

CHAPTER

3

**Harnessing human
development
to navigate
uncertain times**

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There is promise and peril in uncertainty. Tipping the scales towards promise is up to us.

But how do we do this?

This chapter doubles down on human development writ large. Wellbeing achievements matter, but more is needed to expand people's agency and freedoms to help us navigate and flourish in uncertain times.

This chapter also argues for widening the vista on human behaviour, going beyond models of rational self-interest to include emotions, cognitive biases and the critical roles of culture.

Enhancing human development in uncertain times: The end, but also the means, to navigate uncertainty

Being sensitive to what is happening in the world today implies taking notice of a novel uncertainty complex that is unsettling people’s lives, as chapters 1 and 2 documented. But uncertainty, engendering the possibility of change, can also mobilize action and be a source of hope. It is not that more unpredictability is better—but that the glaring, and often increasing, injustices prevailing today call for change. So does the imperative to ease planetary pressures. They both call for transformation, as does the 2030 Agenda for Sustainable Development, subtitled “Transforming Our World.”

Transformation is an opportunity to shape a world that is more just for people living today and in the future—by addressing behavioural inadequacies and institutional and policy gaps.¹ So how are the deficiencies to be addressed?² Behavioural change and institutional and policy reform are mutually interdependent: institutional choices and their effectiveness in shaping better outcomes are contingent on behaviours and on varying social, economic, political and cultural circumstances.³ The interaction of behaviours and institutions is shaped by public reasoning and procedures of social choice (figure 3.1).⁴ Given that outcomes are contingent on behaviour and circumstances, how can social choice be shaped so that it advances a transformation to a more just world while easing planetary pressures?

This is where doubling down on human development comes in. Advancing human development, the

aspiration behind every Human Development Report, is not only the end but also the means for people to strive for change that leads to better outcomes by harnessing diverse and plural views in productive ways. Human development is about expanding capabilities, so equitably expanding capabilities is central in assessing development progress and evaluating policies.⁵

Capabilities are not exhausted with wellbeing achievements. One key distinction relates to the difference between advancing a person’s wellbeing and promoting a person’s agency (spotlight 3.1; see also spotlight 3.2).

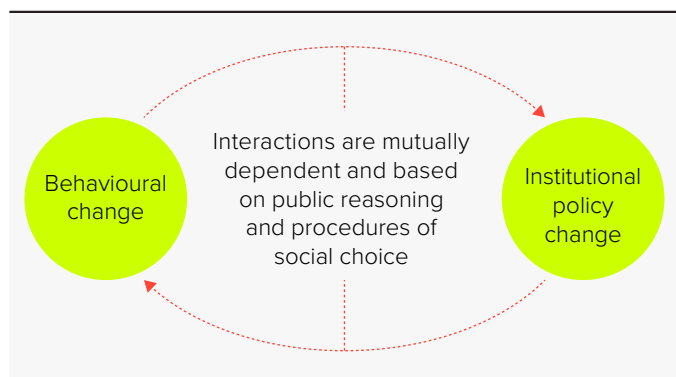
Doubling down on human development (wellbeing and agency) opens the space to explore options to shape our future. Many institutions are designed and policies implemented based on specific behavioural assumptions (that people are rational only if they pursue the maximization of their individual wellbeing while assuming that everyone else is doing the same). But it is possible to draw on a richer understanding of human behaviour and motivation.⁶ Central to the human development approach is the emphasis on people’s ability to participate individually and collectively in public reasoning—subjecting prevalent beliefs and purported reasons to critical examination and retaining those to be sustained after doing so.

The pursuit of human development recognizes that people have plural identities and affiliations and value a plurality of dimensions, often simultaneously. Broadening the vista of how people behave, briefly reviewed below, suggests how an approach centred on the pursuit of human development may be the means to navigate uncertainty. Human development leverages a richer understanding of how people behave as well as the potential for social choice, through individual and public scrutiny of beliefs and reasons, to marshal institutions and public policies that advance justice while easing planetary pressures. How to do so in practice is the subject of part II of the Report.

Widening the vista of human behaviour

Many institutional designs and policy recommendations assume that people behave as “rational”⁷ agents (see spotlight 3.3). Much can be accomplished by using this assumption to descriptively understand many social and economic processes and to

Figure 3.1 Behavioural change and institutional reform are mutually dependent



Source: Human Development Report Office.

normatively clarify the implications of different social choices (column 1 in table 3.1). But descriptively, this assumption corresponds to a very limited way of representing how people make choices. For instance, it poses very high demands on people’s cognitive processing power, which has long motivated alternative framings of bounded rationality.⁸ It also corresponds to a very narrow understanding of the role of the social context,⁹ which has motivated arguments specifying how social embeddedness matters.¹⁰ The explosion of behavioural economics and behavioural science has documented many deviations in actual human behaviour from what this assumption would predict.¹¹ The role of emotions, and how people come to reach and stick to beliefs, has also been increasingly explored. This has provided a broader framework for understanding human behaviour and why it sometimes seems hard for people to act individually and collectively in the face of uncertainty. This broader understanding widens the set of justifications and inspiration for policies and institutions (column 2 in table 3.1).

The human development approach’s consideration of agency alongside wellbeing highlights the relevance of expanding beyond the assumption that choices are driven exclusively by the pursuit of the welfare of individuals, interest groups or countries—recognizing that this pursuit does matter and often dominates.¹² But it need not be the exclusive driver of choice. Amartya Sen described people who are assumed to always exclusively pursue egoistically

individual payoffs while assuming that everyone else is doing the same as “rational fools,”¹³ because mutual choices based on this assumption often lead to suboptimal outcomes for all involved.¹⁴ He argued further that elements such as the choice process (including the menu of available options to choose from) and the fact that choices may have to be made even if a judgment has not been fully completed also point to a richer set of determinants of choice than maximizing individual material interests. That opens space for “the sociological exploration of the complex values that influence people’s conduct.”¹⁵

Recent evidence from cognitive neuroscience nuances the commonly held view that what people value is simply what gives them happiness, rewards or pleasantness. People can value something because of the goals they are pursuing, and these goals (and therefore, what they value) can change with circumstances (for example, a compass is more important than a diamond for someone lost in the desert). This goal-dependent usefulness is critical in guiding behaviour and constructing value—and is particularly important when circumstances change.¹⁶ But what people value is not only associated with need; it can also be the result of notions of responsibility.¹⁷ The notion of responsibility could be influenced by social norms of conduct or individual ethical reflection but takes us to the realm of agency. In particular, Sen argued that responsibility could be crucial in what he called the “operation of ‘environmental values,’ which is one of the reasons why the market analogy

Table 3.1 Behavioural assumptions: Determinants and scope of interventions to shape choices

	“Rational” agent	Behavioural agent	Encultured agent
Individual determinants of choice	Preferences (stable, autonomous); beliefs (isolated from preferences, based on collecting and processing information)	Preferences (can be fickle), beliefs (can be motivated), plus emotions (can change preferences and beliefs)	Preferences, beliefs, emotions shaped by social constructs (cultural mental models)
Cognition	Maximizes utility and assumes everyone else is doing the same	Cognitive limitations and biases (endowment effect) universal and hardwired, social context (norms, social preferences)	Culture shapes psychological traits; culture contingent on context and evolving over time
Social determinants of choice	Prices, rules of the game (emerge from a unique equilibrium)	Prices, rules of the game, plus social context (norms, framing of choices)	Experience and exposure to culture, which creates mental models (categories)
Scope of actions to shape choices	Incentives to correct market failures (externalities), governance (improve the rules of the game)	Incentives, governance, plus choice architecture (nudge, prime), social norms	Incentives, governance, social context, plus social identities, worldviews, narratives (which prime certain behaviours)

Source: Human Development Report Office based on Hoff and Stiglitz (2016).

is often quite deceptive in assessing ‘existence values’ of what people try actively to preserve in nature.”¹⁸

“People tend to make choices under what is called narrow framing. That is, they do not evaluate all possible outcomes and weigh them against one another but focus on one or a few that are more salient for different reasons

The insights briefly reviewed here are not new, but today’s uncertain times make them more relevant—and may, in fact, call for completely new analytical tools (spotlight 3.4; see also spotlight 3.5). Going beyond the “rational” agent and the behavioural agent and recognizing the role of the broader social context in shaping people’s choices gets us to the enculturated agent (column 3 in table 3.1).¹⁹ This provides an even wider scope of interventions, one that includes a more prominent account of the role of the social context and the potential of widening ways of intervening to confront today’s uncertain times. In building this argument, the chapter explains the relevance of the human development approach to seize that potential.

A psychologically richer description of behaviour under uncertainty

One example where the deviations of the rational choice model matters for the analysis in this Report relates to how people make choices under uncertainty. In many cases choices appear to be based on the evaluation of changes in wellbeing from a certain reference point,²⁰ as opposed to being based on the evaluation of levels of wellbeing.²¹ There might be a deep biological and cognitive foundation for this,²² given that human perceptual systems are broadly adaptive: what we find cold or hot or bright or dark is driven in part by a contrast with a frame of reference, typically our recent experience with temperature or light.²³

People often seem to give greater weight to losses than gains when making choices. That is, they are often more reluctant to choose an outcome where there is a chance of losing \$100 than one where there is the same chance of gaining the same amount—loss aversion.²⁴ This can account for the status quo bias,²⁵ or the endowment effect, where people ask for more

compensation to sell something they already own than what they would be willing to pay if they did not own it yet—a rational agent would have no reason to value the same thing differently.²⁶ A related behaviour is probability weighting, where people attribute a higher probability to events that have actually very low probability of occurring (say, winning the lottery), while assuming that events with very high probability of occurring are less likely than they are in reality.²⁷

Something that sociologists have emphasized for a long time is that people often look at money as something other than a fungible and homogeneous flow of income. In many cases they construct mental accounts attributing different meanings and values to different flows of income depending on factors ranging from how the money was earned to what it was meant for.²⁸ Money also serves different functions, from offering for a sense of autonomy to being valued for the security that it provides for the future, which can vary across cultural contexts and across the income distribution.²⁹ Finally—and the list could go on even for this narrow set of behaviours linked to choice under uncertainty—people tend to make choices under what is called narrow framing.³⁰ That is, they do not evaluate all possible outcomes and weigh them against one another but focus on one or a few that are more salient for different reasons (because they are surprising, say).³¹

To illustrate how this set of deviations from the rational choice model can matter in the context of changes to address the challenges discussed in this Report, imagine the following scenario. A policy-maker shows how existing fossil fuel subsidies are inefficient and regressive, are polluting the air and could be phased out and replaced by income transfers or public spending on health and education, at the same time giving incentives for less energy-intensive investments and innovations that help to fight climate change.³²

How would a behavioural agent look at the proposal? Possible deviations from rational choice (interlinked, not necessarily sequential and separate) include the following. First, the subsidy becomes salient (the agent might not even have known before that something like this was in place) and a primary focus of valuation (narrow framing). Second, the endowment effect would suggest that the behavioural agent is not inclined to simply accept losing something she

already has. Third, as appealing as the potential gains from the policy are to the climate change-aware behavioural agent, loss aversion can dominate, and the prospective gains might not compensate for the prospective losses.³³ Fourth, mental accounts mean that all the money may already be destined for purposes and goals from which the agent will not want to deviate. Fifth, even though the policymaker is of unimpeachable integrity and very likely to follow through with the compensation scheme, probability weighting could come to the fore, leading the behavioural agent to believe that it is not that likely.

“Now widely recognized and accepted, cognitive biases have opened a much richer understanding of human behaviour and a wider scope for the range of policies and institutions that may be considered beyond those that emanate from the rational choice model

At a minimum the behavioural agent could be expected to be less supportive, if not outright oppose, phasing out the fossil fuel subsidy, independent of political economy and framing effects. In reality, powerful economic interests seek to sway public opinion against removing fossil fuel subsidies to keep their economic and political power,³⁴ possibly crafting narratives that build on some of these behavioural insights. The scenario does not imply that the behavioural agent is beyond the reach of reason: each of the steps could be critically scrutinized, even if this could be complex and cognitively demanding. Nor is it inevitable that everyone will oppose the removal of fossil fuel subsidies—quite the contrary, as the discussion below suggests. This scenario is meant simply to illustrate how a psychologically richer description of behaviour under uncertainty opens space to consider a wider scope beyond material incentives to shape people’s choices.³⁵

Now widely recognized and accepted, cognitive biases (with reference to what would be expected behaviour as a “rational” agent) and cognitive limitations (people are unable to process as much information as would need to happen under a rational choice model) have opened a much richer understanding of human behaviour. This understanding can widen the range of policies and institutions that

may be considered beyond those that emanate from the rational choice model. The implications continue to be explored in fields ranging from optimal taxation³⁶ to issues that draw on progress in behavioural economics as an example of the “golden age of social science.”³⁷ Prospect theory (which accounts for several of the biases associated with behaviour under uncertainty)³⁸ has been used for insights from politics³⁹ to international relations.⁴⁰ This has inspired policy interest in “nudging” or “priming” interventions that preserve the freedom of choice but change the choice architecture in ways that seek to “correct” for cognitive biases.⁴¹ These nonfiscal and nonregulatory actions steer people to behave in a certain way but fully preserve freedom of choice. One example is the Save More Tomorrow initiative, behavioural interventions nudging people to save more, whose principles have been incorporated in the United States’ 2006 Pension Protection Act.⁴²

No single unified model accounts for all the documented cognitive biases.⁴³ So an intervention seeking to address one type of bias may affect behaviour in a negative way elsewhere.⁴⁴ Some behavioural interventions can even become too salient and backfire, such as displaying death counts in street signs to encourage safer driving, which has been shown to increase car crashes.⁴⁵ Nudges aim at intervening in situations where people think fast and automatically, implying that they make decisions in a different way from when they are able to think slowly and reflectively.⁴⁶ But this dichotomy may imply that opportunities are missed by recognizing that it is possible to incorporate elements of reflection even in nudges⁴⁷ or to boost people’s ability to make decisions, enhancing their agency in making choices.⁴⁸ The effectiveness of nudges and boosts may also vary depending on the cultural context.⁴⁹

More than reviewing all relevant biases and their implications, the purpose here is to suggest that cognitive biases and limitations often shape how people behave, particularly in contexts of uncertainty. But that behaviour, even if it deviates from what the rational choice model predicts, does not imply that people are lacking in reason—much of the behaviour may actually be preferable, particularly to deal with uncertainty.⁵⁰ Thus, awareness of these considerations has heightened relevance when confronting uncertainties. A promising development with potentially

far-reaching policy implications is identifying fundamental cognitive processes that can account for many of the observed behavioural choices under uncertainty (spotlight 3.6).

When emotions make preferences fickle

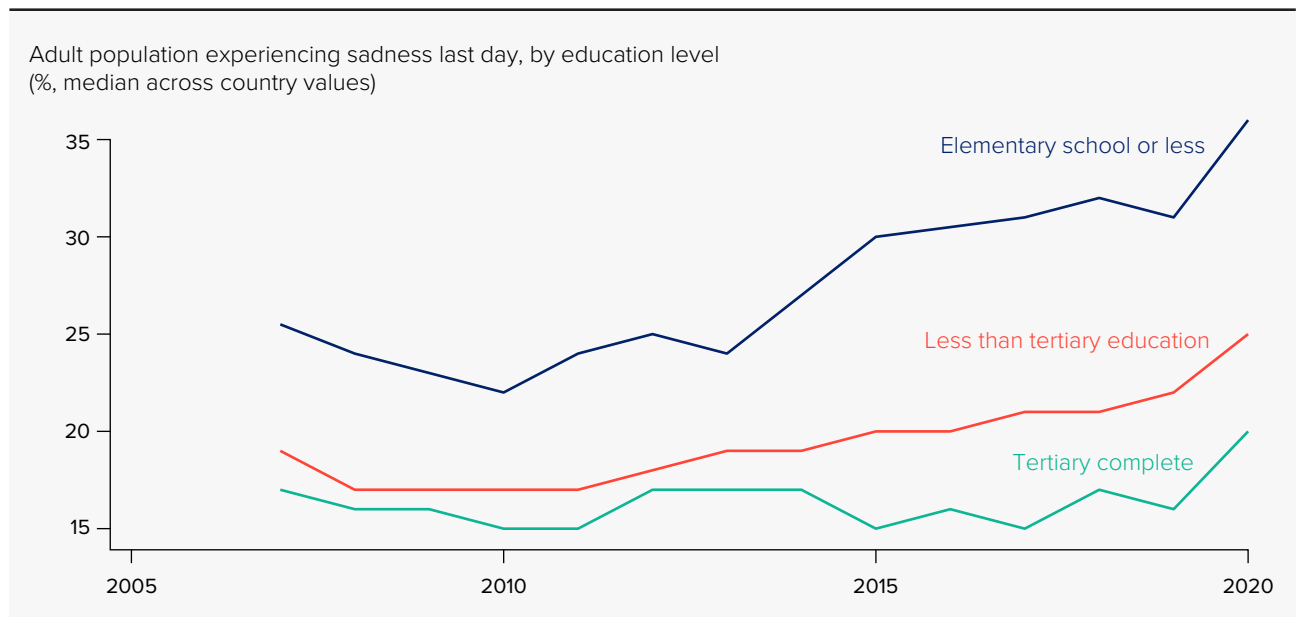
The emotion of fear—triggered by the belief of a threat—tends to make people more risk averse, while anger tends to make them more risk seeking.⁵¹ This is just an example of how beliefs can change preferences through emotions.⁵² Rational choice theory assumes not only that beliefs and preferences both matter but also that they are delinked. Emotions result from gathering information, learning and experience.⁵³ Thinking and feeling are simultaneous processes that cognitively shape an individual’s perception, attention, learning, memory, reasoning and problem solving—affecting even the direction of cognitive biases. For instance, sadness—growing globally over the last decade, with more intensity among the less educated—often reverses the endowment effect: when people are sad, choice prices exceed selling prices (figure 3.2).⁵⁴ Sadness can also heighten addictive substance use.⁵⁵ In addition, anger can account for major changes in political history that

rational choice alone cannot explain,⁵⁶ and emotions more broadly can be decisive in accounts of historical action and thought.⁵⁷ Hope can lead to choices that enhance health⁵⁸ and mediate the relation between income and subjective measures of wellbeing.⁵⁹

The relevance of emotions seems to have deep neuro-anatomical foundations, as seen in the way people with different types of brain injuries make decisions.⁶⁰ Recent neuroscience findings suggest that rational decisionmaking may depend on prior accurate emotional processing.⁶¹ Even though some of the specific findings may not be conclusive,⁶² a growing body of evidence documents multiple ways that emotions matter when making choices,⁶³ generating “the rise of affectivism.”⁶⁴ A full emotion-imbued model of choice has been proposed.⁶⁵

An instinctive sentiment of anger that can trigger a risky course of action—which, in insight and after critical reasoning is seen as harmful to oneself or others—can be dangerous. By contrast, emotions are often triggered by reasoned understanding of connections—for instance, the cause of manifest injustice that makes one angry about discrimination or torture. Angry rhetoric in the writings of Mary Wollstonecraft in the 19th century against the inequalities suffered by women was followed by a strong appeal to reason for the equality of rights of all human beings.⁶⁶

Figure 3.2 People are experiencing more sadness



Source: Human Development Report Office based on data from Gallup.

That emotions matter for behaviour is not, however, a negation of rationality or reason or a justification for not subjecting emotions to reasoned appraisal in the same way that motivations and beliefs need to be.

Motivated beliefs and motivated reasoning: When more and better information may not be enough

Preferences, goals and motivations can directly affect beliefs, as a rapidly growing literature on motivated beliefs and motivated reasoning documents—people distort how they process new information in the direction of beliefs they favour.⁶⁷ In rational choice, beliefs are based on rationally processing information, and people cannot be systematically fooled. But beliefs also fulfil psychological and other needs, with implications for behaviour and choice.

One example of motivated reasoning is wishful thinking, which seems to have a positive valence value, making people feel better and more optimistic about the world, thus also having an emotional component. But it also has a functional value, allowing people to persist in a task under adversity.⁶⁸ However, it may also support dangerous behaviours, such as persisting in smoking, believing that one's health will not be affected, despite all the scientific evidence to the contrary.⁶⁹

Beliefs about oneself or the world can persist despite information that would suggest (in a rational choice model) the need to update beliefs. Such persistence can take place through many mechanisms of self-deception or dissonance reduction.⁷⁰ The propensity to rationalize away evidence that clashes with beliefs has been documented to be higher in some instances for more analytically sophisticated and better educated individuals, so one cannot assume that the importance of motivated cognition will decrease as levels of education increase.⁷¹ Evidence also suggests that motivated reasoning is persistent in political leaders, who rely more on prior political attitudes and less on new policy information than the general public.⁷²

Challenging beliefs that are deeply held because they are associated with a person's goals or commitments—for example, religious, moral or a salient aspect of a person's identity or politics—can trigger strong emotional responses of anger or even

hate and disgust.⁷³ Motivated reasoning can lead to beliefs becoming more polarized around issues such as immigration, income mobility and how to handle crime.⁷⁴ That is, some of the cleavages in beliefs are tied not necessarily to material interests but to different worldviews or social identity. And when these acquire more salience, polarization can become more correlated across issues, leading to “belief-value constellations,”⁷⁵ where people associate more with a group based on shared ideas rather than economic interests.⁷⁶

“Recognizing motivated beliefs can provide a broader understanding not only of economic choices but also of social and political dynamics that cannot be accounted for by assuming that voters and pressure groups pursue their material self-interest and update their beliefs on the basis of new evidence

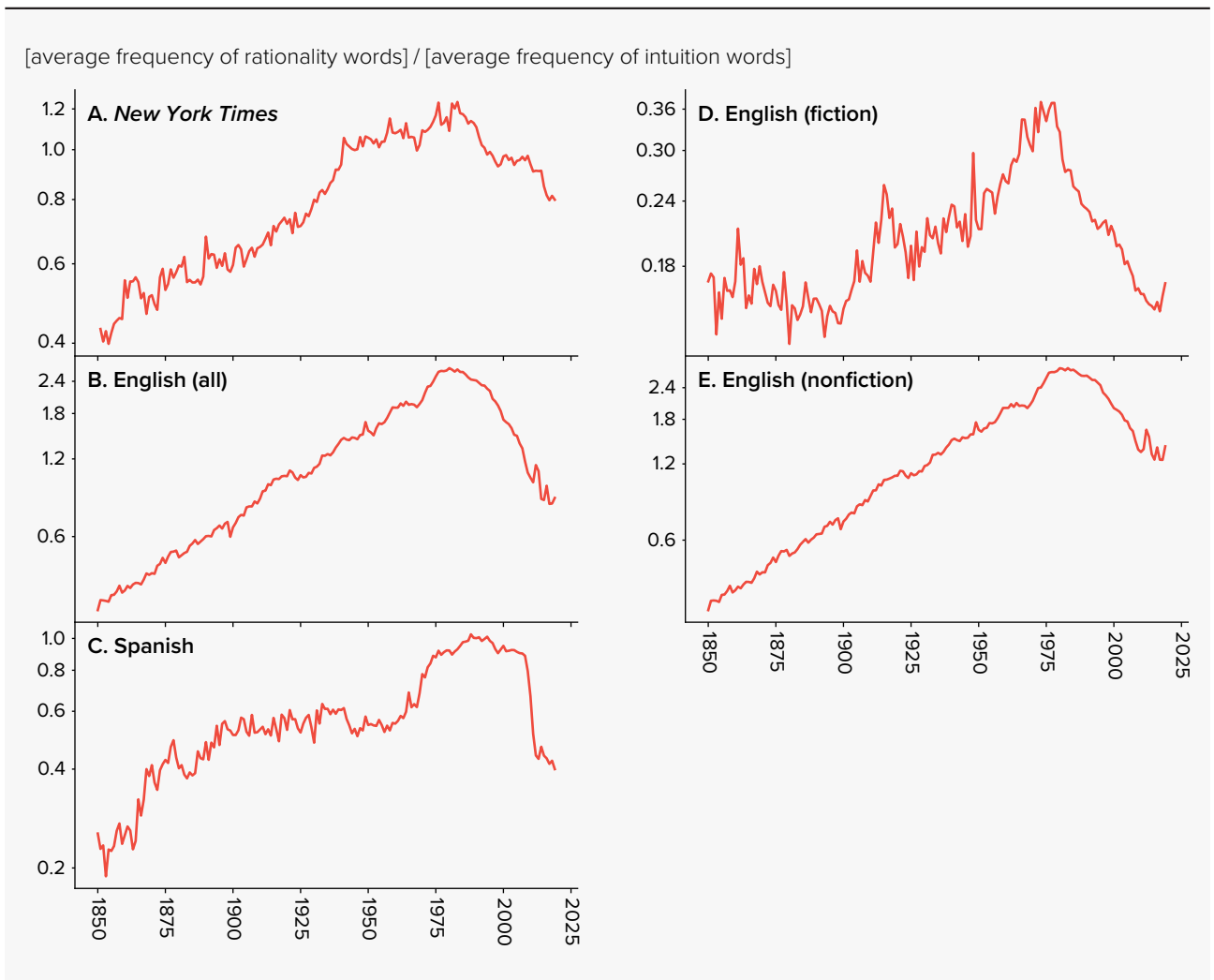
One illustration of the potential implications of motivated reasoning is associated with (epistemic) norms that shape what people consider to be true, in addition to individual reasoning.⁷⁷ Children at very young age (age 4, with some rudimentary aspects emerging during infancy) can determine beliefs that are the norm in their context and identify false beliefs—according to the prevailing social norm.⁷⁸ Different groups may assume different epistemic norms that place different levels of trust on different sources of information, institutions, experts and leaders. Individuals may publicly reject or avoid certain behaviours (for instance, attitudes towards vaccines or the use of masks to avoid the spread of Covid-19)⁷⁹ to signal their commitment to a particular group and the belief-value constellation that it holds.⁸⁰ This may “create a tension between epistemic norms that reliably lead to true beliefs and those that effectively perform [...] signaling functions associated with social identity and group membership.”⁸¹

Thus, recognizing motivated beliefs can provide a broader understanding not only of economic choices but also of social and political dynamics that cannot be accounted for by assuming that voters and pressure groups pursue their material self-interest and update their beliefs on the basis of new evidence.⁸² Another very compelling application of motivated beliefs could be how people may convince themselves

that climate change is not going to be too bad purely because it helps them justify not taking action.⁸³ Understanding motivated reasoning provides a lens to understand some dynamics of polarization noted in chapter 1 and explored further in part II of the Report. How goals and values can motivate beliefs may be relevant when we confront novel uncertainties and particularly when there is a reversal in the importance given in public debate to sentiments rather than reasons. Since the 1980s there has been a reversal in a trend dating from the mid-19th century of rational language dominating sentiment-laden language in fact-based argument (figure 3.3).⁸⁴

This evidence does not suggest that beliefs are never or even infrequently updated based on new information. But it shows how motivated cognition can provide a richer understanding of human behaviour.⁸⁵ It also shows that polarization should not be seen as inevitable and preordained—and that the affirmation of a more salient social identity, above all others, should not be seen to uniquely define a person and thus be accepted without scrutiny.⁸⁶ Even more important from a human development perspective, individual reasoning and public deliberation are powerful drivers of social change—people are not helpless prisoners of one single social identity, of their emotions

Figure 3.3 The Great Reversal from rationality to sentiment in fact-based argument



Note: Sun (2022) suggests a different interpretation of the changes in language, associating them with a shift from more formal to more informal terms, but Scheffer and others (2022) argue that their interpretation holds. Ratio of intuition- to rationality-related words in the *New York Times* (A) and various book corpora represented in the Google n-gram database (B–E), with the lines portraying the ratio of the mean relative frequencies of sets of rationality-related and intuition-related flag words used in the analysis.

Source: Scheffer and others 2021.

or of motivated beliefs. Indeed, harnessing diversity of goals, motivations, values, beliefs and emotions depends on how behaviours interact with institutions and the procedures of social choice that can harness plurality in productive ways, as explored next.

Behavioural and institutional change: Mobilizing human development towards a hopeful future

As argued earlier, behavioural changes and institutional reforms are interdependent. And the richer understanding of human behaviour just reviewed suggests much more scope for change in both than may be commonly assumed. This is central to explore how to draw from a context of uncertainty to mobilize action towards a more hopeful future. That scope expands even further with the understanding that cognitive biases and limitations are not hardwired and universal to all humans in the same way⁸⁷—and are not necessarily an inherent part of our psychology.⁸⁸ Similarly, the role of emotions in changing preferences and driving behaviour is also context contingent. Emotions play a role in people’s conforming with social norms, but the salience of doing so to avoid either shame or guilt depends on the cultural context.⁸⁹ It has been argued that socialization and cultural context determine which emotions matter for behaviour and how.⁹⁰ And preferences and the motivations that may drive certain beliefs—across domains, from attitudes towards risk to preferences for equity and income distribution—vary widely across individuals and across countries.⁹¹

Bringing culture back in: How the social context matters

Recognizing culture (discussed below) is only part of a broader and more fundamental point: the need to give greater salience to how social contexts shape preferences, perceptions and cognition—not only what people do but also who people believe they are. That takes us from the rational agent and beyond the behavioural agent to the encultured agent (see table 3.1).⁹² Recent insights from sociology have reconceptualized culture from something that stays in the background of political and economic life towards a much more dynamic, fluid and adaptable toolkit.

This implies a two-way causal effect between culture and institutions.⁹³ It also means that people select strategically from the toolkit to provide meaning, interpretation and justification for their behaviour.⁹⁴ Studies of poverty that focus on how scarcity taxes people’s cognitive capacities and functions⁹⁵ would benefit from considering how people perceive and identify needs based on what they take from the cultural toolkit available to them.⁹⁶ When uncertainty becomes salient, different groups of young people buffer themselves against a murky future in different ways, drawing on the cultural toolkits available to them.⁹⁷ This perspective on culture is inspiring fresh takes on economic development, exploring how highly adaptable and fluid cultural configurations interact with political power and economic incentives to generate different social, economic and political outcomes.⁹⁸

An emerging account of how cultural variation takes hold comes from the field of cultural evolution,⁹⁹ even if it remains a hotly debated perspective.¹⁰⁰ In this account psychological traits coevolve with the broader cultural context in combinations that make societies better adapted to different circumstances over time.¹⁰¹ These perspectives also suggest that what is assumed to be universal human behaviour is often based on what is observed from a sliver of humanity.¹⁰² Thus, there is a much broader diversity of behaviours, psychology and institutions across the world and over time. And there is even more variation within than across cultures.¹⁰³

“Recognizing culture is only part of a broader and more fundamental point: the need to give greater salience to how social contexts shape preferences, perceptions and cognition—not only what people do but also who people believe they are

Culture, in these accounts, “represents information stored in people’s heads that got there through cultural learning or direct experience induced by various cultural products, like norms, technologies, languages or institutions.”¹⁰⁴ Cultures can vary in systematic ways on dimensions ranging from how tight cultural norms are enforced¹⁰⁵ to how individualistic they are.¹⁰⁶ But cultures cannot be firmly categorized in different boxes—and even less so in dichotomous

ways, such as associating individualistic cultures with “the West” and interdependent cultures with “the East.”¹⁰⁷

In cultural evolution accounts, cultural change is driven largely by the emergence of culture and psychological traits that are better adapted to cope with the new environment.¹⁰⁸ Over time this has resulted in culture-psychology combinations that have enabled people to cooperate at larger scales—millions of strangers in today’s societies—devising specific social arrangements (institutions, policies) resulting in ever more complex and sophisticated technologies, leading to higher income and material wellbeing.¹⁰⁹ Cultural evolution is one way of accounting for changes in moral values, with variations around the world associated in part with how different societies have responded to the problem of cooperation.¹¹⁰

A mismatch of behavioural patterns and institutional settings in today’s uncertain times?

Culture is both persistent, which helps people navigate and make decisions in their social world, and changeable, particularly when that social world or the environment around it is altered.¹¹¹ When uncertainty is heightened or changes, the potential for a cultural mismatch increases between those relying on prevailing culture and those attempting to innovate to adapt to the new circumstances.¹¹² Cultural change can play a role in how the social context influences the emergence of behaviour and institutional configurations. But as Amartya Sen argued: “Paying reflective ethical attention to behaviour neither nullifies, nor is nullified by, the importance of evolutionary forces.”¹¹³ Ethical reasoning has been described as a powerful way of “escaping from tribalism,” manifest in patterns of moral progress that are less and less exclusionary of groups of people.¹¹⁴ It also offers opportunities for norm-based governance to address global collective action challenges, such as climate change.¹¹⁵

Evolutionary processes and ethical reasoning may have interacted in reaching the current prevailing configurations of behaviours and institutions. But today’s uncertain times have novel elements that present fundamentally new challenges, and those configurations may not be a good match. Some of the challenges of the Anthropocene are existential;

others require cooperation not only with people alive today but also with people who do not yet exist—that is, with the future.¹¹⁶ The Anthropocene reality of shared challenges at the planetary scale requires cooperation—or, at a minimum, coordination—across countries.

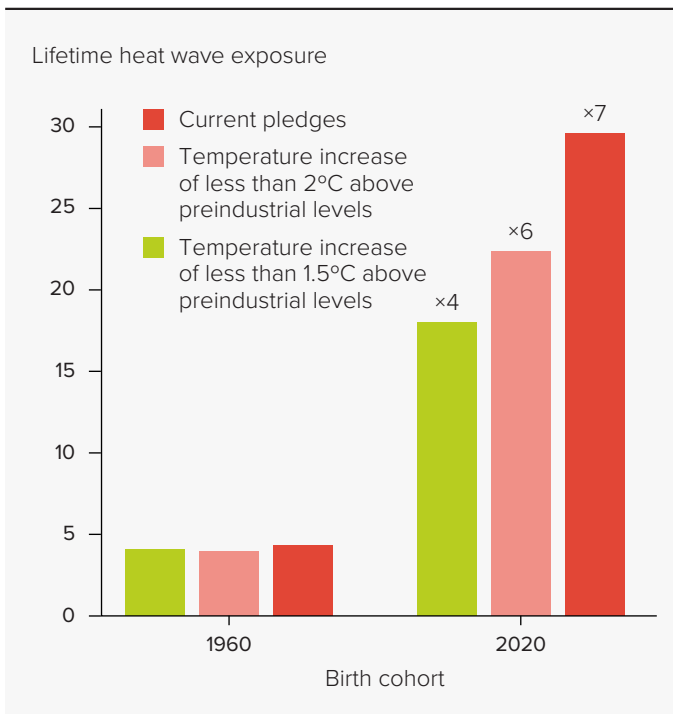
“There is tension between conforming to the prevailing institutions (including norms) and behaviours that have moved the world towards record achievements in material wellbeing—and the lack of response from those norms, institutions and behaviours to a novel and unprecedented context

Individual solutions for shared challenges can create tensions between self-reliance and collective efficiency. One country or group of people may be able to afford to stay protected from a pandemic through private means. That can make cooperation and even coordination more difficult, in a modern tragedy of the commons.¹¹⁷ Certainty about biophysical thresholds of climate change and other dangerous patterns of planetary change that would spell catastrophe would make coordination by self-interested agents more likely. But great uncertainty about those thresholds makes collective action less likely and harder.¹¹⁸

So, today’s uncertain times may be characterized in part as a mismatch between the cultural configurations that have enabled certain development paths thus far¹¹⁹ and the layered novel uncertainties of the Anthropocene, transitions and polarization. Disagreements and even conflict in societies may reflect that mismatch. There is tension between conforming to the prevailing institutions (including norms) and behaviours that have moved the world towards record achievements in material wellbeing—and the lack of response from those norms, institutions and behaviours to a novel and unprecedented context.

This mismatch could be playing out in many dimensions. One has to do with generational inequalities in exposure to climate extremes. For the cohort born in 1960, exposure to lifetime heat waves is essentially the same across climate change scenarios. But even if temperatures stay below 1.5°C above preindustrial levels, the cohort born in 2020 will suffer four times more exposure—and seven times more under current pledges (figure 3.4). No surprise,

Figure 3.4 Younger generations will be four to seven times more exposed to heat waves in their lifetimes than older generations



Source: Thiery and others 2021.

then, that young people ages 16–25 around the world report associating climate change with a range of emotions with negative affect, from anger to anxiety: two-thirds report feeling sad, and two-thirds report feeling afraid.¹²⁰ Another facet of disagreement is the differences across groups of people in either doubting or denying climate change. Groups in Europe more concerned about their economic security and less certain about the future are much more likely to reject climate change—and to be “less prosperous, more rural and more economically dependent on fossil fuels.”¹²¹ And individualistic attitudes are associated with less concern for environmental action¹²² and less wearing of masks during the Covid-19 pandemic.¹²³

The potential of this mismatch, and the broader range of determinants of human behaviour beyond rational and behavioural agents, also opens opportunities to mobilize uncertain times for better individual and social outcomes. The insights from rational choice and the emphasis on incentives remain relevant. Understanding how the context in the moment

of decision influences choices, one of the insights of behavioural science, and the role of emotions and motivated reasoning widens the scope beyond incentives shaping the choices of self-interested agents. But recognizing the role of culture further widens the scope. It takes us beyond considering how interests and institutions drive people’s behaviour, to recognize the power of ideas.¹²⁴

Ideas with the power to shape individual and collective choice range from social identities and world-views¹²⁵ to narratives and frames.¹²⁶ Joel Mokyr has emphasized “cultural entrepreneurs” as agents able to change the beliefs of others during momentous transformations in history, such as during the Enlightenment and the Industrial Revolution.¹²⁷ Caroline Schill and colleagues argue that this more “dynamic understanding of human behaviour” is essential in the Anthropocene.¹²⁸

This Report extends the argument to today’s uncertain times.¹²⁹ It looks at current disagreements and differences in perspective across groups of people less as a motive for despair and more as the kind of diversity and pluralism that may be needed in an open-ended pursuit of the innovations—social, technological, institutional—required to respond to novel and unprecedented challenges. In the “paradox of diversity,” this pursuit may require longer lead times to agree on collective actions and implement collective decisions.¹³⁰ As David Byrne sings: “The future is certain; give us time to work it out.” This paradox gives even more reason to address inequalities perceived as unfair or divisive, while preserving the plurality of views and an open, reasoned, public debate.¹³¹

Advancing human development to learn, and to expand the scope for learning, in uncertain times

Chapter 1 documented how novel layers of interacting uncertainties are heightening feelings of insecurity,¹³² pointing to a disconnect between wellbeing achievements and security. What do we hold on to, then, when even our sense of direction seems submerged in uncertainty? Wellbeing achievements with insecurity and progress with polarization¹³³ cast doubt on seeing development as a smooth process of progress in wellbeing achievements. Ideas, institutions and policies seeking to advance development are not

delivering as expected, but they are also opening new and dangerous problems by undermining the ecological integrity of our biosphere and leaving many people behind.¹³⁴

Where we go from here is up to us. Our planet and societies have gone through periods of change and volatility before. But one key feature making this era unique is humans’ role in driving threats—and our potential ability to shape the changes to build a more hopeful future (spotlight 3.7).¹³⁵ A real paradox of our time is our tentativeness to act despite mounting evidence of the distress that our pursuit of development is inflicting on our societies and planet. One contribution of this Report is to explore how understanding uncertainty and its relation to individual and collective choices can explain why action may be delayed, even in the face of looming threats, and to suggest ways forward that move us beyond paralysis.¹³⁶

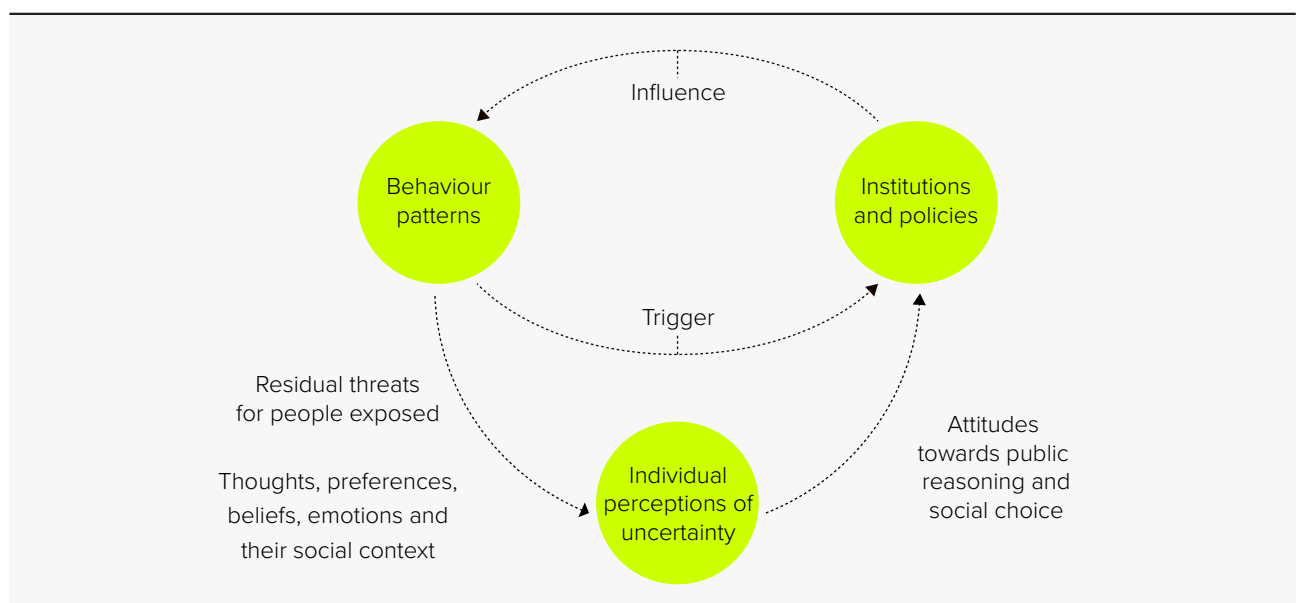
Why might societies not adequately respond to uncertainty? Consider the interaction between the different multilayered uncertainties and both behaviour and institutions (figure 3.5). Societies respond to shocks through multiple institutional and policy mechanisms. These institutions are often designed to absorb the shocks and moderate the threats that people confront. Under the rational choice model this process depends on state capacity, resource distribution and social preferences, as with the way societies

manage the potential tensions between social insurance and individual responsibility.¹³⁷

Now consider how social arrangements (institutions and policies) are influenced by a wider set of individual and social factors interacting with an evolving reality. In the presence of new threats, people’s behaviour is strongly mediated by their perceived uncertainty.¹³⁸ This perception comes through different channels. First is the increase in residual uncertainty, the one not absorbed by the collective response. Second is the perceived adequacy of the social response and the extent to which previous beliefs about how things work hold, which determines confidence in institutions and trust within and across groups. Third is the social and cultural context that defines the interpretation of the new threats in the light of prevailing narratives. Is it a sign of personal failure? Will this affect my position and future prospects in society?¹³⁹ Fourth are the emotions surrounding the increased uncertainty, ranging from fear to indifference to hope. The same shock can thus cause different levels of perceived individual uncertainty, depending on the prevailing narratives about underlying processes and the perceived effectiveness of policies.

Uncertainty for individuals shapes both individual behaviour and attitudes, with an impact on social interactions. Collective responses to uncertainty that

Figure 3.5 Individual and collective responses to uncertainty can drive uncertainty loops



Source: Human Development Report Office.

are perceived as ineffective or unfair can trigger animosity and polarization—especially in the presence of political narratives that manipulate the situation to deepen societal divides.¹⁴⁰ Such polarization has been documented in several countries in the response to the Covid-19 pandemic,¹⁴¹ where the public health measures put in place were resisted less because of a personal assessment of risks of, for instance, being vaccinated, and more because they represented a set of behaviours that defined expected group behaviours. Disbelief in climate change is associated more with political allegiance than with misinformation.¹⁴² This animosity and polarization then drive not only the specific collective response but also how the collective response interacts with the threat, eventually heightening uncertainty. Thus, the high and in many cases rising perceptions of insecurity may be accounted for in this type of uncertainty loop.

Expanding human development to foster learning and public reasoning

The broader understanding of human behaviour highlighted in this chapter helps account for some of the choices that so many people are making around the world, resulting in patterns ranging from political polarization to the rejection or dilution of the science of climate change and pandemics. But understanding does not mean resignation. Recognizing the role of emotions does not mean that we should wait until catastrophic outcomes become emotionally salient to act. Events that become salient and emotionally resonant can drive action, sometimes in directions that were thought to be unthinkable before that event.¹⁴³ But the layers of uncertainty described in chapter 1 imply that we have no option other than to think ahead and act with a sense of urgency, since in many cases we will not have second chances.¹⁴⁴

And understanding that people are often prey to motivated reasoning and hold steadfast to beliefs that are hard to dislodge¹⁴⁵ is no reason to not scrutinize reasons and beliefs. Subjecting prevailing beliefs and alleged reasons to critical examination, through appropriately comprehensive processes (see below) and with relevant information, can result in objective beliefs. Indeed, research has shown that uncertainty about other people's political beliefs and attitudes

can drive people to tighten their own beliefs.¹⁴⁶ Because people often misconceive others' attitudes and values, polarization may be cemented in spaces and on issues where differences in attitudes or opinions are, in fact, fairly small.¹⁴⁷ This so-called “false polarization” has been found to drive actual political polarization.¹⁴⁸ Understanding the processes that create misconceptions opens space for interventions that may correct them and mitigate political polarization.¹⁴⁹

“Subjecting prevailing beliefs and alleged reasons to critical examination, through appropriately comprehensive processes and with relevant information, can result in objective beliefs

This scrutiny of reasons and beliefs should happen at the individual level, but here we have to be mindful also of the cognitive limitations and biases discussed earlier in the chapter (see also spotlight 3.6). That is why public reasoning—always important under any circumstances—acquires heightened relevance in today's world. Our individual brains are limited, but our collective brain¹⁵⁰ is far more powerful. A plurality of sources of voice and power is not a weakness in today's uncertain times but can be a source of strength, provided processes sustained by democratic practices ensure that public reasoning takes place in a context and through processes where what carries the day is not always a powerful economic or political group or a highly motivated believer who refuses to subject beliefs to critical examination.¹⁵¹ Processes of democratic practice, at multiple scales, need to also avoid parochial dominance and welcome perspectives from “impartial spectators”—that is, the views of people who may not be part of a particular political jurisdiction. And given that the novel layers of uncertainty have planetary relevance, the role of multilateralism becomes more relevant than ever.¹⁵²

So what to do? Part II of the Report addresses this question, but as part I closes, it is important to reaffirm the central argument of this chapter, that doubling down on human development is not only the central aspiration but also the means to navigate uncertain times and effect the behavioural changes and institutional reforms that would allow us to shape a more hopeful future. Advancing human development means pursuing all aspects of capabilities, not

just the drive to enhance wellbeing achievements. Agency matters, as do freedoms in both wellbeing and agency—options that need to remain wide as the search for the appropriate set of institutions and behaviours is still open-ended. In a sense expanding human development in uncertain times can also be a learning process, where capabilities—wellbeing and agency, achievements and freedoms—allow for changes in behaviour and institutions to take shape in addition to expanding the scope for learning. Confronting the layers of uncertainty that we face today

is about enhancing cooperation at multiple scales and about the “agility of the mind” to use new and appropriate frames to understand our world and the responses needed to address the challenges that we confront.¹⁵³

Part II of the Report proposes motivating principles whose cultivation can enable public reasoning, as well as priority policy areas, so that human development is advanced in a way that enables people to harness uncertainty towards a more hopeful world—more just for people living now and in the future.

How agency differs from wellbeing

Agency is the ability to hold values and make commitments that may—or may not—advance the person’s wellbeing.¹ The person may be committed to fighting climate change to an extent that she skips school or forgoes a well-paying job, choices that may not advance wellbeing but would express agency. Another important distinction is between actual achievements and the options or freedoms available to people, regardless of their choices. Independent of what people end up securing, the options or freedoms available to people are inherently valuable.²

These distinctions result in four aspects of capabilities of interest:

- Achievements in wellbeing.
- Achievements in agency.
- Freedoms in wellbeing.
- Freedoms in agency.³

In assessing development progress, the spotlight tends to shine more on wellbeing achievements, such as standards of living, and much less on the freedoms available to people and their agency.⁴

But these four aspects of capabilities are relevant in the context of drawing on the human development approach to support behavioural change and institutional reform to navigate today’s uncertain times. Chapters 1 and 2 suggest the need to go beyond—not replace—considering wellbeing achievements alone—for two reasons. First, the spotlight on wellbeing achievements may leave other aspects of life that matter to people in the shadows—such as feeling

very or increasingly insecure, despite high wellbeing achievements. Second, there is no guarantee that focusing on wellbeing achievements alone would equip people with the capabilities to navigate today’s uncertain times—and particularly to lead fundamental transformational change to adapt and transition away from the layers of novel uncertainty that characterize today’s world.

Freedoms and agency have always been intrinsically important. They are also instrumentally important, as in facilitating collective action to provide public goods.⁵ And they may be indispensable where societies have to explore largely uncharted transitions to an aspirational space of expanding human development while easing planetary pressures.⁶

Human development, understood as expanding the four aspects of capabilities, thus becomes both the end and the means. Agency acquires relevance because it is difficult, if not impossible, to conceive of people leading the required transformations if they are seen only as potential receivers of assistance, as simply “vehicles of wellbeing,”⁷ as mere patients—rather than as agents able to judge, to commit and to give priority to goals and values that may go beyond advancing their wellbeing. Recognizing agency affirms people not only as the subject of wellbeing- or welfare- enhancing policies (though these are important) but also as active promoters and catalysts of social and economic change⁸—beyond their own narrow self-interest.

NOTES

- 1 Sen (1985) suggested that the neglect of agency is shadowed by the consideration that people are geared exclusively to pursue their material self-interest.
- 2 Sen (1985) argued that the neglect of options results from assuming that only actual achievements, or what people end up choosing, counts. See Sen (1999) for an elaboration on the perspective of seeing development as freedom. This refers primarily to what Sen called opportunity freedoms, recognizing that process freedoms, some of which may not be associated with capabilities, also matter.
- 3 The original framing around these four categories of capabilities was proposed in Sen (1985). The discussion here, including the examples, draws mainly from the simplified treatment in Sen (2009b).
- 4 These four aspects of capability often reinforce one another but need not. For instance, being well nourished is certainly something important for human life and part of the wellbeing aspect of capabilities. But sometimes a commitment to fasting (for religious or political reasons), which is in the realm of the agency aspect of capabilities, may override the overwhelming importance that being well-nourished has for most people, most of the time. And while the state should have an obligation to ensure that everyone has the freedom to be well-nourished, just because the wellbeing achievement of being well-nourished matters does not imply that the state should ban fasting. That would be a limitation not only in people's freedoms in wellbeing achievements, by precluding the possibility of choosing not to eat, but also in their agency, by excluding the possibility of making a commitment to fasting (Sen 1985).
- 5 Shi and others 2020.
- 6 In standard rational choice theory models, discussed later in the chapter, temporal-dependent and context-dependent preferences are often seen as suboptimal deviations from normative choice. But recent evidence shows how adaptation of preferences is crucial for efficiently representing information in volatile and uncertain contexts: "Value adaptation confers distinct benefits to a decision maker in a dynamic world" (Khaw, Glimcher and Louie 2017, p. 2700).
- 7 Sen 2009b, p. 288.
- 8 Indeed, civil society organizations, community initiatives, social movements and activists around the world work tirelessly using their agency to bring about social change.

Agency, ideas and the origins of the regulatory welfare state

Elisabeth Anderson, *New York University Abu Dhabi*

Can an individual change the course of policy history? Might such individuals be motivated by shared ideas from which they do not stand to directly benefit? The answer to both questions, I argue in my recent book, *Agents of Reform: Child Labor and the Origins of the Welfare State*, is a qualified yes. Under certain conditions, and only with cooperation from others, individual middle-class reformers exercised decisive influence over early legislation to protect workers. Acting on culturally embedded ideas about why industrial labour conditions were problematic, they exercised creative agency to build political coalitions and surmount institutional barriers to change. At a time when labour still lacked the power to demand protective legislation on its own, these reformers deserve much of the credit for bringing the regulatory welfare state into being.

Regulatory welfare refers to the web of policies that protect workers by limiting employers' arbitrary power over them. Child labour laws enacted in the 1830s and 1840s were the first of these efforts to intervene in the relationship between the new industrial bourgeoisie and the "free" labour it employed. These laws formed the bedrock on which vital protections for adult workers—including occupational health and safety regulations as well as the normal working day—were eventually built. Still, scholars tend to pay little attention to this regulatory side of the welfare state. *Agents of Reform* aims to correct this through seven case studies of the political origins of child labour and factory inspection legislation in 19th century Belgium, France, Germany and the United States.

Throughout much of the 19th century, working-class people were politically marginalized. In many countries they could not even vote. Moreover, many workers did not regard child labour as a problem requiring legislative attention; some depended on their children's earnings to survive, and others were more focused on issues of direct concern to adult men. Under these conditions it was

middle-class reformers who spearheaded efforts to enact child labour laws and later to create the factory inspection systems needed to enforce them.

One puzzle is why these reformers bothered to put time and energy into advocating for policies from which they themselves did not stand to directly benefit. Understanding this requires excavating the ideas that motivated them—and these, it turns out, were surprisingly diverse. Ideologically, child labour and factory inspection reformers ran the gamut from classical liberalism to religious conservatism to democratic socialism. What united them, however, was the belief that excessive and premature labour inflicted lasting damage on children's minds, bodies and souls. Allowing such abuses to continue posed a dire threat, not only to working-class children's wellbeing but also to the nation as a whole. How they interpreted this threat varied. For instance, some saw child workers as potential criminals or revolutionaries who required the disciplining influence of school, whereas other regarded them as national resources whose human capital was being squandered. Ideas such as these informed reformers' understandings of the child labour problem and drove them to pursue legislation. They were not, at least not in a direct sense, motivated by simple self-interest.

Of course, not all would-be reformers were equally influential. They needed allies. Scrutinizing how some succeeded while others did not reveals that effective reformers distinguished themselves in two ways: alliance-building and problem solving.

Alliance-building

Reformers used a variety of alliance-building strategies—including framing, citation, piggybacking, compromise and expertise-signalling—in ways that accorded with the priorities and expectations of the audiences they needed to convince. Take the

first of these strategies: frames are ideas that political actors deploy to convert audiences into allies. To be effective, frames must resonate with audience members' existing ideas or interests; otherwise, they will fall flat and can even backfire.¹

To illustrate this, compare how two reformers—one successful, one not—framed the child labour problem at key coalition-building moments. When Charles Dupin, a French legislator, argued before the Chamber of Peers that child labour rendered “the country weak in military powers, and poor in all the occupations of peace,”² he was cleverly framing the issue as vital to France's economic and national security interests. He went on to argue that working children were likely to grow up to be criminals and deviants who would destabilize the social order. Such frames appealed directly to the concerns of political elites and helped Dupin build a solid coalition around his proposed child labour bill.

In contrast, when Édouard Ducpétiaux, a Belgian public administrator, framed child labour as a grave violation of children's rights, his argument was soon used against him by chambers of commerce that were institutionally empowered to weigh in on economic legislation—and whose support Ducpétiaux needed to move forward. The notion that children had rights that sometimes trumped those of fathers had not yet been established by law or custom, so the employers accused Ducpétiaux of trying to upend the sacred privileges of the *pater familias* in a misguided pursuit of “foreign” policy goals. Missteps such as these contributed to Ducpétiaux's failure as a child labour reformer and, by extension, to Belgium's inability to enact child labour regulation until much later in the 19th century.

Problem solving

The second way successful reformers distinguished themselves was through their willingness to try creative, and at times risky, problem-solving strategies. When political opponents repeatedly impeded their

reform ambitions, they reacted by subverting normal policymaking channels in unconventional ways. For example, when Theodor Lohmann, a Prussian commerce ministry official, found his quest for a Reich-wide system of factory inspection thwarted at every turn by his formidable boss, Otto von Bismarck, he refused to give up. Instead, he went behind the chancellor's back, penning anonymous op-ed articles to drum up support, enlisting friends to lobby their political contacts and, most decisively, secretly sharing his own factory inspection bill with leaders of Germany's second most powerful political party. By forging an unauthorized and highly risky alliance with the legislative branch, Lohmann was eventually able to harness the Reichstag's power and circumvent Bismarck's executive authority. Without Lohmann's bold interventions, Germany would not have been able to mandate factory inspections across the empire, at least not until after the end of Bismarck's reign.

* * *

Research on agency and policy change often highlights policy or institutional entrepreneurs and stresses that these actors are first and foremost coalition-builders.³ My analysis builds on this literature by specifying various micro-level relational strategies through which reformers forge alliances and overcome institutional barriers. In doing so, it lends precision to the general claim that their agency matters. It shows, furthermore, that 19th century labour protections were not simply the outcome of dedicated reformers' compassion or morality. Rather, protections were enacted when reformers persuaded lawmakers that working children posed hidden threats, or harboured latent resources, that were relevant to the interests of elites and the state. At a time when labour's political power has eroded and policy progress still requires substantial buy-in from political elites, these insights remain relevant for social welfare reformers today.

Source: Anderson 2018, 2021; Béland and Cox 2016; Fligstein and McAdam 2012; Kingdon 1984; Mintrom 1997; Sheingate 2003.

NOTES

1 See, for example, Snow and Benford 1988.

2 Parlement Français 1840, p. 82.

3 See, for example, Béland and Cox 2016; Fligstein and McAdam 2012; Kingdon 1984; Mintrom 1997; Sheingate 2003.

The “rational” agent and rational choice theory

An agent (someone who acts) makes a rational choice when acting to do as well as she believes she can to achieve her preferences.¹ There are three independent ingredients in rational choice: stable preferences, rational information processing and beliefs, and maximization.² What someone desires (preferences) is autonomous and does not change. It is what moves people to pursue their individual self-interest, their own wellbeing (their utility). They form their belief based on information collected to help the agent make a specific decision. For instance, if someone prefers not to get wet after leaving the house, how does she choose whether to grab an umbrella? Rational choice assumes that she makes the decision based on the combination of the preference (to not get wet) and the belief about whether it is going to rain—for instance, by looking out the window or consulting weather forecasts, depending on how important it is for her to not get wet.³

This concept of agent is very general and is widely used to describe and explain human behaviour with economic models,⁴ framing rational choice as maximizing individual welfare (typically represented by a utility function that translates consumption choices into welfare).⁵ Preferences are thus represented by a utility function that each person seeks to maximize. Powerful extensions account for more general contexts. When two or more agents are in a situation where their choices depend on what others do, they need to form rational expectations (that is, assume that everyone else behaves according to rational choice) about what the others will do. This type of interdependent decisionmaking is studied in game

theory, which can be applied to many economic, political and social settings. More relevant for this Report, where there is uncertainty—that is, where different outcomes are possible, each with a different level of utility associated with it—the model is reframed as expected utility theory. The utility (which represents the agent’s preferences) associated with each possible outcome is weighed by its probability of occurring and averaged out in the form of expected utility, which then represents what the agent seeks to maximize.

Under well-specified conditions (for instance, everyone has access to the same information), economic agents make choices for what to consume and produce, exchanging what they are endowed with in markets, leading to an economic equilibrium that is reached after all the agents make their best possible choice in fulfilling their individual motivations.⁶ The economic equilibrium is such that no agents can improve their utility without harming someone else’s—designated as Pareto optimality. These results are often the justification for many policies and institutions. Their scope is justified as correcting violations of the conditions under which this equilibrium emerges (that is, correcting market failures, ranging from externalities, when choices have side effects that are not included in the moment of choice, to situations in which some agents have more information than others). Policies and institutions often focus on structuring incentives—changing prices through taxes, for instance, to bring the actual conditions under which people make choices closer to the specified conditions under which the model yields the desired Pareto optimum equilibrium.

NOTES

- 1 The description of rational choice in this spotlight draws heavily from Elster (2021b). A more extensive treatment is presented in Elster (2015).
- 2 A canonical statement comes from Becker (1976, p. 143): “all human behaviour can be viewed as involving participants who maximize their utility, form a stable set of preferences and accumulate an optimal amount of information and other inputs in a variety of markets.”
- 3 The example also comes from Elster (2021b).
- 4 Much of the inspiration for the discussion in this spotlight comes from Hoff and Stiglitz (2016).
- 5 A set of axioms that are behaviourally plausible and impose a logical structure to the acts of choice that are allowed to take place is also included (for example, if someone prefers apples to oranges and oranges to pears, she also has to prefer apples to pears). For a formal treatment, including some of the extensions discussed in this paragraph, see Mas-Colell, Whinston and Green (1995). Key axioms are meant to ensure behaviour where there is consistency of choice, but Sen (1993) argued that seemingly inconsistent behaviours do not imply lack of rationality, since they may reflect the consistent use of decision strategies based on rules. Sen (2002) argued that there is no way to establish internal consistency of choice without referring to something external to the act of choice (such as values or norms). Arkes, Gigerenzer and Hertwig (2016) argue that coherence in choice cannot be a universal benchmark of rationality.
- 6 The model formalizes Adam Smith’s intuition that the pursuit of self-interest in the context of potentially mutually beneficial economic exchange would make everyone better off, without the need for moral commitments to doing something good or under the direction of a supra-individual authority. It is ironic that Adam Smith is remembered primarily for this insight, when much of his work was to explore the importance of different motivations for human behaviour, including the role of moral commitments or social expectations about what is acceptable behaviour. These observations draw from Sen (2009b).

How can societies make progress in uncertain times? A question taking on new forms, calling for new analytical tools

Diane Coyle, *Cambridge University.*

In unsettled times the perpetual question of how human societies can progress takes on new forms. This Report diagnoses the multiple sources of insecurity and distress affecting so many people around the world at present and in doing so explores some possible actions policymakers might take. Even setting aside immediate pressures such as conflict-related food shortages and price increases, two long-term challenges face all of us. One is dealing with the consequences of climate change. The other is responding to the structural economic and social changes being brought about by disruptive digital technologies. A long time in the making, both need action now, or they will increase inequalities and insecurities beyond the intolerable levels they have already reached.

Tackling these challenges will require new analytical tools. This is because the phenomena of environmental damage on the one hand and digital transformation on the other do not conform to the assumptions underlying much conventional economic analysis and policy recommendations. Both areas are rife with what economists refer to as externalities or spillovers, whereby decisions have byproducts in the form of substantial consequences for others as well as the decisionmaker. Examples are businesses that emit pollutants or carbon dioxide, causing environmental and societal damage they do not have to pay for, or in the digital domain the provision of personal data that reveal information about other individuals—or conversely that enable platforms to provide a better service to all their users. Environmental externalities are usually negative, as natural resources are so often unpriced. Digital externalities can be either negative or positive.

In textbook economics the rule of thumb is that market prices capture the relevant information for the best use and allocation of resources; but it is also textbook economics that this presumption does not hold when there are pervasive externalities. On the

contrary such situations of market failure pose collective action problems. Individual incentives lead to worse outcomes than are possible if there is coordination, led by either governments and public bodies or community-organized institutions, as in the inspiring work of Elinor Ostrom.

Yet although this is well known, standard economic policy tools continue to assume a simpler world where it can be reasonably believed that individual business or personal decisions generally lead to good economic outcomes, while individual market failures can be tackled one by one with specific solutions. This default way of thinking about economic policy, deeply embedded in the education and traditions of policymakers for decades, needs to change. The world has changed beyond recognition from those mental models of individual choice.

To give one example, digital business models using data and algorithms to deliver services are becoming increasingly widespread in many countries. They hold great promise for individual consumers—for example, enhancing access to low-cost financial services or providing access to markets for small and medium enterprises. But they need an appropriate policy framework to govern their use of data and ensure markets remain open for new entrants.

Data are a key resource in the digital economy, but data's features are not like a standard economic good. Data are “nonrival” in that they can be used by many people simultaneously and are not depleted, and data can cause harm (a negative externality) by unintentionally revealing too much information about people at the expense of their privacy and offer benefits (positive externalities) when different pieces of data are joined to provide useful information. Businesses that acquire a lot of data about users can also turn those data into a barrier to entry to limit their competition, as they are in a much better position to both improve service and earn revenues.

Since 2019 the debate about competition policy has increasingly recognized the challenge posed by the dominance of a few companies in digital markets, which are sometimes described as “winner takes all” or “superstar” markets. However, progress in changing policies to tackle market dominance has been slow, even in the United Kingdom and the United States, where the academic and policy debate started a few years ago. The everyday, practical policy tools for analysis and remedies do not yet exist.

What is more, debates about appropriate governance policies for data more generally are in their early stages. Should data be “owned” as if a piece of property when the information that data provide is always relational or contextual? If so, given that using data creates so much value, who should be assigned property rights: the collector or the original subject or source? If not, what framework of access rights and responsibilities would generate value for society? How should data users be required to take account of data bias due to the inequality of society—and indeed of people who have no data “voice,” whose activities and needs are not measured?

Another example of an area with many open questions, due to the absence so far of an appropriate benchmark policy framework, is biodiversity policies. Partha Dasgupta’s 2020 landmark review of the economics of biodiversity for Her Majesty’s Treasury in

the United Kingdom synthesized the relevant theoretical framework, but again the spadework needs to be done to turn conceptual insights into practical interventions. How can early warning of irreversible tipping points in ecosystems be recognized? What is the appropriate geographic scope for measuring and acting on biodiversity loss? How does it integrate with agricultural productivity or affect human health?

In both arenas, environmental and digital, there has been considerable excellent academic research at the frontier of knowledge. But to turn this into actionable insights, the default presumption needs to be that this is a world of tipping points, multiple possible outcomes depending on current choices, externalities and collective action problems. The economic analysis needs to be integrated with scientific or technical knowledge to deliver practical policy tools. Different datasets are required, going beyond standard economic metrics and dashboards.

There are active debates among researchers and policymakers alike about these kinds of challenges and much recent progress—such as the development of statistical standards for measuring natural capital and ecosystem services. But shaping an appropriate mindset for this uncertain, unstable and interconnected world remains a challenge.

Source: Based on Coyle (2021).

Norms and cooperation in a multipolar world: Beyond economics

Kaushik Basu, *Cornell University*

As the world battles multiple onslaughts—from the fracturing of society, caused by the shifting rules of economic and social interaction, in turn caused by the rapid advance in digital technology, to the rise in climate-related disasters, the Covid-19 pandemic that waxes and wanes but refuses to go, and to the war in Ukraine—it is time to rethink not just our policies but also the foundations of the social sciences. Since much of today’s policy challenge relates to economics, economists have written extensively on these themes, much of it captured in this Report. There is, however, a growing contribution from neighbouring disciplines—philosophy, politics and sociology—that provide insights for economists and urge them to question some of the assumptions hidden deep in the woodwork of their own discipline. It is important to realize that the world that we analyse is partly a construction of our discipline.¹ As we try to understand society, which is on the one hand steadily globalizing and on the other becoming politically polarized with rising conflict across and within nations, it is critical to trespass boundaries and draw on these alternate disciplinary paradigms.

Since the Age of Enlightenment, and even before that, philosophers have been aware of the need for society to nurture cooperation. Some of this happens naturally from the nudges of the invisible hand, but we also need agreements and conventions that coordinate the behaviours of individuals. Such agreements seem like an impossible task for our vast, multipolar world. Hope lies in the fact that we now have a better understanding of how cooperation happens and why it often breaks down. This is because of one instrument that the Enlightenment philosophers did not have but their progenies do, to wit, game theory. As a result, there has been a spate of recent writing that formalizes ideas from the 17th and 18th centuries and helps us think of new ways to manage society, avert conflict and foster development.²

This new literature is helping us grapple with real-world problems, from conflict and social inequality to the role of political leaders. We understand these better than ever before. How do leaders acquire power? Why do they have such influence over individuals, at times hurting the very people who follow them? Surprisingly, much of the leader’s ability to stir action among people arises from nothing but the beliefs of ordinary individuals. The statements and orders of the leader create focal points. You believe that, given a leader’s order or suggestion of order, others will follow it, and that in turn makes it in your interest to follow it as well. When such a confluence of beliefs occurs, a speech or even an utterance by a leader can unleash torrents of behaviour among individuals, propped up by nothing more than beliefs of what other individuals will do.

This kind of analysis can be brought to bear on practical matters, such as the responsibility people bear towards their community³ and a leader’s responsibility for the behaviour of his or her followers. The convention is to hold a leader responsible for certain group behaviour if it can be shown that unleashing such behaviour was the leader’s intention. Following the above analysis, it can be argued that a leader should also be held responsible for unwarranted group behaviour if the leader could reasonably be shown to have been aware that his or her speech or behaviour would result in the group behaviour, even if that was not the leader’s intention.⁴ This altered view can have large implications for how we interpret the law, regulate and punish.

Because of the large influence of economists, much of the formal analysis remains confined to individually rational behaviour. We try to explain all forms of cooperation by reference to self-interest. This often leads to exciting mathematical models, but one consequence of this obsession is we forget that universal self-interested behaviour is one of those assumptions in the woodwork, which we take for granted but is not true.

Virtually all human beings carry some form of moral compasses in their heads. They desist from numerous behaviours not out of self-interest but because their ethics, often deontological principles, do not permit them. I believe we do not pick other people's pockets not because, after doing a cost-benefit analysis, we conclude that the cost of picking pockets outweighs the benefit, but because this is an inbuilt moral code in us.

This, in turn, raises questions about the very meaning of cooperation. Was the cooperation of Adam Smith the same as that of philosophers and scholars of politics?⁵ Basing our evaluation on a wider disciplinary foundation also raises vital questions about value, worth and equality. We can stigmatize individuals, banish individuals to the margins and exacerbate inequities in a variety of ways.⁶ These inequities can give rise to fractures and polarizations that have little to do with economic inequality.

Because these are subjects on the fringes of the social sciences, we know little about the connection between the nature of norms and moral codes we adhere to and the level of our economic growth and

wellbeing. There is need for more research on this. It is arguable that to sustain economic development, we need concurrent moral progress. Michele Moody-Adams argues that what is moral "progress" can be contested, but we can nevertheless take a stance on it, and she expressed optimism that moral progress can be advanced.⁷ Allen Buchanan and Russell Powell take the agenda forward, showing that this can be carried over to codes of inclusivity, which are critically important in today's polarized world.⁸

As we understand these motivations that go beyond individual rationality, we can try to cultivate moral instincts that lead to greater harmony and cooperation in society. The crux of the challenge is to think of codes of behaviour that individuals as well as collectivities such as nations adhere to. The aim is to have agreements, such as minimal constitutions, that are scientifically constructed. This will not rule out conflict since the roots of some conflicts go beyond self-interest.⁹ Nevertheless, by nurturing certain codes of behaviour, which are often innately in us anyway, we can hope to stimulate empathy and further the collective good for the world.

NOTES

1 Mitchell 2005.

2 Basu 2022; Moehler 2019; Thrasher and Vallier 2015; Vanderschraaf 2019.

3 Deb 2020.

4 Basu 2022.

5 Brennan and Sayre-McCord 2018.

6 Goffman 1963; Lamont 2018; Lindbeck, Nyberg and Weibull 1999.

7 Moody-Adams 1999.

8 Buchanan and Powell 2018.

9 Muldoon and others 2014.

Cognitive uncertainty

Benjamin Enke, *Harvard University*

Many of the most important challenges facing humankind require tradeoffs involving uncertainty and time. For instance, climate change mitigation measures are risky in the sense that we do not know precisely how well they will work. Moreover, climate action involves intertemporal tradeoffs because it delivers benefits primarily in the future but accrues costs today. In contexts like these, adequate decisionmaking by policymakers and individuals requires sophisticated reasoning about risk and time. Yet, a key insight from recent research in behavioural economics is that many economically relevant decisions that involve risk or intertemporal tradeoffs are cognitively very difficult. Consider the following two illustrative examples:

- Suppose you are offered an investment that pays \$1,000 with a probability of 35 percent and nothing with a probability of 65 percent. How much would you be willing to pay for such an asset? Maybe \$220? Are you sure? How about \$185? Or \$342?
- Now suppose you actually won \$1,000 and your banker offers you a safe annual interest rate of 4 percent. How much of your new wealth would you like to save at this interest rate rather than spend this year? \$600? Are you sure? Not \$775 or \$452?

These examples illustrate a principle that is very general: in a large range of decisions, people exhibit cognitive uncertainty, meaning that they do not know which decision is actually best for them, given their preferences. Cognitive uncertainty refers to a purely internal—cognitive—form of uncertainty, rather than objective uncertainty about the physical world. Cognitive uncertainty is the result of people’s imperfect ability to determine the optimal course of action in complex situations. The empirical reality that people often exhibit cognitive uncertainty contrasts with the approach traditionally taken by behavioural economists, which is to assume that people may make mistakes but are not aware of their own cognitive imperfections.¹

Why is cognitive uncertainty important? A main reason is that a growing number of experiments and

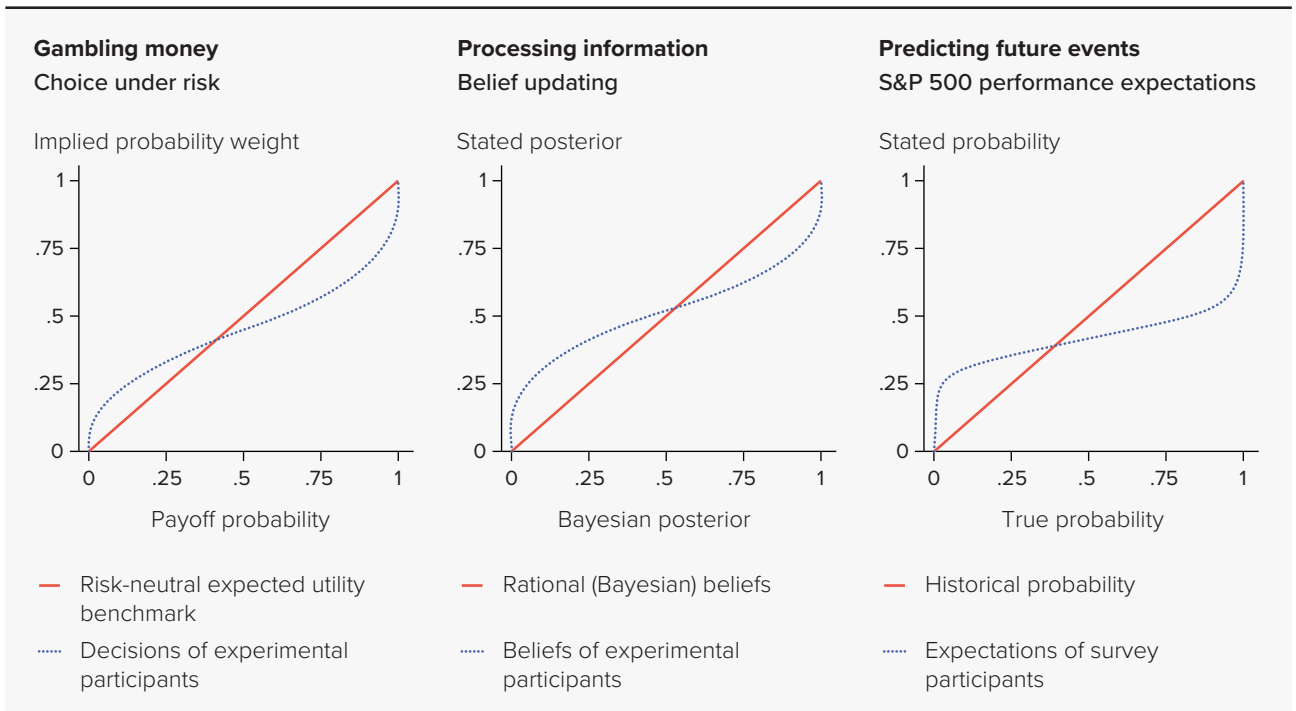
surveys document that when people are cognitively uncertain, they anchor on a so-called cognitive default decision.² A cognitive default decision is the naïve decision people would make in the absence of any deliberation: what they would do if they did not really think about it. In contexts with which people have experience, this could be a decision they previously made. In contexts with which people do not have experience, the cognitive default is often to pick something intermediate or a compromise. Regardless of what the decision is, much evidence shows that when people are cognitively uncertain, they anchor on, or regress to, a cognitive default.³ As a result, people’s decisions are often poorly calibrated to the prevailing set of circumstances, in particular under new environmental conditions.

The following sections explore these abstract ideas in more concrete contexts, by studying how people think about probabilities (uncertainty) and intertemporal tradeoffs and then by discussing more speculatively how cognitive uncertainty and cognitive default decisions may matter for understanding and addressing current societal challenges.

Decisionmaking under uncertainty

Almost all economically relevant decisions involve some risk. As a result, much research in economics and psychology studies how people learn from information, how they make predictions about future events (such as the probability that they will lose their job) and how they choose among different investment strategies (such as whether and how to invest in the stock market). All these domains require people to process probabilities. Yet, substantial research has documented that people have a pronounced tendency to make decisions that look as if they implicitly treat all probabilities to some degree alike, which produces a compression-to-the-centre effect (figure S3.6.1).⁴

Figure S3.6.1 People have a pronounced tendency to make decisions that look as if they implicitly treat all probabilities to some degree alike



Source: Enke and Graeber 2019.

The left panel of figure S3.6.1 shows the canonical probability weighting function that depicts how people typically weight probabilities when they choose among different monetary gambles. For example, people overweight a 5 percent chance of winning \$100 but underweight a 95 percent chance of winning that amount. Thus, in essence, people treat both high and low probabilities as more intermediate than they really are. This is a regularity that economists have devoted much attention to, as it helps explain phenomena such as casino gambling, the overpricing of positively skewed financial assets, the equity premium and why people prefer insurance policies with low deductibles.⁵

The middle panel illustrates a common way in which people's inferences from new information tend to be systematically wrong. When people receive information suggesting that a specified event is objectively very unlikely to occur, they often overestimate such small probabilities. On the other hand, when people receive information suggesting that an event is very likely to occur, they underestimate such high probabilities, which again leads to a compression effect towards the centre.

Finally, the right panel shows a typical pattern regarding people's expectations of how much the stock market will go up, as a function of objective probabilities. Again, people's probability estimates are typically heavily compressed towards the centre, which means that people are overly optimistic as far as very unlikely scenarios are unconcerned but overly pessimistic when it comes to very likely scenarios.

The similarity of compression effects in these three probability domains is striking. Yet, until recently, economists and psychologists often viewed them as separate phenomena, rather than as being driven by a common cognitive mechanism.⁶

One way of jointly accounting for these patterns across different domains is the simple insight that people find it cognitively difficult to think about probabilities and, therefore, anchor on an intermediate cognitive default decision.⁷ The main idea is that people mentally start out from an intermediate decision, something that is far from the extremes and feels moderate. Upon deliberation, they then insufficiently adjust in the direction of the rational decision (the decision that would be expected under a standard rational choice model). Crucially, the idea is that

the magnitude of the adjustment towards the rational decision decreases in cognitive uncertainty. Thus, people who are extremely cognitively uncertain will decide based purely on the cognitive default decision, while people who do not exhibit any cognitive uncertainty will make a rational decision. According to this hypothesis, cognitively uncertain decisions are more compressed towards the centre.

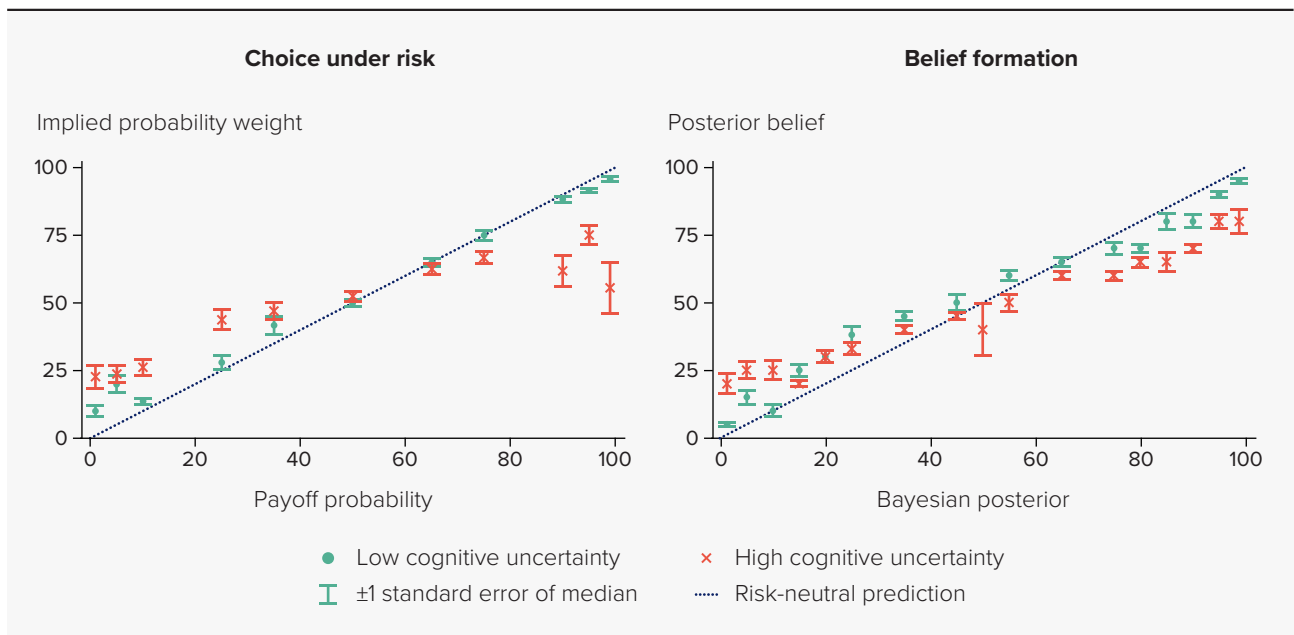
Testing of this hypothesis through a series of experiments and surveys that measured people’s cognitive uncertainty revealed that in all three decision domains in figure S3.6.1, the gist of the results was the same: higher cognitive uncertainty is strongly associated with greater compression of decisions towards the centre (figure S3.6.2).⁸ Intuitively, this makes sense: when people do not know how to value a risky asset, or if they do not know how to form probabilistic estimates about variables such as stock market returns, they anchor on an intermediate decision and then only partially adjust away from it. As a result, cognitively uncertain people overestimate the probability of unlikely events and overweight low probabilities when they translate them into risky

decisions. Likewise, cognitively uncertain people underestimate the probability of likely events and underweight low probabilities when they translate them into risky decisions. However, these patterns do not arise because people have acquired domain-specific errors or even preferences—instead, they reflect a general heuristic according to which people find it difficult to think about probabilities and, therefore, treat different probabilities to some degree alike.

Intertemporal decisions

Consider now an entirely different set of decisions, in which people trade off money (or other goods) at different points in time. For example, an experiment participant may be asked whether she would prefer to receive \$90 today or \$100 in a year from now. A large body of empirical work has documented that people’s intertemporal decisions are often characterized by a type of compression effect that is very similar to the one seen in the case of probabilities.⁹

Figure S3.6.2 Higher cognitive uncertainty is strongly associated with greater compression of decisions towards the centre



Note: The left panel illustrates the probability weighting function in choices between monetary lotteries, and the right panel shows reported beliefs in laboratory belief formation experiments.

Source: Enke and Graeber 2019.

S3.6.3 illustrates this by showing how much people typically value a payment of \$100 to be received at different points in time. For example, the left panel shows that, on average, people value \$100 in nine months roughly as much as \$60 today and that they value \$100 in four years as much as \$40 today. The main takeaway is that people’s decisions seem to treat different time delays to some degree alike. For example, people seem to behave as if it makes almost no difference to them whether they receive \$100 in two years or in three. Overall, this leads to a compression effect, according to which people’s valuation of a delayed payment of \$100 is again compressed towards an intermediate value of roughly \$50.

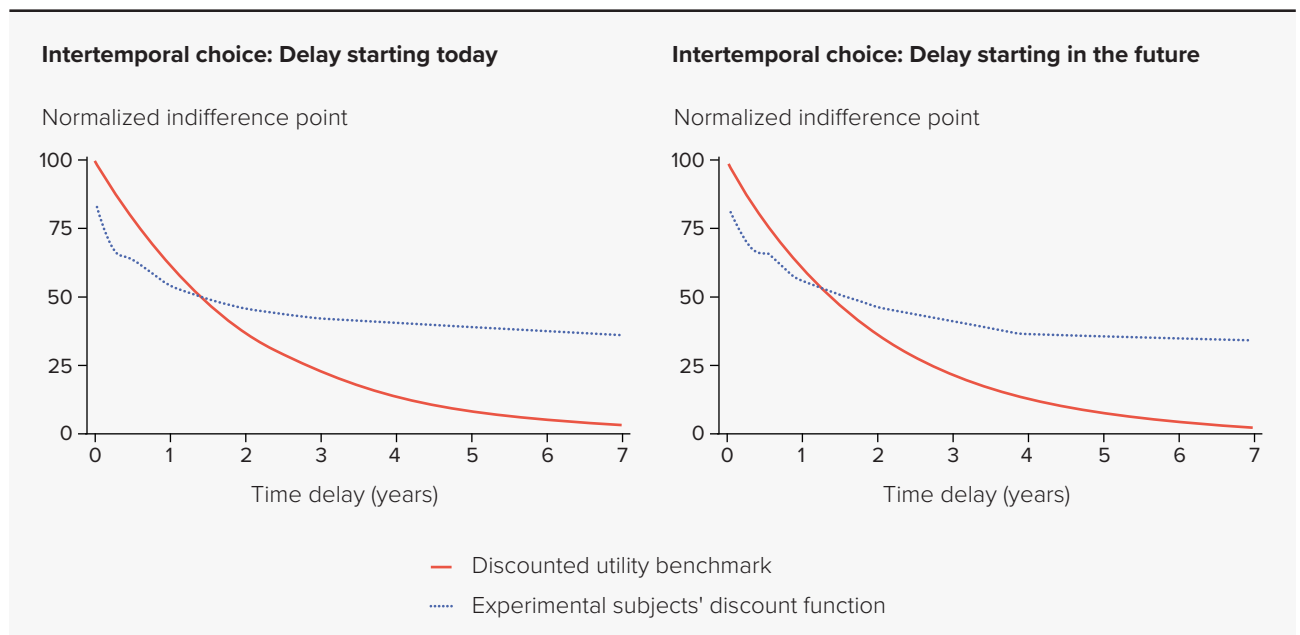
Popular models such as the standard discounted expected utility model, or models of present bias,¹⁰ cannot explain these puzzling patterns. For example, the extreme compression effect towards the centre also occurs when people make decisions that involve tradeoffs between two future dates (right panel of figure S3.6.3), such that present bias cannot play a role.

One hypothesis is that these patterns do not (only) reflect present bias or other nonstandard preferences

but that they are again driven by complexity and resulting cognitive uncertainty.¹¹ The intuition is that when people are cognitively uncertain about exactly how much a payment of \$100 in three years is worth to them today, they again anchor on an intermediate cognitive default decision and then adjust from there—but insufficiently so. According to this hypothesis, relative to the benchmark of a rational decisionmaker, people with cognitive uncertainty will look less patient over short horizons (because the intermediate cognitive default “drags down” their patience), yet they will appear more patient over long horizons.

Experiments measuring people’s cognitive uncertainty when making these types of intertemporal decisions show that cognitive uncertainty is strongly predictive of the degree to which people’s intertemporal decisions seem to treat all time delays alike (figure S3.6.4).¹² As a result, cognitively uncertain people exhibit excessively high impatience over short horizons, such as in tradeoffs between today and in three months. However, in contrast to conventional preferences-based accounts of intertemporal choice, such impatience does not largely reflect genuinely

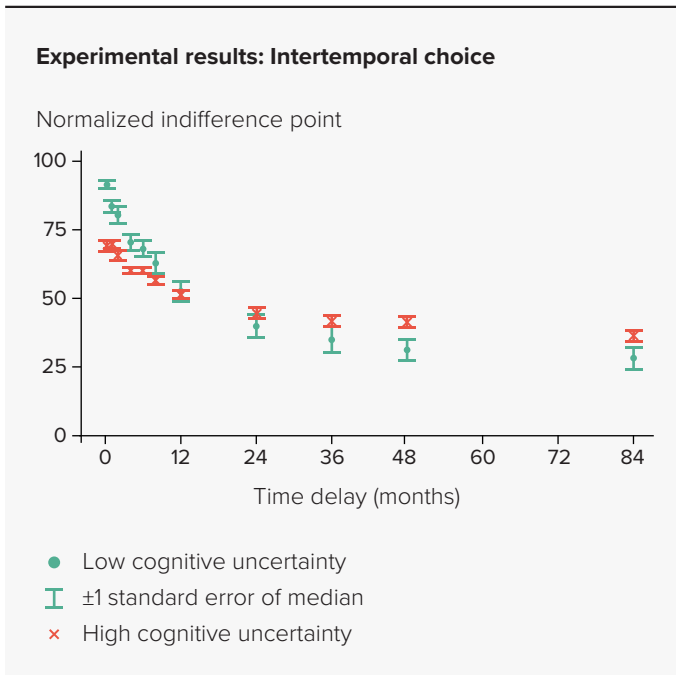
Figure S3.6.3 People’s decisions about value seem to treat different time delays to some degree alike



Note: The left panel shows people’s typical behaviour in tradeoffs between the present and the future, and the right panel shows people’s typical behaviour in tradeoffs between two different future points in time.

Source: Enke and Graeber 2021.

Figure S3.6.4 Cognitive uncertainty is strongly predictive of the degree to which people’s intertemporal decisions seem to treat all time delays alike



Note: The dots show how much participants value a cash payment or food voucher of \$100 at different points in time.
Source: Enke and Graeber 2021.

low patience but instead people’s inability to think through the decision problem.

Recap: Commonalities across decision domains

The common theme that emerges from the preceding discussion is that people’s inability to think through tricky decision problems is a unifying element that ties together various behaviours. How people update their beliefs in light of new information, how they choose between different risky assets and how they trade off different time-dated rewards are, in principle, three different domains of economic decisionmaking. Indeed, economists have devised sophisticated models for each of these domains. Yet, while there is much benefit in focusing on each decision domain in isolation, doing so also sometimes obscures important commonalities across domains. In particular, we have seen that people are often unsure what the best decision is, that cognitive uncertainty is strongly linked to taking “intermediate” decisions

that make it seem as if people treat different probabilities and time delays alike and that this mechanism generates many of the famous empirical regularities that behavioural economists and psychologists have accumulated over the years. According to the logic of cognitive uncertainty, these regularities are all intimately linked.

Potential implications for societal challenges

The main takeaway from the studies summarized above is that when people are cognitively uncertain—that is, when they find a decision problem difficult to think through—they anchor on a cognitive default and then insufficiently adjust in the direction of the rational decision. As a result, decisions look as if people underreact to changes in the prevailing circumstances such as the probabilities of different events.

In experiments the default decision is consistently intermediate in nature, which could reflect a naïve diversification or compromise logic. Yet, these choice experiments all involve contexts with which most people have limited or no experience. This raises the question what constitutes people’s cognitive default decision in situations with which they do have experience, as is usually the case in reality.

A plausible conjecture is that when people are cognitively uncertain “in the wild,” they intuitively anchor on their typical past decision and then adjust from there. For instance, people who always save \$100 of their salary might continue to do so even when the interest rate suddenly changes—purely because they find the decision very difficult to think through and they therefore anchor on their past decision.¹³ Again, such a pattern of behaviour would produce an underreaction to changes in environmental conditions.

This perspective offers a new lens through which behaviour in the general public regarding societal challenges can be understood. For example, thinking through the consequences of climate change for one’s own life is cognitively extremely challenging. Even if we knew for certain that temperatures will rise by 3°C over the next 30 years, it is very hard (even for experts) to think through how this would affect the structure of our economies and lifestyles. In other words it is most likely true that people exhibit very

high cognitive uncertainty when thinking through which personal decisions they should take in light of climate change. Which skills will be valued 30 years from now? How should I optimally behave in light of these changes? How and where should I optimally choose to live given these developments?

Even in the absence of any objective uncertainty about the physical world, these questions are cognitively extremely difficult to think through. This cognitive difficulty may induce people to anchor on the cognitive default of making the same decisions as in the past, which then mechanically produces an underreaction to changes in economic and climatic conditions. For example, the relatively low investment into climate change adaptation in the past may serve as a cognitive anchor for determining today's investments. If true, this would suggest that the apparent underreaction in the population to new economic or

climatic conditions partly reflects the cognitive difficulty of thinking through complex topics, rather than necessarily selfish or short-sighted preferences. This account is potentially valuable because it adds a new perspective and policy prescription. Rather than lament about people's preferences or even try to change them, policymakers may be more successful at inducing people to adjust their behaviours by helping them imagine and think through a future with climate change: what people's lives will look like, which types of jobs they will be competing for, how they will commute to work and what their children will learn. Only when people understand the implications of abstract policy discussions for which decisions they need to make to prepare themselves for the future—once people have reduced their cognitive uncertainty—may they be able to make the decisions that policymakers and international organizations are hoping for.

NOTES

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- 1 Benjamin 2019.
 - 2 Enke and Graeber 2019, 2021; Xiang and others 2021.
 - 3 Enke and Graeber 2019, 2021; Xiang and others 2021.
 - 4 Benjamin 2019; Fischhoff and Bruine De Bruin 1999; Kahneman and Tversky 1979.
 - 5 See Barberis (2013) for a review.
 - 6 For example, Kahneman and Tversky's (1979) prospect theory applies only to how people translate probabilistic beliefs into decisions; it remains silent on how people form probabilistic beliefs in the first place. Similarly, formal economic and psychological models of belief formation sometimes predict that reported beliefs are overly compressed towards 50:50, but they do not predict that people's risky decisions are compressed functions of beliefs (see Benjamin 2019 for a review).
 - 7 Enke and Graeber 2019. The idea that people exhibit noise in processing probabilities is present in various theoretical models, including Erev, Wallsten and Budescu (1994), Khaw, Li and Woodford (2021) and Viscusi 1985, 1989.
 - 8 Enke and Graeber 2019.
 - 9 See, for example, Cohen and others (2020) for a review.
 - 10 Laibson 1997.
 - 11 Enke and Graeber 2021.
 - 12 Enke and Graeber 2021.
 - 13 For example, D'Acunतो and others (2021) document that people with lower cognitive skills react less to changes in interest rates than their higher-ability counterparts. This may reflect that people entertain a cognitive default decision of repeating what they did in the past.

Human agency can help restore biodiversity: The case of forest transitions

Erle C. Ellis, *University of Maryland, Baltimore County*

Biodiversity losses are increasingly recognized as a global crisis demanding transformative changes in human societies to halt further losses and to better conserve and restore biodiversity.¹ Forest habitats generally sustain more species than other terrestrial biomes, and moist tropical forests are among the most biodiverse ecosystems on Earth.² As a result, the conversion, degradation and fragmentation of forests and other biodiverse wild habitats by agriculture and other intensive land uses are currently the leading cause of biodiversity losses across the terrestrial biosphere.³

For more than a century, human demands for food, fibre and other land use products have soared to sustain the growth of increasingly well-off populations and their choice of richer diets, including animal products and other land-demanding commodities.⁴ To meet these demands, land use for crops and pastures have replaced forests and other habitats across more than 35 percent of Earth's ice-free land area.⁵ Yet despite this alarming long-term trend, the global area of agricultural land has not increased significantly since the 1990s, even while the amount of food produced per capita has risen faster than population for more than half a century.⁶

Biodiversity losses remain a serious concern as the global area used for intensive crops continues to grow, both within existing agricultural areas and through deforestation, especially in less developed tropical regions, where biodiversity losses from land conversion are greatest.⁷ Nevertheless, tropical deforestation appears to be slowing, and forests and other wild habitats are regenerating in the more developed temperate regions of the world where less suitable agricultural land is being abandoned.⁸ Though it remains unlikely that global forest area in 2030 could increase by 3 percent relative to 2015 to meet target 1.1 of the United Nations Strategic Plan for Forests, annual net loss of forests has been nearly halved since the 1990s, to about 0.1 percent a year, as a result of declining deforestation rates and increasing forest regeneration

rates.⁹ Clearly, some forest trends are going in the right direction, especially in the more developed regions of the world.

The large-scale regeneration of forests following the abandonment of agricultural land was first identified as a general pattern of forest recovery in developed regions of Europe starting in the late 1800s.¹⁰ In recent decades these so-called forest transitions, defined as sustained regional shifts from net deforestation to net reforestation, are increasingly being observed in contemporary temperate and tropical regions around the world.¹¹ The early forest transitions of Europe, the United States and elsewhere were first explained by an economic development pathway in which urbanization and industrialization drove labour scarcity in agriculture, leading to agricultural intensification to increase total production using the most suitable lands, enabling profits to be maximized and leading to the abandonment of less productive agricultural lands, where forests then regenerated spontaneously.¹²

More recently, "economic" forest transitions have also been explained, to some degree, through "land use displacement pathways," in which forests recover in one region while potentially being lost in another, when agricultural demands are outsourced through globalized supply chains, often to developing regions of the tropics.¹³ In land use displacement pathways the biodiversity benefits of forest regeneration may be reversed many times over, unless the receiving agricultural region has very high yields (and therefore lower net land area requirements), owing to the higher biodiversity of most tropical regions and the potential for land use conversions through deforestation.¹⁴ Additional pathways towards forest transitions have emerged in recent decades, including state and non-governmental organization-supported tree planting programmes and through land use policies and regulatory pathways supporting forest conservation and restoration to meet international targets for carbon and biodiversity.¹⁵

Global supply chain transparency initiatives and voluntary certification of sustainable production are helping reduce losses of tropical forests produced through land use displacement.¹⁶ But there is still a long way to go.¹⁷ Even though forest transitions are increasingly evident around the world, including in many developing tropical regions,¹⁸ at the global scale, biodiversity losses remain inevitable whenever land use is simply exported to other regions,¹⁹ unless their productivity is substantially higher or their biodiversity is substantially lower.

The ultimate prospects for a global forest transition to halt losses of biodiversity will depend on the

degree to which commodity demands can be met by increasingly intensive land use practices that shrink land demand overall—the classic “economic” pathway of urban and industrial development—combined with efforts to prioritize the conservation and restoration of the most biodiverse regions on Earth.²⁰ The pace of this development, including urbanization and agricultural intensification, and the governance of global commodity supply chains²¹ will ultimately determine not only the fate of Earth’s remaining biodiversity but also the future of human opportunities with respect to food, housing, employment, recreation and other essential conditions.

NOTES

- 1 Díaz and others 2019; IPBES 2019b; Pereira, Navarro and Martins 2012; WWF 2020.
- 2 Barlow and others 2018; FAO and UNEP 2020.
- 3 Díaz and others 2019; IPBES 2019b; WWF 2020.
- 4 Alexander and others 2015; Ellis 2019; Sanderson, Walston and Robinson 2018.
- 5 Ramankutty and others 2018.
- 6 Ellis 2019; FAO 2017.
- 7 Barlow and others 2018; Curtis and others 2018; Ramankutty and others 2018.
- 8 FAO and UNEP 2020; Keenan and others 2015.
- 9 FAO and UNEP 2020.
- 10 Mather 1992; Rudel and others 2020.

- 11 Ellis 2021; Meyfroidt and others 2018; Rudel and others 2020.
- 12 Meyfroidt and others 2018; Rudel and others 2020.
- 13 Meyfroidt and Lambin 2011; Meyfroidt and others 2018; Rudel and others 2020.
- 14 Schwarzmüller and Kastner 2022.
- 15 Meyfroidt and others 2018; Rudel and others 2020; Wolff and others 2018.
- 16 Lambin and others 2018.
- 17 Curtis and others 2018.
- 18 Hosonuma and others 2012.
- 19 Meyfroidt and Lambin 2011.
- 20 Curtis and others 2018; Ferreira and others 2018; Meyfroidt and Lambin 2011; Strassburg and others 2020.
- 21 Chung and Liu 2022; Lambin and others 2018; Pimm 2022.