan was...

Golan (21:02):  
Yeah.

Speaker 13 (21:03):  
Would you like to have the possibility to either pick between several definitions or even to provide your own?

Gail (21:09):  
Yeah. Because somebody taking a survey doesn't want to sit there and write something.

Speaker 13 (21:13):  
So pick between several options.

Speaker 1 (21:14):  
All right. Okay. One, two, three, four.

Eileen (21:15):  
Because I often wasn't sure how to answer. Not because I didn't have an opinion, but I said, I'm not sure I understand the implication of such a simplified question. Give me a definition of what you're talking about.

Nancy (21:29):  
One of those examples is where you talk about. And again, everybody had different questions, but I thought it was vague when you were saying something like a miserable life and then getting social support. What would a definition of a miserable life be to someone? Is it where they don't have any money? Where they don't have any housing? Then what do you mean by social support? Are they programs? Is it money?

Nancy (21:58):  
And then just a technical thing. I thought that where you had the scale, you went from zero to whatever the number was, but then on the other one you reversed it and you started out with 100 and you went up. I would've done both from the left going higher. I wouldn't have switched them back and forth [crosstalk 00:22:22].

Suzanne (22:23):

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And while she's on that, just another aesthetic thing. I felt that it's easier to anchor onto the little labels if one or the other is bolded. Either bold the labels and not the slide, the numbers, you had labels and you had numbers and they were all in the same font, so to speak.

Speaker 13 (22:41):  
Ah, I see that.

Suzanne (22:43):  
So if the labels are bolded, you can anchor onto them in your brain and slide more readily.

Speaker 13 (22:49):  
Yeah. We can do that I guess, yeah.

Rachel (22:50):  
I also had something about just maybe have the question a little bit larger text than the answers. I know it was a little bit, but it didn't off as much. Yeah. It didn't stand out. It kind of just all blended together [crosstalk 00:23:03].

Speaker 1 (23:02):  
Like a larger font or something? Okay.

Nancy (23:05):  
And it also said somewhere on the first page, on the second page?

Speaker 13 (23:10):  
Yes, you're right.

Nancy (23:12):  
Yeah. It wasn't really like pages. It wasn't really...

Speaker 13 (23:15):  
Screen?

Nancy (23:17):  
I don't remember what it was...

Speaker 13 (23:18):  
But it was page. It was like on the first page you will get one or two, you will have to evaluate the importance. And also one page you will have two questions for the [crosstalk 00:23:26].

Nancy (23:25):

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Yes.

Speaker 13 (23:26):  
So you didn't...

Nancy (23:27):  
But it wasn't really like a first page or something.

Suzanne (23:29):  
Yeah that was kind of goofy.

Nancy (23:30):  
Yeah, like maybe the next or I don't remember exactly what it was, but it didn't...

Suzanne (23:34):  
Or don't even say first and second, just say first you will do this. Then you'll do that.

Speaker 13 (23:38):  
Goodness. Okay.

Suzanne (23:39):  
Because I think both of us got hung up on which page are we on? And what are we doing?

Nancy (23:43):  
Yeah.

Speaker 13 (23:43):  
We know that now.

Gail (23:44):  
I have a question on when we had to do the answers. They were pretty direct and exact, but then on the other end, the next question, are you sure of what you said. Now you want us people to be confused about their answers because I don't think you gave enough. Instead of being so direct with the three answers, you should maybe had one in between and then ask what percentage we thought.

Speaker 13 (24:28):  
So you mean basically, do you prefer natural security then on this same screen we ask you how sure you are. How certain are you? Oh, this one was this one.

Gail (24:41):

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Let me see that. That is what he meant. All right? Yeah. That part, you're feeling about the conflict [crosstalk 00:24:53].

Speaker 1 (24:52):  
How certain you are about your answer.

Gail (24:55):  
Yeah. It could be certainly, probably.

Speaker 13 (25:00):  
Okay. Less direct, like probably correcting.

Gail (25:02):  
Yeah. Yeah. Because then you're going to answer what percent.

Speaker 13 (25:07):  
Yeah, of course.

Gail (25:07):  
So give us another area.

Speaker 1 (25:07):  
Do people tend to answer that question the same way each time. The certainty question?

Suzanne (25:11):  
No.

Speaker 1 (25:12):  
So some you felt certain on, others you didn't [crosstalk 00:25:14]?

Suzanne (25:14):  
I was bothered by the fact that I couldn't remember my percentages all the time. Cause then I'm like, okay, this is going to seem less important. Because I'm giving a 68 and I gave 90 or I gave a hundred or whatever.

Speaker 13 (25:24):  
So what do you, ladies?

Suzanne (25:25):  
Say what?

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Speaker 13 (25:26):  
Can you say a bit more about these points.

Speaker 1 (25:32):  
This is the certainty questions [crosstalk 00:25:32].

Speaker 13 (25:32):  
That you want say certain less focus than the previous one, but you didn't remember exactly what is your purpose [crosstalk 00:25:35]?

Suzanne (25:35):  
I kind of lost track of where my certainties were lying and I didn't know if the research person was going to weigh my say close to 100% more than my... I just didn't. It didn't bother me, just that I was free to slide around wherever I felt.

Speaker 13 (25:54):  
It's very interesting. Would you prefer to have a set of points that you could distribute over your uncertainty [crosstalk 00:26:00]?

Suzanne (25:59):  
I actually like the hundred, because it gave more ability to have nuances.

Speaker 13 (26:04):  
Yeah. Good. Because I... I... mm-hmm (affirmative).

Nancy (26:07):  
You like the slide.

Suzanne (26:09):  
I like the slide and I like that it was a hundred.

Speaker 13 (26:10):  
Yes.

Suzanne (26:11):  
Because I don't like... it gave more flexibility in throwing down what you felt [crosstalk 00:26:18].

Speaker 13 (26:18):  
Okay.

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Nancy (26:18):  
But the only thing, I didn't really see it as political, but I understand why people might think so. The only thing I thought was a little political in there was when you were talking about cultural diversity insecurity and to me it seemed like then you were on the border of saying you can't be a culturally diverse society and secure at the same time [crosstalk 00:26:39].

Suzanne (26:39):  
Mind, it almost was an implication it was because you were picking one of the other.

Gail (26:43):  
But I think they could have done away with that [crosstalk 00:26:46].

Nancy (26:50):  
Or, it was that you... [crosstalk 00:26:51].

Speaker 1 (26:50):  
Which is more important?

Nancy (26:50):  
This or that one or in the middle. I don't know when you put them together, when you put that together. That to me...

Speaker 13 (26:57):  
No I think you're right.

Speaker 1 (26:58):  
That's a presumption.

Nancy (26:58):  
Exactly.

Suzanne (27:01):  
That's a very hot topic.

Speaker 13 (27:01):  
You're right.

Nancy (27:02):  
But that's why...

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Speaker 13 (27:02):  
As if Trump would be thinking about like that diversity in cultural, then you would build a building.

Nancy (27:02):  
Right. You didn't put it with nature. You didn't put nature and security, it was cultural diversity and security. I don't know. It just that's what struck me.

Suzanne (27:18):  
That was a good one.

Speaker 1 (27:19):  
That's why. It presumes some...

Speaker 13 (27:19):  
It presumes some arrests...yeah.

Nancy (27:21):  
And then just the very end when it says, I think it was just a typo or something, where it says your choice of who you are. It said student and then in parentheses, not in labor force, retired. And it had like, I don't know if you have it on your sheet.

Gail (27:38):  
Yeah. We retired people would like our own place [crosstalk 00:27:40].

Nancy (27:40):  
The very last one. It looked like there were too many things listed together and just not right [crosstalk 00:27:45].

Gail (27:45):  
Yeah. Right. Made no sense.

Speaker 13 (27:47):  
I guess separate the points.

Nancy (27:48):  
You have to have, there was a student and then I forget what the other one was, not, I think it said... [crosstalk 00:27:55].

Rachel (27:54):

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It was...

Suzanne (27:55):  
And can we have Independent Contractor in there somewhere because...

Nancy (27:58):  
I skipped all the way down. I didn't even know.

Suzanne (28:00):  
You're not always think of yourself as self-employed [crosstalk 00:28:04].

Nancy (28:03):  
I think it said work like your own business. Yeah. Self-employed in your own business. This one had a lot of stuff. It said above it was student, but then it said not in the workforce student again [crosstalk 00:28:14].

Gail (28:14):  
Yeah, that was really silly.

Speaker 13 (28:17):  
Yeah retired in parens. Yeah retired.

Speaker 1 (28:18):  
You should use the census format here so you can match the...

Speaker 13 (28:23):  
Yeah, yeah yeah. Right. The census format [crosstalk 00:28:23]. Yeah. Yeah. Yeah.

Suzanne (28:23):  
I see what I think.

Lucille (28:25):  
Or even say part-time.

Nancy (28:26):  
It did say part-time.

Lucille (28:28):  
Well at least mine did.

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Nancy (28:28):  
Part-time was one of the choices, yeah. Because I wrote part time, even though I'm retired.

Gail (28:30):  
I didn't say it. This must have been the one at the bottom.

Speaker 1 (28:30):  
Let's go back to this, Charles.

Charles (28:31):  
Up until the case study.

Speaker 1 (28:40):  
Up until...

Charles (28:40):  
The case study questions...

Speaker 1 (28:40):  
The case study.

Charles (28:42):  
I feel like some of them lack vital information that could help you decide on the answers. For instance, the question about the bed. So the price, are they pitching it on the price or is it free money? Because if they're pitching it, maybe I might feel like if they put in 25, 25, maybe they should walk away with at least 10. But if it's free money it's well, you're not losing anything. So secondly, my kind of, influential questions answered so, I think that... [crosstalk 00:29:15].

Gail (29:14):  
And I thought took it as now you're playing a game. So it has nothing to do with work and has nothing really to do with life. You're doing a game and gambling.

Speaker 1 (29:28):  
Yeah. Okay.

Gail (29:29):  
It didn't have relevance to, I think what you were trying to get.

Speaker 1 (29:35):  
Yeah. Yeah.

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Lucille (29:38):  
I couldn't totally tell what somebody in there said, but she may have said this. When you were talking about certain issues like supposed cultural diversity, whatever. I thought you should either italicize or fold it or whatever. That might be what she was saying. I couldn't tell. So that was one point.

Speaker 1 (29:54):  
Okay. Well.

Lucille (29:55):  
So that would be very helpful also. I couldn't hear what was said, but it jogged when I heard a couple points in there. It was difficult when it was on different pages, because then I suddenly couldn't remember what I'm even answering about on the page before a couple times.

Speaker 1 (30:12):  
Oh, okay.

Suzanne (30:15):  
Could you go back if you wanted?

Speaker 1 (30:16):  
Yes. Yes.

Suzanne (30:18):  
So I guess if you made that clear from the jump that you can go back.

Speaker 13 (30:21):  
You want me to write, you can go back?

Suzanne (30:21):  
I think there's a certain group, that would be helpful.

Gail (30:22):  
Now go back. Would be helpful.

Speaker 1 (30:31):  
Yeah. When you have randomizations like we have, there are points where you can't go back cause it would affect, it would re randomize.

Suzanne (30:38):

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Ah, right.

Lucille (30:40):  
I did have one other thing if you're done. There was a question about the social benefit and in the same question you mentioned social benefit. And then I think you called it social support.

Speaker 13 (30:55):  
Support.

Speaker 1 (30:55):  
Support.

Lucille (30:57):  
Support. So it was like, are those the same thing with social support meant? Did that mean money or did that you bring psychologists and I didn't understand.

Speaker 13 (31:05):  
Yeah. Now it should be the same.

Speaker 1 (31:06):  
Yeah. Yeah.

Lucille (31:07):  
I wasn't sure. And so even if you used the same twice, I wasn't clear what you were talking about when you said social support, bringing in psychology psychologists, or were you talking about giving money to those people?

Speaker 1 (31:20):  
So it was okay. Yeah, we have to make it more.

Lucille (31:23):  
So that would need to be made clear.

Nancy (31:26):  
And the only other thing on that first one where it was about mine was about the die or the dice.

Speaker 1 (31:31):  
Yeah.

Nancy (31:31):

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<p>It said five. I don't remember what the question was like, was it a tax that they were getting? You don't have the question, do you?</p> <p>Lucille (31:40): They were being taxed on their price [crosstalk 00:31:43].</p> <p>Nancy (31:42): Like is it five something, but is it, is it a percentage?</p> <p>Speaker 1 (31:46): Yes.</p> <p>Nancy (31:47): Okay. I don't think it says that if you go back.</p> <p>Eileen (31:50): No, it doesn't. Cause that was my question. Are we talking about a casual, recreational bit between France or is it a government regulated betting venue. In which case are you talking about a percentage like income tax?</p> <p>Nancy (32:03): Right. Right.</p> <p>Eileen (32:05): And so it was again, it was too vague.</p> <p>Nancy (32:07): When you're sliding, I think you're sliding that scale or something.</p> <p>Lucille (32:11): Where it, gambling. If somebody wins then it's not social.</p> <p>Nancy (32:20): Or down at the bottom if you're sliding the scale and it just has numbers starts at zero.</p> <p>Speaker 1 (32:25): Yeah. But maybe I can add like a percent.</p> <p>Nancy (32:28): Percentage sign.</p> <p style="text-align: right;">Page 33 of 50</p>	<p>Eileen (32:28): Percentage sign, yeah.</p> <p>Speaker 13 (32:30): But you are okay with zero to 50% and not more you understood right?</p> <p>Eileen (32:33): The percentage sign should be there.</p> <p>Speaker 13 (32:33): Yeah.</p> <p>Nancy (32:33): Yeah.</p> <p>Speaker 13 (32:33): But the slider didn't...</p> <p>Eileen (32:42): Well, I don't know. I don't know anything about taxing percentages on this. So I don't know if zero to 50 is here to a hundred would be appropriate.</p> <p>Nancy (32:48): It just says [inaudible 00:32:49] tax the winner. I mean, what is it like five? What? I mean 5%. It should say 5%.</p> <p>Speaker 13 (32:53): Like it went from 0 to 50.</p> <p>Eileen (32:59): Is that what it is?</p> <p>Speaker 13 (32:59): Yes.</p> <p>Eileen (32:59): I wouldn't expect them to take more than 50 or... I sure hope not.</p> <p>Speaker 13 (32:59):</p> <p style="text-align: right;">Page 34 of 50</p>
<p>Exactly. We don't care right. Because then that would mean the guy who is losing is earning more than it doesn't make sense.</p> <p>Eileen (33:02): Exactly there's no logic to that.</p> <p>Nancy (33:05): Right, but there has to just be a percentage sign.</p> <p>Speaker 13 (33:07): Yeah. You are absolutely right. That is good.</p> <p>Eileen (33:07): Yeah, I did. I wrote that down. I sure appreciate that.</p> <p>Speaker 1 (33:13): John, do you have anything else in your notes?</p> <p>John (33:15): No.</p> <p>Suzanne (33:16): I don't think they should take anything personally. They've already taxed enough.</p> <p>John (33:18): I'd have to be disagreed. I'd be opposed to a numbering system. They're looking for in the surveys are honest opinion not the finish line and on number three of 15, whereas you might be rushing through some of the questions.</p> <p>Suzanne (33:33): Exactly.</p> <p>John (33:34): Whereas if you don't know, you just say it's an approximately a 25 minute question. You're going to get attention [crosstalk 00:33:40].</p> <p>Suzanne (33:40): That's true.</p> <p>Speaker 13 (33:42):</p> <p style="text-align: right;">Page 35 of 50</p>	<p>To not put the numbers, but you only want...</p> <p>John (33:43): I agree with that.</p> <p>Speaker 13 (33:44): Oh you agree too. Yeah. because usually when we put the progress bar, people attempt to do this kind of like strategic care. They want the rush, like.</p> <p>Suzanne (33:49): Yeah.</p> <p>Speaker 1 (33:49): Okay yeah.</p> <p>John (33:51): I don't like to just agree with somebody like that.</p> <p>Speaker 1 (33:54): Okay. All right.</p> <p>Lucille (33:56): Yeah. But you just did.</p> <p>Speaker 1 (34:04): That's all right. That's all right. All right. Anybody else got any other things from their notes, John?</p> <p>John (34:09): No. No. No.</p> <p>Nancy (34:11): It's interesting. Very interesting.</p> <p>Speaker 13 (34:12): Yeah. You like?</p> <p>Nancy (34:13): Yeah.</p> <p style="text-align: right;">Page 36 of 50</p>

Speaker 13 (34:13):  
Thank you.

Gail (34:14):  
Are you going to tell us what this is for.

Nancy (34:18):  
Very interesting.

Gail (34:18):  
What were you aiming for?

Speaker 13 (34:20):  
So.

Gail (34:20):  
What was that?

Speaker 13 (34:21):  
What we aim for with this survey is like usually when people nowadays, like they would, we ask them opinions. Like a lot of people disregard the opinions coming from non-experts because we think that other people respond to emotionally or because there is a lot of fake news and et cetera. And we want to see whether people really care about social issues. And if that's the case, then we should weight the values of opinions to normal people, let's say.

Suzanne (34:47):  
Okay.

Speaker 13 (34:48):  
And not to disregard the opinion because you don't have this background or this background, for instance. And that's also a device that we could implement online in the sense that people, when we make like online opinion posts. Now we have a lot of bots, robots who just answer and you saw what happens with XTERRA. So then we could have like disregard opinions, which have been answered too quickly or unemotionally, and not count for the public debates because that's not informed opinion, for instance. So that's this kind of macro aim that we have.

Speaker 14 (35:20):  
Can I ask a question about the political aspect, because we hesitated, we wanted to have dilemmas and issues, which were connected to things that people are familiar with. Right? Which are usual issues. And so in that sense, it's good because it makes people more

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interested in this question or is it problematic because then it triggers some, it sparks some issues where people say, oh yeah, you are connected for instance security and cultural diversity. So, so there is some, some issue there. It, so it's not that they, yeah.

Speaker 1 (35:50):  
Maybe you have suspect him of having an agenda or something and it's a set agenda.

Nancy (35:56):  
I'm fine with a set agenda, as long as it's same as mine.

Speaker 13 (36:00):  
But we don't, we don't want an agenda here.

Nancy (36:01):  
Right yeah. Well, I thought at the end you did ask, are you liberal, conservative, very liberal?

Speaker 1 (36:08):  
Well that's the usual.

Speaker 13 (36:09):  
Usual, right? Demographics. Everybody asks district value.

Speaker 1 (36:17):  
Yeah.

Nancy (36:17):  
I don't know. I've never been asked that question before.

Gail (36:18):  
I thought the whole thing had an agenda.

Nancy (36:18):  
I've never been asked that in a survey.

Speaker 1 (36:19):  
Oh yeah. Yeah, usually...

Gail (36:19):  
I thought it was very much like what we read the papers now and about the climate change specifically, are you for it or are you against it? And having to choose whether you want money

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or nature, that is what's going on in society now. So I thought this whole thing just gelled right with the problems we have now.

Speaker 13 (36:50):  
Right. So, so it's probably a good point, right?

Speaker 1 (36:50):  
No.

Speaker 14 (36:50):  
You think it's no.

Speaker 13 (36:50):  
You think it's no? No?

Gail (36:50):  
Well, I kind of am more liberal on that. I believe in climate change. I believe in nature. I'm a bleeding heart.

Speaker 13 (37:02):  
But would you prefer to have dilemmas who have nothing to do with the current situation? Let's say I put something on.

Speaker 14 (37:08):  
Yeah. That's the question.

Speaker 13 (37:10):  
Because we try to, we try to, yeah. So first we try to select six values and classify them symmetrically on the spectrum trying to take two, which were more like on the left, two more on the right and two more on the center [crosstalk 00:37:26].

Gail (37:25):  
Yeah. But that's what we're having now in society.

Speaker 13 (37:33):  
To give everybody opinion. Happy? But would you like to have something which is not what you have now in society?

Eileen (37:33):  
I don't know.

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Lucille (37:38):  
You might get a more honest answer because you use the word trigger.

Speaker 13 (37:39):  
Honest yeah.

Lucille (37:40):  
And I bet it would trigger some people who might not even answer, honestly. They're angry about some political issues.

Suzanne (37:45):  
Yeah.

Lucille (37:46):  
And then they're just going to tell you that might not be their honest assessment.

Speaker 13 (37:57):  
Oh yeah. Harsh.

Lucille (37:57):  
Between two things. Do you know what I mean?

Gail (37:57):  
Yeah, yeah, yeah. Of course. If you...

Lucille (37:57):  
Where he triggers the right word and maybe you should do some other not contemporary either, but...

Nancy (38:03):  
And that...I mean, if that's how they feel. I don't see that it matters if it's political or not.

Gail (38:07):  
Yeah. And that one that really hit me was the one about the freedom of I don't know how you put it. Yeah.

Suzanne (38:13):  
Because that's how they find out how they feel?

Speaker 13 (38:14):

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<p>Because...</p> <p>Speaker 14 (38:14): Political versus equality?</p> <p>Gail (38:14): Pardon me?</p> <p>Speaker 13 (38:14): But this is very classical.</p> <p>Gail (38:25): It might have been because all I could think of this is stupid. Yeah. You want to have the freedom of expression and it's very important, but you also have to live within the limits of the law. Freedom of expression, as I said before, is a person who says, I don't like what's going on here and I'm going to shoot them. And that's too much freedom. There's nothing... You didn't give us an in between.</p> <p>Lucille (38:56): Maybe you just need to qualify with it [crosstalk 00:38:58] society.</p> <p>Speaker 13 (38:58): That's the short definition, yeah.</p> <p>Gail (39:02): Yeah, because our freedom is very important, but it's only as important as we live within. Because now we've got, somebody who has lots of freedom and nothing can be done when he's against the law.</p> <p>Speaker 13 (39:17): Yeah, yeah, yeah.</p> <p>Gail (39:18): You know, so that's why that was the first thing. That was a really big trigger.</p> <p>Speaker 13 (39:22): But did, did you feel any pressure because we asked questions about climate change to answer things in favor, climate change because you live in a society now has this kind of issue.</p> <p>Gail (39:33):</p> <p style="text-align: right;">Page 41 of 50</p>	<p>No, because I'm for it.</p> <p>Speaker 13 (39:35): Now let's suppose you were not for climate change. Would you pressure to say yes?</p> <p>Gail (39:39): Then you would answer the other way.</p> <p>Speaker 13 (39:41): But you would say yes.</p> <p>Gail (39:41): You would answer the other way.</p> <p>Lucille (39:44): It's not me, but I think it's problematic if there some people who are angry about this.</p> <p>Speaker 13 (39:45): Exactly. Right.</p> <p>Gail (39:49): Yeah. Because I know what my son would say, he would be the opposite of me.</p> <p>Speaker 13 (39:52): But you would say, you think in a survey, we would have to say, oh, these guys have an agenda I should probably say yes.</p> <p>Gail (39:59): That's what he would say though. There's a bleeding heart agenda here.</p> <p>Rachel (40:00): Yes. Right.</p> <p>Nancy (40:00): Well, yeah. But you could put it the opposite way. You could say that it's not important. I mean, I don't see anything that is an agenda.</p> <p>Charles (40:09): I kind of like don't agree too much because I feel like those type of questions were to push you to pick the better of two goods. You know? Like they want, they're pushing you to the extreme.</p> <p style="text-align: right;">Page 42 of 50</p>
<p>And also the presence of like the political challenges. I feel like it's kind of good for a servant because it pushes you to like a certain limit. It produce certain emotions and with emotions you act like if you're angry, whatever you say is however you feel. So if you put it there, if you sad, whatever you say, it's coming deep up from your heart.</p> <p>Gail (40:46): That's why I was asking the objective though.</p> <p>Charles (40:47): To one extent. It shouldn't be too much. It shouldn't be too less.</p> <p>Rachel (40:49): Okay.</p> <p>Charles (40:49): But every subject that I'm taking has a certain amount of political challenges because especially when it comes to values, whatever you do, is going to be political.</p> <p>Gail (41:02): I don't know because I think it could have been done. I came out of this at the end thinking this definitely was political and I wasn't sure of the quality but I didn't take it as a survey to find out about emotion [crosstalk 00:41:02].</p> <p>Nancy (41:08): What if you did equality? I mean, it's the same thing as political. If you're asking a question of male versus female, an equality question that way, everything you look at could be a political tend to it. But people are going to write down how they feel. I don't think they one way or another.</p> <p>Speaker 1 (41:25): Well, this has been, this has been really helpful.</p> <p>John (41:29): Yes.</p> <p>Speaker 1 (41:29): I want to thank you all for coming in.</p> <p>Charles (41:30): Thank you so much.</p> <p style="text-align: right;">Page 43 of 50</p>	<p>Suzanne (41:30): It was fun.</p> <p>Speaker 1 (41:34): This will really help us take it to the next level in terms of getting ready for a bigger national survey.</p> <p>Speaker 15 (41:39): Yeah.</p> <p>Charles (41:40): Thank you so much.</p> <p>Speaker 1 (41:42): Everybody needs to see. Everybody needs to see. Everybody needs to see. Stop and see Dana on your way out. Stop and see Dana on your way out. Stop and see Dana on your way out [crosstalk 00:42:04].</p> <p>Speaker 1 (42:03): Yes, leave those there.</p> <p>Jeffrey (42:03): It's a pretty nice looking building. Greatest songs of the year.</p> <p>Rachel (42:03): It's more brick, yeah.</p> <p>Jeffrey (42:03): Oh it is, I'm sorry.</p> <p>Suzanne (42:03): You didn't say a word.</p> <p>Jeffrey (42:12): I stayed in charter I don't know why you said cod in my mind. I don't know why I thought charter. You're right. That's more closer to the university and the other one is way down in charter. I don't know why. I'm just tired.</p> <p>Rachel (42:28): It's like rectangular red brick.</p> <p style="text-align: right;">Page 44 of 50</p>

Suzanne (42:28):  
Yeah. It's fine.

Gail (42:28):  
Can y'all hand that to him. Thank you.

Rachel (42:28):  
I'm not sure yet. Really not at all.

Suzanne (42:36):  
I guess one for the road. Oh. Cool.

Speaker 15 (42:48):  
I'm going to collect the notes.

Jeffrey (42:54):  
Cool.

Speaker 1 (42:58):  
Hey, thank you for coming in man.

John (43:03):  
You're welcome.

Golan (43:03):  
Totally ruined as good as I came tonight, if I didn't have anything to say... I... yeah.

Speaker 1 (43:17):  
All right? So I'll get you those recordings.

Rachel (43:31):  
They're not cool enough to be here.

Jeffrey (43:31):  
Yeah. If we can get that feedback that you gave. That wonderful feedback that you gave.

John (43:31):  
Thanks.

Speaker 1 (43:31):

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No problem. Okay.

Speaker 13 (43:31):  
Very good. Very, very happy.

Speaker 1 (43:54):  
All right. Thank you, sir. Stop and see Dana. You sure? Yeah.

Speaker 13 (44:03):  
Don't matter. No rush. I think there's a line over here you want. I don't care about the environment, but I want to recycle. I care about that.

Speaker 13 (44:14):  
Thank you so much. Yes.

Speaker 15 (44:16):  
I think there's some over here though wait a second.

Speaker 1 (44:18):  
I actually didn't write that down by the way about not numbering the questions.

Speaker 13 (44:22):  
I see.

Speaker 1 (44:23):  
I didn't write that down if you.

Speaker 13 (44:25):  
No, but that's fine. Thank you. I have, I have written, like to try to keep track of everything.

Speaker 15 (44:29):  
Take some extra sheets there.

Speaker 16 (44:44):  
See Dana for your money, okay. She has your money. Okay. We're all good.

Speaker 13 (44:52):  
Thank you so much.

Speaker 16 (44:59):

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Then he tape recorded it too. So we'll get that transcribed too. Take some cookies or some candy. Oh take whatever you want, sure. He's our student worker. He works here for us. He's our student.

Speaker 13 (45:18):  
Okay.

Speaker 15 (45:18):  
Princeton student. And he's part like 10 hours a week.

Speaker 13 (45:24):  
Cool.

Speaker 15 (45:24):  
Yeah.

Speaker 13 (45:24):  
What do you study?

John (45:24):  
I study mathematics.

Speaker 13 (45:24):  
Cool in undergrad.

John (45:24):  
Yes.

Speaker 13 (45:24):  
Cool. Are we here?

John (45:26):  
I'm a freshman actually.

Speaker 13 (45:27):  
Freshman, first year?

John (45:28):  
First year.

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Speaker 13 (45:29):  
I see. Cool. Do you like it so far?

John (45:29):  
I love it here.

Speaker 16 (45:32):  
He loves working here.

John (45:34):  
I also love working here.

Speaker 13 (45:35):  
Yeah. Yeah. I you love working here. Yeah. That's very cool to do mathematics and statistics in some sense.

Speaker 15 (45:40):  
Yeah. Yeah.

Speaker 13 (45:40):  
Very cool.

John (45:42):  
Wait, so are you working in like the sociology department?

Speaker 13 (45:44):  
No. In economics.

John (45:48):  
Economics?

Speaker 13 (45:49):  
Yeah.

John (45:49):  
How is this related to economics? Behavioral.

Speaker 13 (45:51):  
So basically economics. I mean more for culture economy. So it's between politics and economics sometimes. Yeah.

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John (45:59):

It's kind of cool.

Speaker 13 (45:59):

Yeah. I mean just try to make economics a bit wider than...

John (46:07):

Yeah. So I guess you've met Dr. Kahneman yet?

Speaker 13 (46:15):

No, not yet. He, I haven't seen him here. He's usually around. Oh, you saw him?

John (46:21):

No,

Speaker 13 (46:24):

No, he's not. So, but I mean, he has a center, but I don't know. I haven't seen him a lot.

John (46:27):

Would you like to meet him?

Speaker 13 (46:35):

Would love to. And that would be amazing. So feedback on this kind of thing.

John (46:35):

It was nice meeting you.

Speaker 13 (46:36):

Yeah. Me too. What's your name?

John (46:37):

I'm John.

Speaker 13 (46:38):

John. Nice to meet you.

Speaker 1 (46:38):

Hmm. Okay. I think it went very well.

Speaker 13 (46:44):

You think so?

Speaker 1 (46:45):

Yeah.

Speaker 13 (46:47):

Very helpful. I mean, it's very amazing because what I did once, like to workshop with only academy with the widow wisdom like this, I get like and economics and we get like diversity. Right. That's but here we have so much diversity and

**B.2.2 Second Focus Group Transcript**



## FocusGroup2

Fri, 2/25 8:37AM • 47:22

## SUMMARY KEYWORDS

question, people, answer, survey, thought, political, student, feel, money, definition, skewed, society, conflicted, write, values, cultural diversity, talking, freedom, percentage, conflict

Speaker 1 (00:02):

Bring the chairs.

Interviewer (00:02):

What did you say, sir?

Speaker 1 (00:05):

He said bring the chairs.

Interviewer (00:07):

Oh, not everybody in this side of the room is going to get-

Speaker 2 (00:09):

Oh, come in here. I gotcha. Thank you. [ Crosstalk 00:00:29]

Interviewer (00:27):

All right. First, I just wanted to have everybody, if we could just go around the room, introduce themselves. Just tell us your first name, a little bit about yourself, a sentence or two. That would be great. Let's start with you.

Gail (00:40):

I'm Gail. At one point I owned a business for 35 years. I started as a teacher, went into business, and then retired from business, went back to teaching in a non, it was a non-school district school, which means we didn't get paid much. Now I just tutor and substitute for no money.

Interviewer (01:16):

Okay. Well, I'm glad you here. John.

John (01:17):

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Hi. John. I've been with the university, employed for about 10 years doing financials for several departments. Prior to that, I was in and out of 10 companies. It's nice to have some stability here. I don't know.

Interviewer (01:38):

Okay. Yeah. In and out with money or?

John (01:43):

Some money.

Interviewer (01:43):

Okay. All right. Charles.

Charles (01:47):

All right. I'm Charles. I've been in this country for six years. From West Africa, Ghana. I'm still a student. I haven't had interest in [inaudible 00:01:59]. I work as a temp guy in various department in [inaudible 00:02:03] university. I'm going back to school.

Interviewer (02:07):

Back to school as a?

Charles (02:09):

As a biomedical, biochemistry major.

Interviewer (02:09):

Pre-med, right?

Charles (02:13):

Pre-med.

Interviewer (02:13):

All right. Excellent. Good. All right. Lucille.

Lucille (02:17):

Yes. Hi. Well, on that note, I am a former molecular biologist.

Interviewer (02:21):

Oh, wow.

Lucille (02:22):

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Yeah. Through post-ops. Then I had my family and didn't quite jive with having three kids. I was an editor. I was a technical editor. I also did some proofreading, so that's what I was doing here. Recently, I've been teaching [inaudible 00:02:42].

Interviewer (02:43):

Great. Very welcome. Yes, sir.

Jeffrey (02:46):

My name's Jeffrey. I live in Plainsboro and I work part-time now. I love to travel whenever I can and... See what other things people have been saying.

Interviewer (02:58):

Oh, glad to be here. Never been in this building before. I learned something.

Jeffrey (03:05):

All right. Good, good. Welcome. Yes.

Rachel (03:07):

I'm Rachel. I'm a senior at Notre Dame High School, and I plan on going to Pace University in Manhattan for psychology. I actually work at one of the Princeton Eden clubs down the street. I work at the quad.

Jeffrey (03:19):

Okay. All right.

Suzanne (03:20):

I'm Suzanne and I was a banker for 20 years. I left when I had my kids. Went back to school, became a teacher. Now I do that and referee, obviously. I came from the field.

Interviewer (03:34):

Very good. Yes.

Goan (03:35):

Hi. I'm [Goan 00:03:37]. I was born and raised in Israel. I'm a student right now. I go to SJU, Saint Joseph's University in Philadelphia and I'm an upcoming junior.

Interviewer (03:48):

Wonderful. Great. Yes.

Eileen (03:51):

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My name is Eileen. I've been an art teacher with children for 30 years. Aside from what you heard, it is not a flipping profession. Art makes you smart. That's my saying. I currently teach part-time.

Interviewer (04:06):

Wonderful. Yes, John.

John Alloy (04:08):

I'm John [Alloy 00:04:09]. I'm from Trinidad and Tobago. I go to school right here at Princeton. That's about it.

Interviewer (04:11):

Okay. Nancy.

Nancy (04:15):

My name's Nancy. I taught for 37 years, middle school. I do a lot of volunteer work right now. I actually went back to sub also. That's about it.

Interviewer (04:24):

Okay. All right.

Nancy (04:24):

And my daughter went to St. Joe's also.

Interviewer (04:32):

All right. All right, about how long did it take to get through the survey?

Lucille (04:36):

I'm on the last question.

Interviewer (04:37):

You're on the last question? So about what, 10, 11 minutes?

Lucille (04:43):

I didn't more than that. Seem about that though.

Eileen (04:47):

Whenever we started. I don't remember what that was.

Interviewer (04:51):

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Okay. All right. Good. All right. First impressions, Nancy.

Nancy (04:52):  
Well, I thought it was a little confusing. Do you want to go us through each of the questions? How are you?

Interviewer (05:04):  
I don't know. I just wanted to start by getting a general impression. You think it's going to work for us? I mean, the objective-

Nancy (05:13):  
Yeah, that's right. Yeah.

Interviewer (05:15):  
Is we're asking people to weigh priorities between different values, because sometimes in making a value choice, we have to accept things that can be in conflict with one another. Right. So it's great to have excellent art programs at our schools, but that means we have to pay more taxes. So it's one thing weighed against another. So in some sense, the survey's trying to put you in a situation where you've got to weigh one against another. We're trying to get a sense of how people prioritize different values. Yes.

Eileen (05:53):  
I just wanted more information. It was strict and concise and I felt, therefore, superficial and I wanted more meat. What do you mean? Blah, blah, blah and give me more information to base an answer on.

Interviewer (06:12):  
Or put a place where we could answer something that we think, because some of it was ambiguous. Some of it-

Gail (06:22):  
Yeah. Some of it did not have real meaning.

Interviewer (06:30):  
Okay. So you mean like an open-ended question where you could-

Gail (06:34):  
Well, some of the things, what your answers were didn't fit what was on my mind.

Suzanne (06:40):

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I jotted that down too. I don't know if you could come up with a different phrase, but there was this, this, and then I don't know. I think the phrase I don't know is misleading because it's not that you don't know, it's that you're not, and no one likes to say they don't know. So I think whatever the wording should be would be my choice, my thoughts are not present. But I know for your tabulation and open-ended is a bugger for you to tabulate. So yeah..

Lucille (07:13):  
I thought it was very political.

Interviewer (07:14):  
Really?

Gail (07:17):  
Yeah. Because right now that's what we're having in society.

Suzanne (07:24):  
Debate's political, but I don't think that it was skewed.

Gail (07:28):  
But it still was, I thought it was somebody in one of the political problems that we have now, trying to see what the idea was amongst people here.

Speaker 2 (07:46):  
I go along with her. What she was saying, the top issues that at least some, I don't want to bring parties in, but when in society, they have this thing about global warming. You got to believe it's happening and if you don't, you're not smart for some reason. The idea of equality of some sort of distributing money, or we all have to have, we can't have poor people for some reason, or can't have somebody who can't bring themselves up. You have to bring them up. That can't do it. And these are things that are now. So these values are what you saying is important is things that we're thinking about. There might be other values that that nobody's thinking about or is dead in society, maybe more concrete, religious beliefs or maybe something to do about, maybe something to do with art. I don't know exactly, but these are things the survey really deals with a lot of things that's in the minds of the newspapers, the media, the public. There could be a lot of the values out there, we're not even-

Gail (08:42):  
As far as religion, we have religion, but not all of us practice. So whatever we entered might be very misleading.

Speaker 3 (08:54):

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The demographics when-

Suzanne (08:56):  
Yes, because when you were asked the religion question, it's very straightforward, but you can be that, but not practicing.

Speaker 3 (09:02):  
Oh, I see.

Interviewer (09:03):  
John, what was your impression?

John Alloy (09:04):  
Question was, I think it was, it was certainly not biased, but it was definitely political in nature. Obviously you can answer them all and you can come away with a political bias and the answers are skewed one way or the other. I think it accomplished what it needed to. I think ranking your answer or going from not confident to totally confident. It seemed there were three categories and the non-confident and only totally confident at the end.

Lucille (09:41):  
There was a mistake. There was a duplicate. Twice it said somewhat unconfident. It said no confidence, somewhat unconfident, somewhat unconfident. It repeated by mistake.

Lucille (10:00):  
I may have the first time I answered. I'm sorry to cut it.

Suzanne (10:03):  
Yeah. I think we all interpreted that question differently.

Gail (10:07):  
The first time I answered it on my survey. I don't know if you're going to look at our answers or not. I may have seen somewhat unconfident which really was self confidence.

Interviewer (10:18):  
So, that's a label we got to fix.

Gail (10:19):  
I throw those errors and I don't think any of us would've hit that she did. But I don't think any of us would've hit it because I know I can read those things. They always put in Facebook and all

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over with all the mistakes or even written sideways or backwards. Because it depends upon how your brain think and I can always read them.

Suzanne (10:46):  
So what was your point for the question about the political? Because I see here that people interpreted it two different ways. It was it to be interpreted. It is obviously those questions are political. Because that's what, or was it skewed? I think you could read that question two different ways. Was the survey politically skewed? Like she said, a certain group trying to find out certain thoughts, or were the questions just by being asked political in nature. I think that's a very distinct difference and you would answer it very differently. Because I answered it not, I think I answered it, I did not think it was skewed. That is a no, but yet the questions are very political and I didn't know which it was asking.

Speaker 3 (11:39):  
Yeah. That's a second option that we want to go is-

Suzanne (11:39):  
So maybe word it differently depending on your goal.

Speaker 3 (11:41):  
I didn't think where the words could go-

Gail (11:47):  
Specifically, the ones where, what she's talking about, where you talked about the nature and finances. Well, there should have been something that not one or the other, some middle ground.

Speaker 3 (12:03):  
Okay. Why not... True.

Interviewer (12:05):  
Part of the exercise though is to push you and see where they're willing to go.

Interviewer (12:15):  
Now I got to ask, if related to this though, we had questions in there that I asked about how conflicted you were about your answer. Did you find, in some cases, you felt conflicted about weighing one thing against another?

Nancy (12:28):  
Was that the sliding thing?

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Eileen (12:29):  
I didn't like that word conflict because, a better word might have been maybe ambivalent instead of conflict. I'm not conflicted, but I don't know if I have to go all the way that way. Just a little that way. Maybe I'm a little ambivalent, you could maybe change my mind with a good argument.

Speaker 3 (12:50):  
No, that's perfect.

Eileen (12:51):  
So maybe not the word conflict, but it a different.

Speaker 3 (12:54):  
Just like ambivalence is like the broad category. And within, there was one scale, which is a scale of conflicting. So actually we could just replace the word conflicting with ambivalent, with no product.

Eileen (13:05):  
Or simpler ones that you get in your email from, I don't know, dog food companies or something. I feel very strongly or I don't feel strong, but not conflict, a different word.

Interviewer (13:17):  
We also ask how confident are you of your answer to the question on the previous page.

Nancy (13:24):  
That makes it look like there's a right or wrong answer.

Interviewer (13:27):  
Really?

Nancy (13:27):  
I think so. When somebody says how confident are you?

Interviewer (13:31):  
Well, it's how confident you are in your answer.

Eileen (13:33):  
How will I know to budge or not to budge?

Interviewer (13:37):

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Means how much you think you're right.

Nancy (13:40):  
Well I think if you, I don't know, I felt like then somebody's going to, there's a right answer or wrong.

Eileen (13:46):  
I do think the way I, when I first started this, but then I moved on as I answered where the questions-

Rachel (13:53):  
I think you got into how to slide it once you did a few.

Nancy (13:58):  
But one of the things you said was, one of the questions about freedom and expressing yourself, which is more important or expressing yourselves and fulfilling your desires. I think that's not the same, that's you were, or it seemed like you were explaining freedom that way. I don't think expressing yourself and fulfilling your desire is very different when you're trying to explain-

Speaker 3 (14:23):  
Oh, you mean I could have just said expressing yourself.

Nancy (14:27):  
Yeah. Or a different definition of freedom. I mean, fulfilling your desire isn't... I mean you're in the freedom to do what you want, but I don't know, expressing your desires to me is you go out and do whatever you want.

Gail (14:40):  
I was worried in that because-

Nancy (14:43):  
That didn't seem- [crosstalk 00:14:47]

Gail (14:47):  
Go out with the gun, he's expressing.

Nancy (14:49):  
Whatever your desires are.

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Rachel (14:49):  
Looking at like society. I don't know. I didn't-

Speaker 3 (14:49):  
I just have a question.

Gail (14:56):  
Maybe you should have put within the law.

Suzanne (14:58):  
Right, right. Within society-

Nancy (15:02):  
There were a couple like that.

Charles (15:04):  
Like the extent of these values in society. So what extent is freedom? Because somebody's freedom might conflict mine.

Gail (15:13):  
He's filling his desire to shoot.

Eileen (15:16):  
Was there a typo in the first scenario? Because it said generation one is the current situation. Is the current generation or something.

Suzanne (15:35):  
Incomplete sentence.

Eileen (15:36):  
Okay. That's what I thought it was. I found that particular scenario to be the most challenging. I don't know what demographics you're targeting, but if someone is not literate, are very literate, they're going to really struggle.

Speaker 3 (15:52):  
Collectively challenging. You mean-

Eileen (15:56):  
I found that the general population will have a problem reading that very first question.

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Rachel (16:02):  
Did we all get the same question first? Was it that one first? I got that one first.

Suzanne (16:10):  
Oh, well, you'll have to write down on which one I got because that was the one with generation one is the current situation.

Rachel (16:18):  
Because I wrote that one down and that was the first one that I got and I didn't know what the survey was about from that. I was confused. It took me a couple tries to read it over and really understand what it was saying.

Speaker 3 (16:22):  
I see.

Suzanne (16:30):  
The thought isn't finished.

Nancy (16:32):  
I almost had to write it like a-

Suzanne (16:37):  
A part of it was because it had the wrong word in there.

Nancy (16:37):  
Should it not be die instead of dice?

Interviewer (16:40):  
Yes. Die is a single. But I'm not sure, I'm not sure-

Suzanne (16:45):  
I don't know that the world is on-

Interviewer (16:48):  
Most people think of it as dice.

Suzanne (16:49):  
Only the teachers know that.

Lucille (16:52):

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It's not a major thing. That there were a number of times that I thought certain things were written awkwardly. I wrote those down. I don't know that you want me to bring up-

Interviewer (17:09):  
Let's have a look.

Gail (17:14):  
Oh, I know one.

Lucille (17:21):  
Just purpose of the research. For example, it's a, okay. To me, and I'm not being insulting, but I felt and I heard some actions there, that some of it that it was written by a non-native English speaker. I thought, I understood all of it but it's not the way I would write it or usually read it. So things like the researcher's aim. You would usually read the aim of the research. Those are little things but there were some others that were-

Interviewer (17:49):  
So there's stylistic usage.

Lucille (17:51):  
Maybe stylistic. Or one of the answers that we could answer was very much, another one was much. So very much is a thing, but much is not a thing. Alone. Things like that were a little awkward went though I knew the point. How hard did you find this question? You would say how difficult. How confident was your answer in the previous page? You would say on the brief. These are little thing that I know you want to hear from me now, but there were a number of those that out there-

Lucille (18:23):  
I read them as an editor and I noticed them immediately, I noticed-

Interviewer (18:36):  
Yeah, Rachel, did you have any other spots that you wanted to mention?

Rachel (18:42):  
There was the one about, I forget specifically what it was, but where it said safe life. I didn't know what you were deeming a safe life when it said-

Interviewer (18:55):  
Security.

Rachel (18:55):

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Anyone else remember that? Oh yeah. Security. It was, should everyone have a safe life? I wasn't sure exactly what you were referring to. Then I just wrote some little things. I would've liked the questions to be numbered just because it just seems awkward to just have the question there and then the answers, and I don't really know where it's going and how many more questions.

Speaker 3 (19:24):  
Are you like to know the total? Say, we going to answer 70 questions and you are-

Rachel (19:25):  
Yeah. Or you could do, at the top corner, you could do six out of 20 or something like that and then-

Speaker 3 (19:31):  
It'll be good to have a progress bar.

Interviewer (19:32):  
In the middle somewhere. You said you're almost done.

Interviewer (19:37):  
Well I agree with her. Then I thought it was almost done and I wasn't. Where it came up with me, I was like, wait a minute. It's not even half I think, or something. Maybe half I can't remember.

Speaker 3 (19:50):  
Less than half.

Speaker 2 (19:51):  
See what I'm saying? So it was like, wait a minute. If it was like two more questions, I could go along with it.

Interviewer (19:56):  
Goan, you had some notes?

Goan (19:58):  
Yeah. For me, the biggest thing was, I feel some of the definitions were too vague. I feel they could've been more into them, to give a more understanding.

Interviewer (20:11):

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Is that related to the point that was made earlier about a little more, I guess, an additional sentence or so about what you're talking about? Okay.

Goan (20:21):  
But yeah, that was basically what I thought was one of the biggest issues with it but-

Speaker 3 (20:27):  
Would you prefer very specific questions, very specific definitions that maybe go against yours?

Goan (20:33):  
I would do... I mean, because I understood what was going on, but I feel like sometimes it could have been a little bit more that would've been added to make it even better for everyone to understand.

Charles (20:48):  
Can we consider the idea of letting people provide the definitions themselves? Would you like doing that?

Goan (20:54):  
That would be, yeah.

Charles (20:55):  
If people could provide definition themselves or provide more details about the definitions themselves.

John Alloy (21:01):  
Or maybe even pick the definition that they want, there'll be different definitions and then, yeah.

Speaker 3 (21:08):  
Several ones and the big one. How many people would like the description? Several one, you like?

Gail (21:10):  
What did you say?

Speaker 3 (21:18):  
Would you like to have the possibility to, as pick between several definitions or even to provide you all?

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Gail (21:23):  
Yeah. Because somebody taking a survey doesn't want to sit there and write something.

Speaker 3 (21:25):  
So pick between two other, yeah?

Suzanne (21:29):  
Because I often wasn't sure how to answer. Not because I didn't have an opinion, but I said I'm not sure I understand the implication of such a simplified question. Give me a definition of what you're talking about.

Nancy (21:43):  
But one of those examples is where you talk about, and again, everybody had different questions. But I thought it was vague when you were saying something like a miserable life. Then getting social support. What is your, what would a definition of a miserable life be to someone? Is it where they don't have any money, where they don't have housing and then what do you mean by social support? Are they programs? Is it money? Then just a technical thing. I thought that where you had the scale, you went from zero to whatever the number was, but then on the other one you reversed it and you started out with 100 and you went up. I would've done both from the left going higher.

Eileen (22:35):  
While she's on that, just another aesthetic thing. I felt that it's easier to anchor onto the little labels if one or the other is bolded. Like either bold the labels and not the slide, the numbers. You had labels and you had numbers and they were all in the same font, so to speak. So if the labels are bolded, you can anchor onto them in your brain and slide more readily.

Speaker 3 (23:02):  
I do that. Yeah.

Rachel (23:04):  
I also had something about just maybe have the question a little bit larger text than the answers. I know it was a little bit, but it didn't pop as much. Yeah. It didn't stand out. It just all blended together.

Nancy (23:16):  
It also said somewhere on the first page, on the second page.

Speaker 3 (23:24):  
Yes, you're right.

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Nancy (23:24):  
Yeah. It wasn't really like page. It wasn't really, I don't remember what it was.

Speaker 3 (23:32):  
No, it was page. It was, on the first page you will get one or two, you will have to evaluate the importance. Also the page will have two questions for the-

Nancy (23:39):  
Yes. It wasn't really a first page or something. Yeah.

Eileen (23:43):  
That was kind of goofy.

Nancy (23:44):  
Yeah. Like maybe the next or, I don't remember exactly what it was, but it didn't-

Suzanne (23:48):  
Or don't even say first and second, just say first you will do this. Then you'll do that. Because I think both of us got hung up on which page are we on and what are we doing.

Gail (23:54):  
Now I have a question on when we had to do the answers. They were pretty direct and exact, but then, on the other end, the next question, are you sure of what you said? Now, you want us people to be confused about their answers? I don't think you gave enough, instead of being so direct with the three answers, you should maybe have one in between and then ask what percentage we thought.

Speaker 3 (24:41):  
So you mean, basically, do you prefer natural security? Then, on this same screen we ask you how sure you are? Makes sense? How certain are you? This one was, this was-

Gail (24:54):  
Let me see what... All right. Yeah. That part, you're feeling about the conflict... Yeah. There could be certainly, probably.

Speaker 3 (25:13):  
Okay. Let's direct probably correctly so-

Gail (25:16):  
Yeah because then you're going to ask us what percent.

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Interviewer (25:17):  
Did people tend to answer that question the same way each time? The certainty question? So some you felt something on, others you didn't?

Eileen (25:27):  
I was bothered by the fact that I couldn't remember my percentages all the time. Because then I'm like, okay, this is going to seem less important because I'm giving it a 68 and I gave a 90 or I gave a hundred or whatever.

Speaker 3 (25:38):  
So what do you-

Eileen (25:38):  
Say what?

Speaker 3 (25:40):  
Can you say a bit more?

Charles (25:45):  
[crosstalk00:00:25:47] less for this than the previous one, but you didn't remember exactly what-

Eileen (25:48):  
I lost track of where my certainties were lying. I didn't know if the research person was going to weigh my close to 100% more than my, I just didn't, it didn't bother me. Is just that I was free to slide around wherever I felt.

Speaker 3 (26:07):  
It's very interesting. Would you prefer to have a set of points that you could distribute over how you-

Suzanne (26:13):  
I actually like the hundred because it gave more ability to have nuances.

Speaker 3 (26:20):  
Yeah. Good. Because I-

Interviewer (26:21):  
You like the slide?

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Eileen (26:22):  
I like the slide and I like that it was a hundred. Because I don't like, it gave more flexibility and throwing down what you felt.

Nancy (26:33):  
The only thing, I didn't really see it as political, but I understand why people might think so. The only thing I thought was a little political in there was when you were talking about cultural diversity and security, and to me it seemed then you were on the border of saying it can't be a culturally diverse society and secure at the same time.

Eileen (26:52):  
How much was it implication? It's because you were picking one of the others.

Nancy (27:00):  
Or it was that you, this or that or in the middle. I don't know, when you put them together, when you put that together. That to me-

Lucille (27:11):  
That's a very hot topic.

Nancy (27:17):  
But that's why-

Speaker 3 (27:17):  
As if Trump would be thinking about diversity in future. Then you would build a build.

Nancy (27:21):  
You didn't put it with, you didn't put nature and security. It was cultural diversity and security. I don't know. It just, that's what shows me. Then just as-

Nancy (27:37):  
Then just the very end when it says, I think it was just a typo or something, where it says your choice of who you are. It said student and then in parentheses, not in labor, force, retired. It had like, I don't have, I don't know if you have it on your sheet.

Suzanne (27:52):  
Yeah. We retired people would like-

Nancy (27:54):  
The very last one, it looked like there were too many things listed together and just not. Right.

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Speaker 3 (27:52):  
You would like to have a separate point?

Nancy (28:03):  
You have to have, there was as a student. I forget what the other one was.

Gail (28:07):  
An independent contractor in there somewhere because-

Suzanne (28:11):  
I skipped all the way down. I didn't even-

Gail (28:13):  
You're not always think of yourself as self-employed.

Nancy (28:14):  
I think it said work your own business. Self-employed in your own business. This one had a lot of stuff, it said, above it was student but then it said not in the workforce student, again.

Interviewer (28:27):  
What was the census format here? So you can match the-

Suzanne (28:36):  
Or even student part-time.

Nancy (28:41):  
It did say part-time.

Gail (28:41):  
Well, at least mine did. Part-time was one of the choices.

Interviewer (28:44):  
Let's go back to this.

Gail (28:44):  
Yeah, because I wrote part-time even though I'm retired.

Interviewer (28:51):  
Up until the case study?

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Charles (28:57):  
I feel like some of them find some information that could help you decide with the transcript. For instance, the question [inaudible 00:29:04]. So the price, are we pitching it on the price or the free month because if they're pitching it, maybe I might throw, if they put in 25, 25, maybe they should walk away with at least 10. But if it's free money, it's well, you are not losing anything. So why, if you want [inaudible 00:29:32].

Gail (29:31):  
I took it as you're playing a game. It has nothing to do with work. It has nothing really to do with life. You're doing a game at gambling. It didn't have relevance to, I think what you were trying to get.

Lucille (29:52):  
I couldn't totally tell what somebody in there said, but she may have said this. When you were talking about certain issues like cultural diversity, whatever. I thought you should either italicize or bolded or whatever. I thought that might be what she was saying. I couldn't tell. So that was one point.

Lucille (30:09):  
So that would be very helpful. Also, I couldn't hear what was said, but it, when I heard a couple points in there. It was difficult when it was on different pages, because then I suddenly couldn't remember what I'm even answering about on the page before a couple times.

Gail (30:29):  
Could you go back if you wanted?

Gail (30:32):  
So I guess if you made that clear from the jump, that you can go back. I didn't even know.

Speaker 3 (30:37):  
You want me to write, you can go back?

Gail (30:44):  
I think there's a certain group that, would be helpful.

Interviewer (30:45):  
When you have randomizations like we have, there are points where you can't go back. Sometimes it would affect, it would re-randomize.

Lucille (30:55):

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I did have one other thing, if you're done. There was a question about the social benefit and in the same question, you mentioned social benefit. Then I think you called it social support. I was like, are those the same thing? Was social support meant? Did that mean money or did that mean bringing psychologists in? I didn't understand.

Speaker 3 (31:12):  
It should be the same.

Lucille (31:21):  
I wasn't sure. Even if you used the same twice, I wasn't clear what you were talking about when you said social support, bringing in psychologists, or were you talking about giving money to those people? [ Crosstalk 00:31:35]

Lucille (31:34):  
So, that would need to be made clear.

Nancy (31:40):  
The only other thing on that first one, where it was about mine, was about the die or the dice. It said five, I don't remember what the question was. Was it a tax that they were getting? You don't have the question do you?

Gail (31:54):  
They were being taxed on their price.

Nancy (31:56):  
Is it five, but is it a percentage?

Speaker 3 (32:00):  
Yes.

Nancy (32:01):  
Okay. I don't think it says it, I don't think it says that.

Eileen (32:05):  
No, it doesn't because that was my question. Are we talking about a casual, recreational bit between friends or is it a government regulated betting venue? In which case, are you talking about a percentage, like income tax? It was, again, it was too vague.

Nancy (32:20):  
When you're sliding, I think you're sliding that scale or something.

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Nancy (32:23):  
Or down at the bottom and you're sliding the scale and it just has numbers, starting from zero.

Speaker 3 (32:32):  
Yeah but maybe I can add a percentage but you okay with the zero to 40% and not more?

Suzanne (32:47):  
The percentage sign should be there. I don't know anything about taxing percentages on this. So I don't know if zero to 50 was for the hundred.

Nancy (33:02):  
Yes. It just says... the winner. What is it, five what? I mean 5%, it should say 5%.

Gail (33:11):  
I wouldn't expect them to take more than 50.

Speaker 3 (33:12):  
Then we'll be the guys who losing is earning more. It doesn't make sense.

Nancy (33:20):  
But there has to just be a percentage.

Speaker 3 (33:21):  
Yeah. You are absolutely right. That's good that you-

Eileen (33:22):  
I did. I wrote that down.

Interviewer (33:23):  
Do you have anything else in your notes?

John Alloy (33:29):  
No. But I have to be disagree, I would be opposed to a numbering system.

John Alloy (33:36):  
...four in the surveys are honest opinion. Not the finish line along number three of 15. Whereas you might be rushing through some of the questions, but if you don't know, you say it's an approximately a 25 minute- [crosstalk 00:33:52]

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Speaker 3 (33:53):  
Put the numbers, but you only want some.

Goan (33:56):  
I agree with him.

Speaker 3 (34:00):  
Usually, when we put the progress bar, people who tend to do this strategy, they want to rush-

Interviewer (34:08):  
Okay. Right.

Lucille (34:08):  
Yeah. But you just did.

Interviewer (34:08):  
That's alright. That's alright. All right. Anybody else got any other things from their notes? John? No?

Gail (34:25):  
Interesting. Very interested. Are you going to tell us what this is for? What were you aiming for?

Speaker 3 (34:34):  
So what we aim for, with the surveys, is usually when people nowadays, we ask them opinions. A lot of people disregard opinions coming from non-experts because they think that as people respond to emotionally or because there is a lot of fake news and et cetera, and we want to see whether people really care about social issues. If that the case, then we should weight the values of opinions to normal people, let's say, and not to disregard the opinion because you don't have this background or this background, for instance. That's also a divide that we could implement online, in the sense that people, when we make online opinion bots now, we have a lot of bots, robots who just answer and you saw what happens with [Extra 00:35:20]. Then we could have disregard opinions would have been answered too quickly or emotionally and not count for the public debates because there's not informed opinion, for instance. That's this macro end that we have.

Charles (35:34):  
Can I ask a question about the political aspect? Because we hesitated, we wanted to have dilemmas and issues, which were connected to things that people are familiar with, right?

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Which are usual issues. So in that sense, it's good because it makes people more interested in this question or is it problematic because then it triggers some, it sparks some issues where people say, oh, you are connected, for instance, security and cultural diversity. So there is some issue there. So it's not that.

Interviewer (36:05):  
Maybe you're suspected of having an agenda or something.

Nancy (36:08):  
I'm fine with an agenda. Same as mine.

Speaker 3 (36:08):  
But we don't, we don't have an agenda.

Nancy (36:17):  
Well, I thought, at the end you did ask are you liberal, conservative, very liberal?

Speaker 3 (36:21):  
Well that's usual, right? Demographics, everybody else just-

Nancy (36:26):  
I don't know. I've never been asked that before.

Nancy (36:26):  
I've never been asked. Maybe not in a survey.

Gail (36:26):  
I thought it was very much like what we read the papers now and about the climate change specifically. Are you for it or are you against it? Having to choose whether you want money or nature. That is what's going on society now. I thought this whole thing just gelled right with the problems we have now.

Charles (37:00):  
So it's probably a good point, right? You think it's, no?

Eileen (37:07):  
Well, I am more liberal on that. I believe in climate change. I believe in nature and I'm a bleeding heart.

Speaker 3 (37:16):

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Would you prefer to have dilemmas that have nothing to do with the current situation? Let's say I put something on.

Speaker 3 (37:22):  
Yeah. That's the question. Because we try to, yeah. So first we try to select six values and classify them, symmetrically on the spectrum, trying to take two, which were more on the left, two more on the right and two more a center. To keep everybody happy.

Gail (37:41):  
Yeah. But so that's what we're having now in society.

Speaker 3 (37:44):  
But would you like to have something which is not what you have now in society?

Gail (37:48):  
I don't know.

Lucille (37:49):  
You might get a more honest answer because you use the word trigger. I get it would trigger some people. You might even answer honestly. They're angry about some political issue. And then they're just going to tell you, that might not be their honest assessment weighing two things. Do you know what I mean?

Lucille (38:10):  
I don't think trigger's the right word. Maybe you should do some other, not-

Suzanne (38:16):  
But that's how they feel.

Eileen (38:21):  
[ Crosstalk 00:38:20] One that really hit me was the one about the freedom of, I don't know how you put it.

Speaker 3 (38:28):  
Justice of inequality?

Eileen (38:28):  
Pardon me?

Speaker 3 (38:28):

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Was it the freedom versus people?

Gail (38:40):  
It might have been because all I could think of, this is stupid. Yeah, you want to have the freedom of expression and it's very important, but you also have to live within the limits of the law. Freedom expression, as I said before, is a person who says, I don't like what's going on here and I'm going to shoot them. That's too much freedom. There's nothing, you didn't give us an in between.

Lucille (39:08):  
Maybe you just need to qualify within limits-

Speaker 3 (39:12):  
That's the issue of definition.

Gail (39:16):  
Yeah. Because our freedom is very important, but it's only as important as we live within. I mean, because now we've got somebody who has lots of freedom and nothing can be done when he is against the law. That's why, that was the first thing that was a very big trigger.

Speaker 3 (39:36):  
Did you feel any pressure because we ask questions about climate change to answer things in favor of climate change because you live in society now because this kind of questions?

Gail (39:47):  
No, because I'm for it.

Speaker 3 (39:49):  
No, suppose you were, you were not for climate change. You would feel pressure to say yes?

Speaker 3 (39:54):  
But you would say yes?

Gail (39:55):  
Yeah. Would answer the other way.

Eileen (39:57):  
But I think it's problematic there some people who are angry about this.

Gail (40:02):

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Yeah. Because I know what my son would say. Would be the opposite of me.

Speaker 3 (40:08):  
But you would say, you think it is for bad. Where we would have to say, oh, these guys have an agenda. I should probably say yes.

Gail (40:12):  
That's what he would say. There's a bleeding heart agenda.

Nancy (40:15):  
But you could put the opposite way. You can see that it's not important. I don't see, I don't think it an agenda.

Charles (40:24):  
I don't agree too much because I feel those type of questions are to push you to become fake. They want, they push you to the screen. And also the presence of the political challenges. I feel it's good for a serving because it pushes you to a certain limit. It introduce certain emotions and with emotions, act like, if you are angry, whatever you say is however you feel. So if you put in there, if you sad, whatever you say, it's coming different.

Gail (40:58):  
That's why I was asking you.

Charles (41:07):  
It shouldn't be too much, It shouldn't be too less. I was [inaudible 00:41:07] certain amount of political challenges. Especially when it comes to values, whatever you do, it's going to be political.

Gail (41:14):  
I don't know because-

Nancy (41:15):  
[ Crosstalk 00:41:19] It's the same, it's political. If you're asking a question of, male versus female, inequality question. That way, everything you look at will be political tint to it. But people are going to write down how they feel. I don't think it's one way or another.

Interviewer (41:39):  
Well, this has been really helpful. I want thank you all for coming in. This will really help us take it to the next level in terms of getting ready for a bigger national survey. Everybody

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needs to see Helen on the way out. You need to see Dana on the way, right. Stop and see Dana on your way out.

Interviewer (44:17):  
[ Crosstalk 00:42:06].



## **B.3 Survey**

## **Items**

## The Normative Uncertainty Survey - Qualtrics

Start of Block: Consent Form



Q1 ADULT CONSENT FORM PRINCETON UNIVERSITY Title of Research  
Survey on Societal Values Principal Investigator Marc Fleurbaey Principal Investigator's  
Department

Woodrow Wilson School of Public and International Affairs

You are invited to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done, as well as what it will involve. Please take the time to read the following information carefully. If anything is not clear, then please ask the researcher. Purpose of the Research

The aim of this research is to test whether subjects are uncertain about their societal values. Study Procedures

You will be asked to a series of questions. The survey is composed of four parts. Your total expected time commitment for this study is 30 minutes, on average.

### Benefits and Risks

The possible benefit to the participants is to become more aware of the societal values that affect their choice. The risk of potential discomfort is minimal.

### Confidentiality

All records from this study will be kept strictly confidential. Your responses will be kept private. We will not include any information that could be used to identify you in any report we publish. Research records will be stored securely in a locked cabinet, or else on password-protected computers. The research team will be the only party with access to your data. Compensation Paid by the company.

### Who to contact with questions:

1. PRINCIPAL INVESTIGATOR to contact: Marc Fleurbaey, jabarian@princeton.edu
2. If you have questions regarding your rights as a research subject, or if problems arise which you do not feel you can discuss with the Investigator, please contact the Institutional Review Board at:

Assistant Director, Research Integrity and Assurance  
Phone: (609) 258-8543  
Email: irb@princeton.edu

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3. I understand the information that was presented. I understand that:

A. My participation is voluntary. I may withdraw my consent at any time. I may also discontinue participation in the project at any time. My refusal to participate will not result in any penalty.

A. My participation is voluntary. I may withdraw my consent. I may also discontinue participation in the project at any time. My refusal to participate will not result in any penalty.

B. I do not waive any legal rights nor release Princeton University, its agents, or you from liability for negligence.

Yes, I give my consent to participate in your research. (1)

No, I do not give my consent to participate in your research. (2)

Skip To: End of Block If ADULT CONSENT FORM PRINCETON UNIVERSITY Title of Research  
Survey on Societal Values Principa... = No, I do not give my consent to participate in your research

End of Block: Consent Form

Start of Block: Honest Form



Q2 The most important factor for the success of our research is that you answer honestly. If you cannot answer a question, please indicate it. Remember, there are no right or wrong answers.

I attest that I WILL answer the questions honestly. (1)

I attest that I CANNOT honestly answer the questions. (2)

Skip To: End of Block If The most important factor for the success of our research is that you answer honestly. If you ca... = I attest that I CANNOT honestly answer the questions.

End of Block: Honest Form

Start of Block: Demographics

Q3 What is your gender?

Male (1)

Female (2)

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Q4 What was your TOTAL household income, before taxes, last year (2018)?

\$0 - \$9,999 (1)

\$10,000 - \$14,999 (2)

\$15,000-\$24,999 (3)

\$25,000 - \$34,999 (4)

\$35,000 - \$49,999 (5)

\$50,000 - \$59,999 (6)

\$60,000 - \$74,999 (7)

\$75,000 - \$99,999 (8)

\$100,000 - \$124,999 (9)

\$125,000 - \$149,999 (10)

\$150,001 - \$199,999 (11)

\$200,000+ (12)

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Q5 Which category best describes your highest level of education?

Eighth Grade or less (1)

Some High School (2)

High School degree/ GED (3)

Some College (4)

2-year College Degree (5)

4-year College Degree (6)

Master's Degree (7)

Doctoral Degree (8)

Professional Degree (JD, MD, MBA) (9)

Q6 What is your age?

\_\_\_\_\_

Q7 Were you born in the United States?

Yes (1)

No (2)

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Q8 How would you describe your ethnicity/race?

- European American/White (1)
- African American/Black (2)
- Hispanic/Latino (3)
- Asian/Asian American (4)
- Other (5)

Q9 In which state do you currently reside?

▼ Alabama (1) ... I do not reside in the United States (53)

Q10 Please indicate your marital status

- Single (1)
- I have a long term partner (2)
- Married (3)

Q11 What is your current employment status?

- Full-time employee (1)
- Part-time employee (2)
- Self-employed or small business owner (3)
- Unemployed and looking for work (4)
- Student (5)
- Not in labor force (for example: retired, or full-time parent) (6)

Q12 What are your political views?

- Very conservative (1)
- Conservative (2)
- Moderate (3)
- Liberal (4)
- Very Liberal (5)

Q13 What is your religious background?

- Jewish (1)
- Christian (2)
- Muslim (3)
- Buddhist (4)
- Atheist (5)
- Other (6)
- Prefer not to tell (9)

Q14 Do you have any children?

- 0 child (1)
- 1 child (2)
- 2 children (3)
- more than 2 children (4)

End of Block: Demographics

Start of Block: Empirical Uncertainty Behavior (Psychology Uncertainty)

Q18 Timing

- First Click (1)
- Last Click (2)
- Page Submit (3)
- Click Count (4)



Q19 For each statement, please select the answer that corresponds to you.

	Not at all characteristic of me (1)	A little characteristic of me (2)	Somewhat characteristic of me (3)	Very characteristic of me (4)	Entirely characteristic of me (5)
Unforeseen events upset me greatly. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It frustrates me not having all the information I need. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uncertainty keeps me from living a full life. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One should always look ahead so as to avoid surprises. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A small unforeseen event can spoil everything, even with the best of planning. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When it's time to act, uncertainty paralyzes me. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am uncertain I can't function very well. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always want to know what the future has in store for me. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I can't stand being taken by surprise. (9)

The smallest doubt can stop me from acting. (10)

I should be able to organize everything in advance. (11)

I must get away from all uncertain situations. (12)

---

End of Block: Empirical Uncertainty Behavior (Psychology Uncertainty)

---

Start of Block: Empirical Risk Behavior 1 (Psychology Risk)

Q22 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q23 How willing are you to take risks, in general?

Not at all

0 1 2 3 4 5 6 7 8 9 10

(0)

---

End of Block: Empirical Risk Behavior 1 (Psychology Risk)

---

Start of Block: Altruism Behavior (Dictator)

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Q26 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q27 Consider the following scenario. Suppose you are given 100 cents. How much do you give to another, randomly chosen, participant of this study? You can give from 0 to 100. All of the amount not given is yours.

0 10 20 30 40 50 60 70 80 90 100

I give to another participant, randomly chosen (in cents): (0)

---

End of Block: Altruism Behavior (Dictator)

---

Start of Block: Instructions Module 1

Q32 In the following, we are going to ask you a series of two types of questions. The first type of question asks you to assess the importance of several values for a good society. The second type of question asks you to think about your answer to this first question. It is very important for the purposes of this research that you give equal attention to both questions and that you take your time to answer the questions.

---

End of Block: Instructions Module 1

---

Start of Block: Feeling + Subjective Belief : Security

Q33 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

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Q34 Suppose security means that citizens do not fear for their lives and properties. According to you, how important is this value for a good society?

Not Important (1)

Slightly Important (6)

Moderately Important (3)

Important (4)

Very Important (5)

---

Page Break

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Q35 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q36 Do you feel ambivalent about your answer to the previous question?

Yes (1)

No (11)

---

Display This Question:  
If Do you feel ambivalent about your answer to the previous question? = Yes

Q37 To what degree do you feel ambivalent?

Rather Ambivalent (3)

Totally Ambivalent (6)

---

Display This Question:  
If Do you feel ambivalent about your answer to the previous question? = No

Q38 To what degree do you feel unambivalent?

Rather Unambivalent (1)

Totally Unambivalent (2)

---

Page Break

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Q39 Are you certain about your answer to the question on the previous screen?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = Yes

Q40 How certain are you?

Rather Certain (1)

Completely Certain (2)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = No

Q41 How uncertain are you?

Rather Uncertain (1)

Completely Uncertain (2)

---

End of Block: Feeling + Subjective Belief : Security

Start of Block: Feeling + Subjective Belief : Freedom

Q42 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

JS

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Q43 Suppose freedom means that people have the possibility of expressing themselves and pursuing their desires. According to you, how important is this value for a good society?

Not Important (1)

Slightly Important (6)

Moderately Important (3)

Important (4)

Very Important (5)

---

Page Break

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Q44 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q45 Do you feel ambivalent about your answer to the previous question?

Yes (1)

No (11)

---

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = Yes

Q46 To what degree do you feel ambivalent?

Rather Ambivalent (3)

Totally Ambivalent (6)

---

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = No

Q47 To what degree do you feel unambivalent?

Rather Unambivalent (1)

Totally Unambivalent (2)

---

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Q48 Are you certain about your answer to the question on the previous screen?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = Yes

Q49 How certain are you?

Rather Certain (1)

Completely Certain (2)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = No

Q50 How uncertain are you?

Rather Uncertain (1)

Completely Uncertain (2)

---

End of Block: Feeling + Subjective Belief : Freedom

Start of Block: Feeling + Subjective Belief : Nature

Q51 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

JS

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Q52 Suppose being nature-friendly means that one seeks to protect the natural environment. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q53 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q54 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

Display This Question:  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q55 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

Display This Question:  
 If Do you feel ambivalent about your answer to the previous question? = No

Q56 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)

Q57 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

Display This Question:  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q58 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

Display This Question:  
 If Are you certain about your answer to the question on the previous screen? = No

Q59 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

End of Block: Feeling + Subjective Belief : Nature

Start of Block: Psychology (CRT 1)

Q30 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q31 A bat and a ball cost \$1.10 in total. The bat costs \$1.00 more than the ball. How much does the ball cost?

- in cents (ex: put 100 for 100 cents) (4)

End of Block: Psychology (CRT 1)

Start of Block: Psychology (Raven 1)

Q15 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q16

Q17

- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)

End of Block: Psychology (Raven 1)

Start of Block: Feeling + Subjective Belief : Equality

Q60 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

**JS**

Q61 Suppose equality means that everyone is given an equal chance. According to you, how important is this value for a good society?

Not Important (1)

Slightly Important (6)

Moderately Important (3)

Important (4)

Very Important (5)

---

Page Break

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Q62 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q63 Do you feel ambivalent about your answer to the previous question?

Yes (1)

No (11)

---

**Display This Question:**  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q64 To what degree do you feel ambivalent?

Rather Ambivalent (3)

Totally Ambivalent (6)

---

**Display This Question:**  
 If Do you feel ambivalent about your answer to the previous question? = No

Q65 To what degree do you feel unambivalent?

Rather Unambivalent (1)

Totally Unambivalent (2)

---

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Q66 Are you certain about your answer to the question on the previous screen?

Yes (2)

No (6)

---

**Display This Question:**  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q67 How certain are you?

Rather Certain (1)

Completely Certain (2)

---

**Display This Question:**  
 If Are you certain about your answer to the question on the previous screen? = No

Q68 How uncertain are you?

Rather Uncertain (1)

Completely Uncertain (2)

---

End of Block: Feeling + Subjective Belief : Equality

Start of Block: Feeling + Subjective Belief : Prosperity

Q69 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

**JS**

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Q70 Suppose prosperity means that people are financially comfortable and enjoy material well-being. According to you, how important is this value for a good society?

Not Important (1)

Slightly Important (6)

Moderately Important (3)

Important (4)

Very Important (5)

---

Page Break

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Q71 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q72 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q73 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

**Display This Question:**  
 If Do you feel ambivalent about your answer to the previous question? = No

Q74 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

---

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Q75 Are you certain about your answer to the question on the previous screen?

Yes (2)  
 No (6)

---

**Display This Question:**  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q76 How certain are you?

Rather Certain (1)  
 Completely Certain (2)

---

**Display This Question:**  
 If Are you certain about your answer to the question on the previous screen? = No

Q77 How uncertain are you?

Rather Uncertain (1)  
 Completely Uncertain (2)

End of Block: Feeling + Subjective Belief : Prosperity  
 Start of Block: Feeling + Subjective Belief : Culture

Q78 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

**JS**

---

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Q79 Suppose cultural diversity describes the presence of groups with different backgrounds in society. According to you, how important is this value for a good society?

Not Important (1)  
 Slightly Important (6)  
 Moderately Important (3)  
 Important (4)  
 Very Important (5)

---

Page Break

---

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Q80 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q81 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q82 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

**Display This Question:**  
 If Do you feel ambivalent about your answer to the previous question? = No

Q83 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

---

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Q84 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = Yes

Q85 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = No

Q86 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

End of Block: Feeling + Subjective Belief : Culture

Start of Block: Instructions Module 2

JS

Q89  
In the following, we are going to ask you a series of two types of questions. The first type of question asks your preference between two values. The second type of question asks you to think about your answer to this first question. It is very important for the purposes of this research that you give equal attention to both questions and that you take your time to answer the questions.

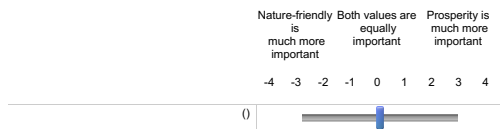
End of Block: Instructions Module 2

Start of Block: Feeling + Subjective Belief : Trade-off Nature VS Prosperity

Q90 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

JS

Q91 As a reminder, nature-friendly means that one cares to protect the natural environment and prosperity means that people enjoy material well-being and financial flexibility. Compare both values. How important is one to the other?



Page Break

Q92 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q93 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = Yes

Q94 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = No

Q95 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)

Q96 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = Yes

Q97 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = No

Q98 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

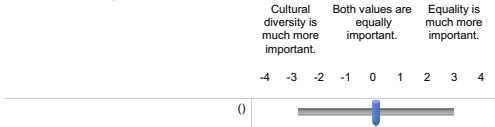
End of Block: Feeling + Subjective Belief : Trade-off Nature VS Prosperity

Start of Block: Feeling + Subjective Belief : Trade-off Cultural Diversity VS Equality

Q99 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

JS

Q100 As a reminder, cultural diversity describes the presence of groups with different backgrounds in society and equality means that everyone is given an equal chance. Compare both values. How important is one to the other?



Page Break

Q101 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q102 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

Display This Question:  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q103 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

Display This Question:  
 If Do you feel ambivalent about your answer to the previous question? = No

Q104 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)

Q105 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

Display This Question:  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q106 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

Display This Question:  
 If Are you certain about your answer to the question on the previous screen? = No

Q107 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

End of Block: Feeling + Subjective Belief : Trade-off Cultural Diversity VS Equality

Start of Block: Psychology (CRT 2)

Q87 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q88 If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?

- in minutes (4) \_\_\_\_\_

End of Block: Psychology (CRT 2)

Start of Block: Psychology (Raven 2)

Q117 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q118

Q119

- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)

End of Block: Psychology (Raven 2)

Start of Block: Feeling + Subjective Belief : Trade-off Freedom VS Security

Q108 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

**JS**

Q109 As a reminder, freedom means that people have the possibility of expressing themselves and pursuing their desires and security means that citizens live safe lives. Compare both values. How important is one to the other?

	Freedom is much more important.	Both values are equally important.	Security is much more important
	-4	-3 -2 -1	0 1 2 3 4

Page Break

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Q110 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q111 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q112 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = No

Q113 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

---

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Q114 Are you certain about your answer to the question on the previous screen?

Yes (2)  
 No (6)

---

*Display This Question:*  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q115 How certain are you?

Rather Certain (1)  
 Completely Certain (2)

---

*Display This Question:*  
 If Are you certain about your answer to the question on the previous screen? = No

Q116 How uncertain are you?

Rather Uncertain (1)  
 Completely Uncertain (2)

---

End of Block: Feeling + Subjective Belief : Trade-off Freedom VS Security  
 Start of Block: Instructions Module 3

Q120 In the following, we are going to ask you a series of two types of questions. The first type of question asks you to make a hypothetical choice between different policy scenarios. The second type of question asks you to think about your answer to this first question. It is very important for the purposes of this research that you give equal attention to both questions and that you take your time to answer the questions.

---

End of Block: Instructions Module 3  
 Start of Block: Feeling + Subjective Belief : Dilemma Well Being

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Q121 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

**JS**

Q122 Consider the following scenario: a society consists of two groups of citizens, Group 1 members are very rich, but feel sad and depressed, and could receive support in the form of psychological therapy. Group 2 members are very happy, but they are poor and could receive support in the form of social benefits. In your opinion, which group should the government prioritize?

	Group 1	Group 2
	-5 -4 -3 -2 -1	0 1 3 4 5

Page Break

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Q123 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q124 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q125 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = No

Q126 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

---

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Q127 Are you certain about your answer to the question on the previous screen?

Yes (2)  
 No (6)

---

*Display This Question:*  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q128 How certain are you?

Rather Certain (1)  
 Completely Certain (2)

---

*Display This Question:*  
 If Are you certain about your answer to the question on the previous screen? = No

Q129 How uncertain are you?

Rather Uncertain (1)  
 Completely Uncertain (2)

---

End of Block: Feeling + Subjective Belief : Dilemma Well Being  
 Start of Block: Feeling + Subjective Belief : Dilemma Wager

Q130 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

JS

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Q131 Consider the following situation: on internet platforms, individuals can agree to make bets with their money. In your opinion, to what extent should your government regulate these betting platforms to limit losses?

No regulation	Moderate regulation	Full regulation
0	1 2 3 4	5 6 7 8 9 10

---

Page Break

---

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Q132 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q133 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q134 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = No

Q135 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

---

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Q136 Are you certain about your answer to the question on the previous screen?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = Yes

Q137 How certain are you?

Rather Certain (1)

Completely Certain (2)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = No

Q138 How uncertain are you?

Rather Uncertain (1)

Completely Uncertain (2)

End of Block: Feeling + Subjective Belief : Dilemma Wager

Start of Block: Psychology (Raven 3)

Q508 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q509

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Q510

1 (1)

2 (2)

3 (3)

4 (4)

5 (5)

6 (6)

7 (7)

8 (8)

End of Block: Psychology (Raven 3)

Start of Block: Feeling + Subjective Belief : Dilemma Climate 1 (inequality)

Q139 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

JS

---

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Q140 Consider the following scenario: there has been a catastrophic event and two farmers have lost their entire livelihoods. A relief agency has arrived to help restore the farmers' land. However, its budget is limited, and one farm is harder to rehabilitate than the other due to the landscape. The agency has to decide who to help and considers two different options:

Option A: Spend the same amount of money on both farms, which will result in more rehabilitated land for farmer 1 (80 acres restored) than for farmer 2 (20 acres restored). Option B: Restore the same amount of land for both farmers (40 acres restored for each farmer), which will result in less restored land overall (80 acres in total). In your opinion, which option should the agency choose?

Option A (1)

Option B (5)

---

Page Break

---

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Q141 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q142 Do you feel ambivalent about your answer to the previous question?

Yes (1)

No (11)

---

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = Yes

Q143 To what degree do you feel ambivalent?

Rather Ambivalent (3)

Totally Ambivalent (6)

---

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = No

Q144 To what degree do you feel unambivalent?

Rather Unambivalent (1)

Totally Unambivalent (2)

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Q145 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

Display This Question:

If Are you certain about your answer to the question on the previous screen? = Yes

Q146 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

Display This Question:

If Are you certain about your answer to the question on the previous screen? = No

Q147 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

End of Block: Feeling + Subjective Belief : Dilemma Climate 1 (inequality)

Start of Block: Psychology (CRT 3)

Q511 Timing

- First Click (1)
- Last Click (2)
- Page Submit (3)
- Click Count (4)

Q512 In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?

- in days (4) \_\_\_\_\_

End of Block: Psychology (CRT 3)

Start of Block: Feeling + Subjective Belief : Dilemma Climate 2

Q148 Timing

- First Click (1)
- Last Click (2)
- Page Submit (3)
- Click Count (4)

JS

Q149 Consider the following scenario: the government of a flood-prone region has allocated a certain amount of money for disaster prevention. The government has to decide which mitigation policy to implement and is considering these two options:

Option A: Invest in short-term mitigation policies, which will save 100 people from drowning this year. Option B: Invest in long-term mitigation policies, which will prevent 200 people from drowning 50 years from now. In your opinion, which option should the government choose?

- Option A (1)
- Option B (5)

Page Break

Q150 Timing

- First Click (1)
- Last Click (2)
- Page Submit (3)
- Click Count (4)

Q151 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

Display This Question:

If Do you feel ambivalent about your answer to the previous question? = Yes

Q152 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

Display This Question:

If Do you feel ambivalent about your answer to the previous question? = No

Q153 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)

Q154 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

Display This Question:

If Are you certain about your answer to the question on the previous screen? = Yes

Q155 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

Display This Question:

If Are you certain about your answer to the question on the previous screen? = No

Q156 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

End of Block: Feeling + Subjective Belief : Dilemma Climate 2

Start of Block: Difficulty + Objective Belief : Prosperity

Q157 Timing

- First Click (1)
- Last Click (2)
- Page Submit (3)
- Click Count (4)

JS

Q158 Suppose prosperity means that people are financially comfortable and enjoy material well-being. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q159 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q160 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

Q161 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

Q162 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q163 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:  
 If Are you certain that your answer to the question on the previous screen is right? = Yes

Q164 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

Display This Question:  
 If Are you certain that your answer to the question on the previous screen is right? = No

Q165 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Prosperity

Start of Block: Difficulty + Objective Belief : Security

Q166 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

JS

Q167 Suppose security means that citizens do not fear for their lives and properties. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q168 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q169 Was it difficult to answer the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q170 To what degree was it difficult to answer the previous question?

Rather Difficult (3)  
 Extremely Difficult (6)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q171 To what degree was it easy to answer the previous question?

Rather Easy (3)  
 Extremely Easy (6)

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Q172 Are you certain that your answer to the question on the previous screen is right?

Yes (2)  
 No (6)

---

**Display This Question:**  
 If Are you certain that your answer to the question on the previous screen is right? = Yes

Q173 How likely is it that you got the answer to the question right?

Probably Right (1)  
 Surely Right (2)

---

**Display This Question:**  
 If Are you certain that your answer to the question on the previous screen is right? = No

Q174 How likely is it that you got the answer to the question wrong?

Probably Wrong (1)  
 As likely right as wrong (2)

---

End of Block: Difficulty + Objective Belief : Security  
 Start of Block: Difficulty + Objective Belief : Culture

Q175 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

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**JS**

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Q176 Suppose cultural diversity describes the presence of groups with different backgrounds in society. According to you, how important is this value for a good society?

Not Important (1)  
 Slightly Important (6)  
 Moderately Important (3)  
 Important (4)  
 Very Important (5)

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Page Break

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Q177 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q178 Was it difficult to answer the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q179 To what degree was it difficult to answer the previous question?

Rather Difficult (3)  
 Extremely Difficult (6)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q180 To what degree was it easy to answer the previous question?

Rather Easy (3)  
 Extremely Easy (6)

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Q181 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q182 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

Q183 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Culture

Start of Block: Difficulty + Objective Belief : Freedom

Q184 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)



Q185 Suppose freedom means that people have the possibility of expressing themselves and pursuing their desires. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q186 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q187 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

*Display This Question:*  
If Was it difficult to answer the previous question? = Yes

Q188 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

*Display This Question:*  
If Was it difficult to answer the previous question? = Yes

Q189 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q190 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q191 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

Q192 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Freedom

Start of Block: Difficulty + Objective Belief : Equality

Q193 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)



Q194 Suppose equality means that everyone is given an equal chance. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q195 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q196 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

Q197 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

Q198 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q199 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:  
 If Are you certain that your answer to the question on the previous screen is right? = Yes

Q200 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

Display This Question:  
 If Are you certain that your answer to the question on the previous screen is right? = No

Q201 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Equality

Start of Block: Difficulty + Objective Belief : Nature

Q202 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

JS

Q203 Suppose being nature-friendly means that one seeks to protect the natural environment. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q204 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q205 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q206 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q207 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q208 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q209 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = No

Q210 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Nature

Start of Block: Difficulty + Objective Belief : Trade-off Freedom VS Security

Q211 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

JS

Q212 As a reminder, freedom means that people have the possibility of expressing themselves and pursuing their desires and security means that citizens live safe lives. Compare both values. How important is one to the other?

Freedom is much more important.	Both values are equally important.	Security is much more important						
-4	-3	-2	-1	0	1	2	3	4



Page Break

Q213 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q214 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q215 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q216 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q217 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q218 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = No

Q219 How likely is it that you got the answer to the question wrong?

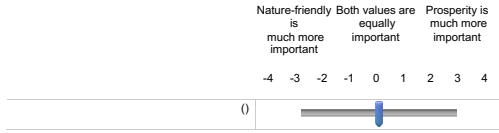
- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Trade-off Freedom VS Security  
Start of Block: Difficulty + Objective Belief : Trade-off Nature vs Prosperity

Q220 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)



Q221 As a reminder, nature-friendly means that one cares to protect the natural environment and prosperity means that people enjoy material well-being and financial flexibility. Compare both values. How important is one to the other?



Page Break

Q222 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q223 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q224 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q225 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Page Break

Q226 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q227 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = No

Q228 How likely is it that you got the answer to the question wrong?

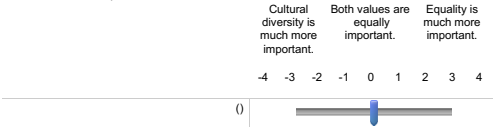
- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Trade-off Nature vs Prosperity  
Start of Block: Difficulty + Objective Belief : Trade-off Cultural Diversity VS Equality

Q229 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)



Q230 As a reminder, cultural diversity describes the presence of groups with different backgrounds in society and equality means that everyone is given an equal chance. Compare both values. How important is one to the other?



Page Break

Q231 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q232 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q233 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q234 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q235 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q236 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = No

Q237 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Trade-off Cultural Diversity VS Equality

Start of Block: Difficulty + Objective Belief : Dilemma Climate 1

Q238 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

JS

Q239 Consider the following scenario. Suppose there has been a catastrophic event and two farmers have lost their entire livelihood. A relief agency has arrived to help restore the farmers'

land. However, its budget is limited, and one farm is harder to rehabilitate than the other due to the landscape. The agency has to decide who to help and considers two different options:  
Option A: spending the same amount of money on both farms, which will result in more rehabilitated land for farmer 1 (80 acres restored) than for farmer 2 (20 acres restored). Option B: restoring the same amount of land for both farmers (40 acres restored for each farmer), which will result in less restored land overall (80 acres in total).  
In your opinion, which option should the agency choose?

- Option A (1)
- Option B (5)

Page Break

Q240 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q241 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q242 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q243 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q244 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q245 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

Display This Question:  
If Are you certain that your answer to the question on the previous screen is right? = No

Q246 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Dilemma Climate 1

Start of Block: Difficulty + Objective Belief : Dilemma Well Being

Q247 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

US

Q248 Consider the following scenario. Suppose a society consists into two groups of citizens. Group 1 members are very rich, but feel sad and depressed and could receive support in the

form of psychological therapy. Group 2 members are very happy but they are poor and could receive support in the form of social benefits.

In your opinion, which group should the government prioritize?



Page Break

Q249 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q250 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q251 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q252 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q253 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q254 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

Q255 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Dilemma Well Being

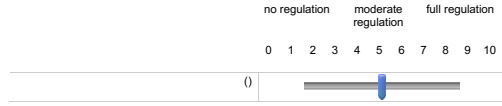
Start of Block: Difficulty + Objective Belief : Dilemma Wager

Q256 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

JS

Q257 Consider the following scenario. Suppose on internet platforms, individuals can agree to make bets with their money.

In your opinion, to what extent should your government regulate these betting platforms to limit losses?



Page Break

Q258 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

JS

Q259 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

*Display This Question:*  
If Was it difficult to answer the previous question? = Yes

JS

Q260 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

*Display This Question:*  
If Was it difficult to answer the previous question? = Yes

Q261 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q262 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

JS

Q263 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

JS

Q264 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Dilemma Wager

Start of Block: Difficulty + Objective Belief : Dilemma Climate 2 (Discounting)

Q265 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

JS

Q266 Consider the following scenario. Suppose the government of a flood-prone region has allocated a certain amount of money for disaster prevention. The government has to decide which mitigation policy to implement and is considering these two options:  
 Option A: investing in short-term mitigation policies, which will save 100 people from drowning this year. Option B: investing in long-term mitigation policies, which will prevent 200 people from drowning 50 years from now.  
 In your opinion, which option should the government choose?

- Option A (1)
- Option B (5)

Page Break

Q267 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q268 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

Q269 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

Q270 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q271 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:  
 If Are you certain that your answer to the question on the previous screen is right? = Yes

Q272 How likely is it that you got the answer to the question right?

- Probably Right (1)
- Surely Right (2)

Display This Question:  
 If Are you certain that your answer to the question on the previous screen is right? = No

Q273 How likely is it that you got the answer to the question wrong?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Difficulty + Objective Belief : Dilemma Climate 2 (Discounting)

Start of Block: Difficulty + Subjective Belief : Security

Q274 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q275 Suppose security means that citizens do not fear for their lives and properties. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break



Q276 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q277 Was it difficult to answer the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q278 To what degree was it difficult to answer the previous question?

Rather Difficult (3)  
 Extremely Difficult (6)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

**JS**

Q279 To what degree was it easy to answer the previous question?

Rather Easy (3)  
 Extremely Easy (6)

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Q280 Are you certain about your answer to the question on the previous screen?

Yes (2)  
 No (6)

---

**Display This Question:**  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q281 How certain are you?

Rather Certain (1)  
 Completely Certain (2)

---

**Display This Question:**  
 If Are you certain about your answer to the question on the previous screen? = No

Q282 How uncertain are you?

Rather Uncertain (1)  
 Completely Uncertain (2)

---

End of Block: Difficulty + Subjective Belief : Security  
 Start of Block: Difficulty + Subjective Belief : Culture

Q283 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

**JS**

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Q284 Suppose cultural diversity describes the presence of groups with different backgrounds in society. According to you, how important is this value for a good society?

Not Important (1)  
 Slightly Important (6)  
 Moderately Important (3)  
 Important (4)  
 Very Important (5)

---

Page Break

---

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Q285 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q286 Was it difficult to answer the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q287 To what degree was it difficult to answer the previous question?

Rather Difficult (3)  
 Extremely Difficult (6)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

**JS**

Q288 To what degree was it easy to answer the previous question?

Rather Easy (3)  
 Extremely Easy (6)

---

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Q289 Are you certain about your answer to the question on the previous screen?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = Yes

Q290 How certain are you?

Rather Certain (1)

Completely Certain (2)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = No

Q291 How uncertain are you?

Rather Uncertain (1)

Completely Uncertain (2)

End of Block: Difficulty + Subjective Belief : Culture

Start of Block: Difficulty + Subjective Belief : Freedom

Q292 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

JS

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Q293 Suppose freedom means that people have the possibility of expressing themselves and pursuing their desires. According to you, how important is this value for a good society?

Not Important (1)

Slightly Important (6)

Moderately Important (3)

Important (4)

Very Important (5)

---

Page Break

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Q294 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q295 Was it difficult to answer the previous question?

Yes (1)

No (11)

---

*Display This Question:*  
If Was it difficult to answer the previous question? = Yes

JS

Q296 To what degree was it difficult to answer the previous question?

Rather Difficult (3)

Extremely Difficult (6)

---

*Display This Question:*  
If Was it difficult to answer the previous question? = Yes

Q297 To what degree was it easy to answer the previous question?

Rather Easy (3)

Extremely Easy (6)

---

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Q298 Are you certain about your answer to the question on the previous screen?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = Yes

JS

Q299 How certain are you?

Rather Certain (1)

Completely Certain (2)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = No

JS

Q300 How uncertain are you?

Rather Uncertain (1)

Completely Uncertain (2)

End of Block: Difficulty + Subjective Belief : Freedom

Start of Block: Difficulty + Subjective Belief : Prosperity

Q301 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

JS

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Q302 Suppose prosperity means that people are financially comfortable and enjoy material well-being. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q303 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q304 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

Q305 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

Q306 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q307 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

Display This Question:  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q308 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

Display This Question:  
 If Are you certain about your answer to the question on the previous screen? = No

Q309 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

End of Block: Difficulty + Subjective Belief : Prosperity

Start of Block: Difficulty + Subjective Belief : Nature

Q310 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

JS

Q311 Suppose being nature-friendly means that one seeks to protect the natural environment. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q312 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q313 Was it difficult to answer the previous question?

Yes (1)  
 No (11)

---

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

JS

Q314 To what degree was it difficult to answer the previous question?

Rather Difficult (3)  
 Extremely Difficult (6)

---

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

JS

Q315 To what degree was it easy to answer the previous question?

Rather Easy (3)  
 Extremely Easy (6)

---

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Q316 Are you certain about your answer to the question on the previous screen?

Yes (2)  
 No (6)

---

Display This Question:  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q317 How certain are you?

Rather Certain (1)  
 Completely Certain (2)

---

Display This Question:  
 If Are you certain about your answer to the question on the previous screen? = No

JS

Q318 How uncertain are you?

Rather Uncertain (1)  
 Completely Uncertain (2)

---

End of Block: Difficulty + Subjective Belief ; Nature  
 Start of Block: Difficulty + Subjective Belief : Equality

Q319 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

JS

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Q320 Suppose equality means that everyone is given an equal chance. According to you, how important is this value for a good society?

Not Important (1)  
 Slightly Important (6)  
 Moderately Important (3)  
 Important (4)  
 Very Important (5)

---

Page Break

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Q321 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q322 Was it difficult to answer the previous question?

Yes (1)  
 No (11)

---

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

JS

Q323 To what degree was it difficult to answer the previous question?

Rather Difficult (3)  
 Extremely Difficult (6)

---

Display This Question:  
 If Was it difficult to answer the previous question? = Yes

Q324 To what degree was it easy to answer the previous question?

Rather Easy (3)  
 Extremely Easy (6)

---

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Q325 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

Display This Question:  
If Are you certain about your answer to the question on the previous screen? = Yes

Q326 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

Display This Question:  
If Are you certain about your answer to the question on the previous screen? = No

Q327 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

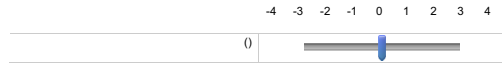
End of Block: Difficulty + Subjective Belief : Equality  
Start of Block: Difficulty + Subjective Belief : Trade-off Freedom VS Security

Q328 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)



Q329 As a reminder, freedom means that people have the possibility of expressing themselves and pursuing their desires and security means that citizens live safe lives. Compare both values. How important is one to the other?

Freedom is much more important.    Both values are equally important.    Security is much more important



Page Break

Q330 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q331 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
If Was it difficult to answer the previous question? = Yes



Q332 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
If Was it difficult to answer the previous question? = Yes



Q333 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q334 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

Display This Question:  
If Are you certain about your answer to the question on the previous screen? = Yes

Q335 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

Display This Question:  
If Are you certain about your answer to the question on the previous screen? = No

Q336 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

End of Block: Difficulty + Subjective Belief : Trade-off Freedom VS Security  
Start of Block: Difficulty + Subjective Belief : Trade-off Nature vs Prosperity

Q337 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)



Q338 As a reminder, nature-friendly means that one cares to protect the natural environment and prosperity means that people enjoy material well-being and financial flexibility. Compare both values. How important is one to the other?



Page Break

Q339 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

JS

Q340 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:

If Was it difficult to answer the previous question? = Yes

Q341 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:

If Was it difficult to answer the previous question? = Yes

Q342 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q343 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

Display This Question:

If Are you certain about your answer to the question on the previous screen? = Yes

Q344 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

Display This Question:

If Are you certain about your answer to the question on the previous screen? = No

Q345 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

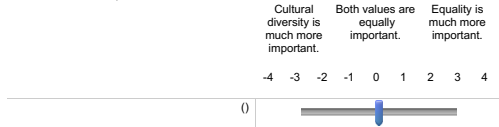
End of Block: Difficulty + Subjective Belief : Trade-off Nature vs Prosperity

Start of Block: Difficulty + Subjective Belief : Trade-off Cultural Diversity VS Equality

Q346 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

JS

Q347 As a reminder, cultural diversity describes the presence of groups with different backgrounds in society and equality means that everyone is given an equal chance. Compare both values. How important is one to the other?



Page Break

Q348 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q349 Was it difficult to answer the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q350 To what degree was it difficult to answer the previous question?

Rather Difficult (3)  
 Extremely Difficult (6)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q351 To what degree was it easy to answer the previous question?

Rather Easy (3)  
 Extremely Easy (6)

---

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Q352 Are you certain about your answer to the question on the previous screen?

Yes (2)  
 No (6)

---

**Display This Question:**  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q353 How certain are you?

Rather Certain (1)  
 Completely Certain (2)

---

**Display This Question:**  
 If Are you certain about your answer to the question on the previous screen? = No

Q354 How uncertain are you?

Rather Uncertain (1)  
 Completely Uncertain (2)

---

End of Block: Difficulty + Subjective Belief : Trade-off Cultural Diversity VS Equality  
 Start of Block: Difficulty + Subjective Belief : Dilemma Climate 1

Q355 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

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**JS**

Q356 Consider the following scenario: there has been a catastrophic event and two farmers have lost their entire livelihoods. A relief agency has arrived to help restore the farmers' land.

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However, its budget is limited, and one farm is harder to rehabilitate than the other due to the landscape. The agency has to decide who to help and considers two different options:

Option A: Spend the same amount of money on both farms, which will result in more rehabilitated land for farmer 1 (80 acres restored) than for farmer 2 (20 acres restored). Option B: Restore the same amount of land for both farmers (40 acres restored for each farmer), which will result in less restored land overall (80 acres in total).

In your opinion, which option should the agency choose?

Option A (1)  
 Option B (5)

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Page Break

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Q357 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q358 Was it difficult to answer the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q359 To what degree was it difficult to answer the previous question?

Rather Difficult (3)  
 Extremely Difficult (6)

---

**Display This Question:**  
 If Was it difficult to answer the previous question? = Yes

Q360 To what degree was it easy to answer the previous question?

Rather Easy (3)  
 Extremely Easy (6)

---

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Q361 Are you certain about your answer to the question on the previous screen?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = Yes

Q362 How certain are you?

Rather Certain (1)

Completely Certain (2)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = No

Q363 How uncertain are you?

Rather Uncertain (1)

Completely Uncertain (2)

End of Block: Difficulty + Subjective Belief : Dilemma Climate 1

Start of Block: Difficulty + Subjective Belief : Dilemma Climate 2

Q364 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

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**JS**

Q365 Consider the following scenario: the government of a flood-prone region has allocated a certain amount of money for disaster prevention. The government has to decide which

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mitigation policy to implement and is considering these two options:

Option A: Invest in short-term mitigation policies, which will save 100 people from drowning this year. Option B: Invest in long-term mitigation policies, which will prevent 200 people from drowning 50 years from now. In your opinion, which option should the government choose?

Option A (1)

Option B (5)

---

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Q366 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q367 Was it difficult to answer the previous question?

Yes (1)

No (11)

---

*Display This Question:*  
If Was it difficult to answer the previous question? = Yes

Q368 To what degree was it difficult to answer the previous question?

Rather Difficult (3)

Extremely Difficult (6)

---

*Display This Question:*  
If Was it difficult to answer the previous question? = Yes

Q369 To what degree was it easy to answer the previous question?

Rather Easy (3)

Extremely Easy (6)

---

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Q370 Are you certain about your answer to the question on the previous screen?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = Yes

Q371 How certain are you?

Rather Certain (1)

Completely Certain (2)

---

*Display This Question:*  
If Are you certain about your answer to the question on the previous screen? = No

Q372 How uncertain are you?

Rather Uncertain (1)

Completely Uncertain (2)

End of Block: Difficulty + Subjective Belief : Dilemma Climate 2

Start of Block: Difficulty + Subjective Belief : Dilemma Well-Being

Q373 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

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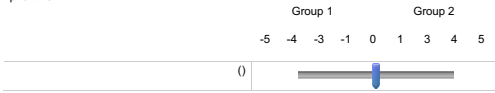
**JS**

Q374 Consider the following scenario: a society consists of two groups of citizens. Group 1 members are very rich, but feel sad and depressed, and could receive support in the form of

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psychological therapy. Group 2 members are very happy, but they are poor and could receive support in the form of social benefits. In your opinion, which group should the government prioritize?



Page Break

Q375 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q376 Was it difficult to answer the previous question?

- Yes (1)
- No (11)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q377 To what degree was it difficult to answer the previous question?

- Rather Difficult (3)
- Extremely Difficult (6)

Display This Question:  
If Was it difficult to answer the previous question? = Yes

Q378 To what degree was it easy to answer the previous question?

- Rather Easy (3)
- Extremely Easy (6)

Q379 Are you certain about your answer to the question on the previous screen?

- Yes (2)
- No (6)

Display This Question:  
If Are you certain about your answer to the question on the previous screen? = Yes

Q380 How certain are you?

- Rather Certain (1)
- Completely Certain (2)

Display This Question:  
If Are you certain about your answer to the question on the previous screen? = No

Q381 How uncertain are you?

- Rather Uncertain (1)
- Completely Uncertain (2)

End of Block: Difficulty + Subjective Belief : Dilemma Well-Being

Start of Block: Difficulty + Subjective Belief : Dilemma Wager

Q382 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

JS

Q383 Consider the following situation: on internet platforms, individuals can agree to make bets with their money. In your opinion, to what extent should your government regulate these betting platforms to limit losses?



Page Break

Q384 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q385 Was it difficult to answer the previous question?

Yes (1)  
 No (11)

---

*Display This Question:*  
 If Was it difficult to answer the previous question? = Yes

Q386 To what degree was it difficult to answer the previous question?

Rather Difficult (3)  
 Extremely Difficult (6)

---

*Display This Question:*  
 If Was it difficult to answer the previous question? = Yes

Q387 To what degree was it easy to answer the previous question?

Rather Easy (3)  
 Extremely Easy (6)

---

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Q388 Are you certain about your answer to the question on the previous screen?

Yes (2)  
 No (6)

---

*Display This Question:*  
 If Are you certain about your answer to the question on the previous screen? = Yes

Q389 How certain are you?

Rather Certain (1)  
 Completely Certain (2)

---

*Display This Question:*  
 If Are you certain about your answer to the question on the previous screen? = No

Q390 How uncertain are you?


Rather Uncertain (1)  
 Completely Uncertain (2)

---

End of Block: Difficulty + Subjective Belief : Dilemma Wager  
 Start of Block: Feeling + Objective Belief : Security

Q391 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---



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Q392 Suppose security means that citizens do not fear for their lives and properties. According to you, how important is this value for a good society?

Not Important (1)  
 Slightly Important (6)  
 Moderately Important (3)  
 Important (4)  
 Very Important (5)

---

Page Break

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Q393 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q394 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q395 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = No

Q396 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

---

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Q397 Are you certain that your answer to the question on the previous screen is right?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q398 How certain are you?

Probably Right (1)

Surely Right (2)

---

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

Q399 How uncertain are you?

Probably Wrong (1)

As likely right as wrong (2)


End of Block: Feeling + Objective Belief : Security

---

Start of Block: Feeling + Objective Belief : Freedom

Q400 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---



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Q401 Suppose freedom means that people have the possibility of expressing themselves and pursuing their desires. According to you, how important is this value for a good society?

Not Important (1)

Slightly Important (6)

Moderately Important (3)

Important (4)

Very Important (5)

---

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Q402 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q403 Do you feel ambivalent about your answer to the previous question?

Yes (1)

No (11)

---

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = Yes

Q404 To what degree do you feel ambivalent?

Rather Ambivalent (3)

Totally Ambivalent (6)

---

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = No

Q405 To what degree do you feel unambivalent?

Rather Unambivalent (1)

Totally Unambivalent (2)

---

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Q406 Are you certain that your answer to the question on the previous screen is right?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q407 How certain are you?

Probably Right (1)

Surely Right (2)

---

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

Q408 How uncertain are you?

Probably Wrong (1)

As likely right as wrong (2)


End of Block: Feeling + Objective Belief : Freedom

---

Start of Block: Feeling + Objective Belief : Culture

Q409 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---



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Q410 Suppose cultural diversity describes the presence of groups with different backgrounds in society. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q411 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q412 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

Display This Question:

If Do you feel ambivalent about your answer to the previous question? = Yes

Q413 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

Display This Question:

If Do you feel ambivalent about your answer to the previous question? = No

Q414 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)

Q415 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:

If Are you certain that your answer to the question on the previous screen is right? = Yes

Q416 How certain are you?

- Probably Right (1)
- Surely Right (2)

Display This Question:

If Are you certain that your answer to the question on the previous screen is right? = No

Q417 How uncertain are you?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Feeling + Objective Belief : Culture

Start of Block: Feeling + Objective Belief : Prosperity

Q418 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

JS

Q419 Suppose prosperity means that people are financially comfortable and enjoy material well-being. According to you, how important is this value for a good society?

- Not Important (1)
- Slightly Important (6)
- Moderately Important (3)
- Important (4)
- Very Important (5)

Page Break

Q420 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q421 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
If Do you feel ambivalent about your answer to the previous question? = Yes

Q422 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

**Display This Question:**  
If Do you feel ambivalent about your answer to the previous question? = No

Q423 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

---

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Q424 Are you certain that your answer to the question on the previous screen is right?

Yes (2)  
 No (6)

---

**Display This Question:**  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q425 How certain are you?

Probably Right (1)  
 Surely Right (2)

---

**Display This Question:**  
If Are you certain that your answer to the question on the previous screen is right? = No

Q426 How uncertain are you?

Probably Wrong (1)  
 As likely right as wrong (2)

---

End of Block: Feeling + Objective Belief : Prosperity  
Start of Block: Feeling + Objective Belief : Equality

Q427 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

**JS**

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Q428 Suppose equality means that everyone is given an equal chance. According to you, how important is this value for a good society?

Not Important (1)  
 Slightly Important (6)  
 Moderately Important (3)  
 Important (4)  
 Very Important (5)

---

Page Break

---

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Q429 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q430 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

**Display This Question:**  
If Do you feel ambivalent about your answer to the previous question? = Yes

Q431 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

**Display This Question:**  
If Do you feel ambivalent about your answer to the previous question? = No

Q432 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

---

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Q433 Are you certain that your answer to the question on the previous screen is right?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q434 How certain are you?

Probably Right (1)

Surely Right (2)

---

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

Q435 How uncertain are you?

Probably Wrong (1)


As likely right as wrong (2)

End of Block: Feeling + Objective Belief : Equality

Start of Block: Feeling + Objective Belief : Nature

Q436 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---



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Q437 Suppose being nature-friendly means that one seeks to protect the natural environment. According to you, how important is this value for a good society?

Not Important (1)

Slightly Important (6)

Moderately Important (3)

Important (4)

Very Important (5)

---

Page Break

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Q438 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---

Q439 Do you feel ambivalent about your answer to the previous question?

Yes (1)

No (11)

---

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = Yes

Q440 To what degree do you feel ambivalent?

Rather Ambivalent (3)

Totally Ambivalent (6)

---

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = No

Q441 To what degree do you feel unambivalent?

Rather Unambivalent (1)

Totally Unambivalent (2)

---

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Q442 Are you certain that your answer to the question on the previous screen is right?

Yes (2)

No (6)

---

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q443 How certain are you?

Probably Right (1)

Surely Right (2)

---

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

Q444 How uncertain are you?

Probably Wrong (1)


As likely right as wrong (2)

End of Block: Feeling + Objective Belief : Nature

Start of Block: Feeling + Objective Belief : Trade-off Nature vs Prosperity

Q445 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

---



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Q446 As a reminder, nature-friendly means that one cares to protect the natural environment and prosperity means that people enjoy material well-being and financial flexibility. Compare both values. How important is one to the other?



Page Break

Q447 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q448 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

Display This Question:

If Do you feel ambivalent about your answer to the previous question? = Yes

Q449 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

Display This Question:

If Do you feel ambivalent about your answer to the previous question? = No

Q450 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)

Q451 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:

If Are you certain that your answer to the question on the previous screen is right? = Yes

Q452 How certain are you?

- Probably Right (1)
- Surely Right (2)

Display This Question:

If Are you certain that your answer to the question on the previous screen is right? = No

Q453 How uncertain are you?

- Probably Wrong (1)
- As likely right as wrong (2)

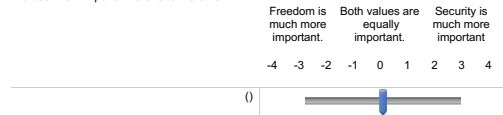
End of Block: Feeling + Objective Belief : Trade-off Nature vs Prosperity

Start of Block: Feeling + Objective Belief : Trade-off Freedom VS Security

Q454 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

JS

Q455 As a reminder, freedom means that people have the possibility of expressing themselves and pursuing their desires and security means that citizens live safe lives. Compare both values. How important is one to the other?



Page Break

Q456 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q457 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

Display This Question:  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q458 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

Display This Question:  
 If Do you feel ambivalent about your answer to the previous question? = No

Q459 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)

Q460 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:  
 If Are you certain that your answer to the question on the previous screen is right? = Yes

Q461 How certain are you?

- Probably Right (1)
- Surely Right (2)

Display This Question:  
 If Are you certain that your answer to the question on the previous screen is right? = No

Q462 How uncertain are you?

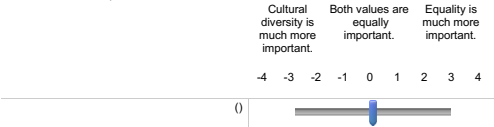
- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Feeling + Objective Belief : Trade-off Freedom VS Security  
 Start of Block: Feeling + Objective Belief : Trade-off Cultural Diversity vs Equality

Q463 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)



Q464 As a reminder, cultural diversity describes the presence of groups with different backgrounds in society and equality means that everyone is given an equal chance. Compare both values. How important is one to the other?



Page Break

Q465 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q466 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

Display This Question:  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q467 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

Display This Question:  
 If Do you feel ambivalent about your answer to the previous question? = No

Q468 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)



Q469 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q470 How certain are you?

- Probably Right (1)
- Surely Right (2)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

Q471 How uncertain are you?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Feeling + Objective Belief : Trade-off Cultural Diversity vs Equality

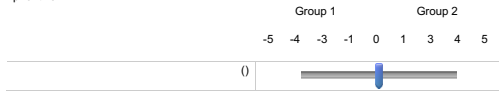
Start of Block: Feeling + Objective Belief : Dilemma Well-Being

Q472 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)



Q473 Consider the following scenario: a society consists of two groups of citizens. Group 1 members are very rich, but feel sad and depressed, and could receive support in the form of

psychological therapy. Group 2 members are very happy, but they are poor and could receive support in the form of social benefits. In your opinion, which group should the government prioritize?



Page Break

Q474 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)

Q475 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = Yes

Q476 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

*Display This Question:*  
If Do you feel ambivalent about your answer to the previous question? = No

Q477 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)

Q478 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = Yes

Q479 How certain are you?

- Probably Right (1)
- Surely Right (2)

*Display This Question:*  
If Are you certain that your answer to the question on the previous screen is right? = No

Q480 How uncertain are you?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Feeling + Objective Belief : Dilemma Well-Being

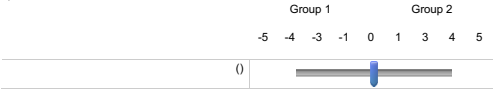
Start of Block: Feeling + Objective Belief : Dilemma Wager

Q481 Timing  
First Click (1)  
Last Click (2)  
Page Submit (3)  
Click Count (4)



Q482 Consider the following scenario: a society consists of two groups of citizens. Group 1 members are very rich, but feel sad and depressed, and could receive support in the form of

psychological therapy. Group 2 members are very happy, but they are poor and could receive support in the form of social benefits. In your opinion, which group should the government prioritize?



Page Break

Q483 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

Q484 Do you feel ambivalent about your answer to the previous question?

- Yes (1)
- No (11)

Display This Question:

If Do you feel ambivalent about your answer to the previous question? = Yes

Q485 To what degree do you feel ambivalent?

- Rather Ambivalent (3)
- Totally Ambivalent (6)

Display This Question:

If Do you feel ambivalent about your answer to the previous question? = No

Q486 To what degree do you feel unambivalent?

- Rather Unambivalent (1)
- Totally Unambivalent (2)

Q487 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)
- No (6)

Display This Question:

If Are you certain that your answer to the question on the previous screen is right? = Yes

Q488 How certain are you?

- Probably Right (1)
- Surely Right (2)

Display This Question:

If Are you certain that your answer to the question on the previous screen is right? = No

Q489 How uncertain are you?

- Probably Wrong (1)
- As likely right as wrong (2)

End of Block: Feeling + Objective Belief : Dilemma Wager

Start of Block: Feeling + Objective Belief : Climate 1

Q490 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

JS

Q491 Consider the following scenario: there has been a catastrophic event and two farmers have lost their entire livelihoods. A relief agency has arrived to help restore the farmers' land.

However, its budget is limited, and one farm is harder to rehabilitate than the other due to the landscape. The agency has to decide who to help and considers two different options:

Option A: Spend the same amount of money on both farms, which will result in more rehabilitated land for farmer 1 (80 acres restored) than for farmer 2 (20 acres restored). Option B: Restore the same amount of land for both farmers (40 acres restored for each farmer), which will result in less restored land overall (80 acres in total). In your opinion, which option should the agency choose?

- Option A (1)
- Option B (5)

Page Break

Q492 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q493 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q494 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = No

Q495 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

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Q496 Are you certain that your answer to the question on the previous screen is right?

Yes (2)  
 No (6)

---

*Display This Question:*  
 If Are you certain that your answer to the question on the previous screen is right? = Yes

Q497 How certain are you?

Probably Right (1)  
 Surely Right (2)

---

*Display This Question:*  
 If Are you certain that your answer to the question on the previous screen is right? = No

Q498 How uncertain are you?

Probably Wrong (1)  
 As likely right as wrong (2)

End of Block: Feeling + Objective Belief : Climate 1  
 Start of Block: Feeling + Objective Belief : Climate 2

Q499 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

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**US**

Q500 Consider the following scenario: the government of a flood-prone region has allocated a certain amount of money for disaster prevention. The government has to decide which

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mitigation policy to implement and is considering these two options:

Option A: Invest in short-term mitigation policies, which will save 100 people from drowning this year. Option B: Invest in long-term mitigation policies, which will prevent 200 people from drowning 50 years from now. In your opinion, which option should the government choose?

Option A (1)  
 Option B (5)

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Page Break

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Q501 Timing  
 First Click (1)  
 Last Click (2)  
 Page Submit (3)  
 Click Count (4)

---

Q502 Do you feel ambivalent about your answer to the previous question?

Yes (1)  
 No (11)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = Yes

Q503 To what degree do you feel ambivalent?

Rather Ambivalent (3)  
 Totally Ambivalent (6)

---

*Display This Question:*  
 If Do you feel ambivalent about your answer to the previous question? = No

Q504 To what degree do you feel unambivalent?

Rather Unambivalent (1)  
 Totally Unambivalent (2)

---

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Q505 Are you certain that your answer to the question on the previous screen is right?

- Yes (2)  
 No (6)

Display This Question:

If Are you certain that your answer to the question on the previous screen is right? = Yes

Q506 How certain are you?

- Probably Right (1)  
 Surely Right (2)

Display This Question:

If Are you certain that your answer to the question on the previous screen is right? = No

Q507 How uncertain are you?

- Probably Wrong (1)  
 As likely right as wrong (2)

End of Block: Feeling + Objective Belief : Climate 2

Start of Block: After Survey feedbacks

JS

Q513 In your opinion, was the survey politically skewed?

- Yes (1)  
 No (5)

End of Block: After Survey feedbacks

## B.4 Further Uses of the NUS

### B.4.1 The Social Progress Scale

### B.4.2 A Consistency Scale

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(1)

	Security	Freedom	Nature	Equality	Prosperity	Culture	Political View
Security	1						
Freedom	0.337***	1					
Nature	0.434***	0.310***	1				
Equality	0.481***	0.456***	0.490***	1			
Prosperity	0.332***	0.342***	0.401***	0.313***	1		
Culture	0.265**	0.257**	0.592***	0.491***	0.314***	1	
Political View	-0.0622	-0.0739	-0.0287	0.0725	-0.107	0.156	1
Observations	144						

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\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table B.7: PAIRWISE SPEARMAN CORRELATION OF SOCIAL VALUESS

### B.4.3 A Complementary Scale