Social Futures

THE FUTURE OF
SENSE-MAKING

EXAMINING CHANGES TO THE WAYS
WE THINK, ACT, AND BEHAVE

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CONTENTS

FOREWORD

Sometimes it feels like making sense of the world grows more difficult with each passing day. Unprecedented volumes of information arrive along multiple—and multiplying—channels, some of it is questionable and dangerous. Over time, Canadians could find it increasingly challenging to know who or what to trust as they make important social, economic, environmental, and political decisions.

These and other ongoing disruptions to individual and collective sense-making present clear challenges for policy makers. At the same time, they offer glimpses of startlingly positive sense-making futures, where our ability to understand ourselves and the complex systems that shape our lives brings radically improved outcomes for all concerned.

Guided by its mandate, Policy Horizons Canada (Policy Horizons) is tracking shifts in our sense-making routines, capacities, tools, and contexts in order to identify key areas of change and initial policy implications. We present the preliminary results of this work below.

We welcome your comments and participation as we continue our foresight work on social futures.

We hope you find it insightful.

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INTRODUCTION

Sense-making drives what people think they know, how they make decisions, and how they behave. It is at the heart of challenges to communicating information in ways that reach Canadians. It also plays a key role in overall trust in government, with long-term implications for Canadians' views on democratic institutions and science.

Policy Horizons is exploring how Canadians' sense-making may change in the future.

Viral disinformation and conspiracy theories pollute our information environment. They shape the way a growing number of Canadians make sense of the world, which in turn influences their social, economic, and political decisions. And these forces could become even more influential.

How this came to be remains something of a puzzle. Does the problem lie with technology? Weak regulatory frameworks? The business models of sprawling social media platforms? Or the influence of malicious actors?

Each of these factors springs to mind for good reason. Yet if analysis stops there, it reinforces a problematic assumption: that the problem lies with supply rather than demand. We assume people want rational, objective, and evidence-based content. However, current signals suggest that disinformation and conspiracy theories satisfy powerful internal needs that are not entirely rational, and are otherwise not being met.

In futures where supply and demand make disinformation and conspiracy theories more widespread and attractive, considering both supply and demand might be beneficial to Canadians' sense-making activities.

Disinformation is just one aspect of the emerging information environment that relates to sense-making. Policy Horizons is exploring the broader question of how Canadians' sense-making may change in the future. We define sense-making as the way people gather and interpret information to give meaning to their lives and the world. Sense-making drives what people think they know, how they make decisions, and how they behave. Foresight on sense-making could help government decision makers. For example, changes in how Canadians make sense of information could affect the ways they engage with government institutions. These changes could also alter the effectiveness of government programs and policies. Changes in sense-making could influence the ways that the government creates and organizes its own information and decision making, and communicates with Canadians and the world.

Policy Horizons is exploring the future of sense-making as part of its broader line of foresight on social futures. Like all of Policy Horizons' work, this project aims to help the Government of Canada design policies and programs that are resilient in the face of disruptive change and robust across a range of plausible futures. The goal of this study is to assist in strategy and policy development, build anticipatory capabilities, test planning assumptions, and support informed, collaborative networks on horizontal issues.

This paper helps government decision makers understand how changes to sense-making could affect their specific policy contexts. To this end, the paper begins by explaining what we mean by sense-making, then presents some sources and areas of change in the sense-making system. It ends with questions designed to make potential connections between these changes and the broader policy landscape.

WHAT WE MEAN BY SENSE-MAKING

Sense-making is how we gather information and interpret it along with our experiences to understand our world, make decisions, and take action. The term "sense-making" originally referred only to the sensory systems humans use to interpret physical experiences. Since then, the concept has broadened to include the biological, cognitive, social, and cultural factors that mediate how we understand our internal and external worlds.[1]

This study takes the broader view of sense-making. It can be as simple as what happens between a stimulus and a behaviour. And it can be as complex as how people and machines interact to access, filter, and process information when making a decision.

Figure 1 below offers our model of a sense-making process. It begins on the left with raw inputs, namely information and experiences. These must pass through external filters such as algorithms or editorial reviews before they reach our senses. After passing through our senses, which tend to privilege some types of information over others, inputs enter our processing systems. These systems stand on two pillars: our innate and trained cognitive abilities; and the linguistic[2] frameworks, mental models, and ways of knowing we have acquired through education and experience. The "sense" that emerges through this process leads to decisions and actions. It also feeds back into the world through expressions or behaviours that affect others. At the same time, the sense we make revises and refines the way we process, for example by updating mental models or tweaking cognitive biases.

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1 C. Urquhart, Louisa Mei Chun Lam, Bonnie Ceuk, Brenda L. Dervin, "Sense-Making/Sensemaking" Oxford Bibliographies, last modified 24 June, 2020, DOI: 10.1093/OBO/9780199756841-0112.

2 Language is an important sense-making tool. Writing this paper in a certain language ties it more directly to some sense-making cultures than others. And we acknowledge that this shapes the way we understand and express changes in Canada's sense-making environment.
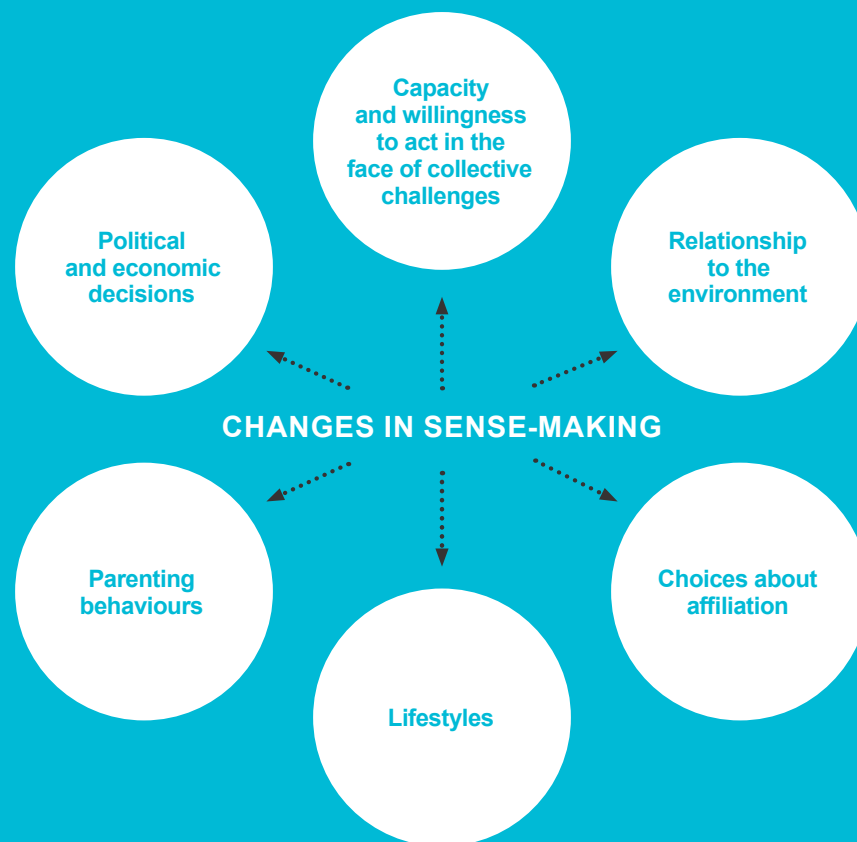
FIGURE 1:

OUR MODEL OF SENSE-MAKING
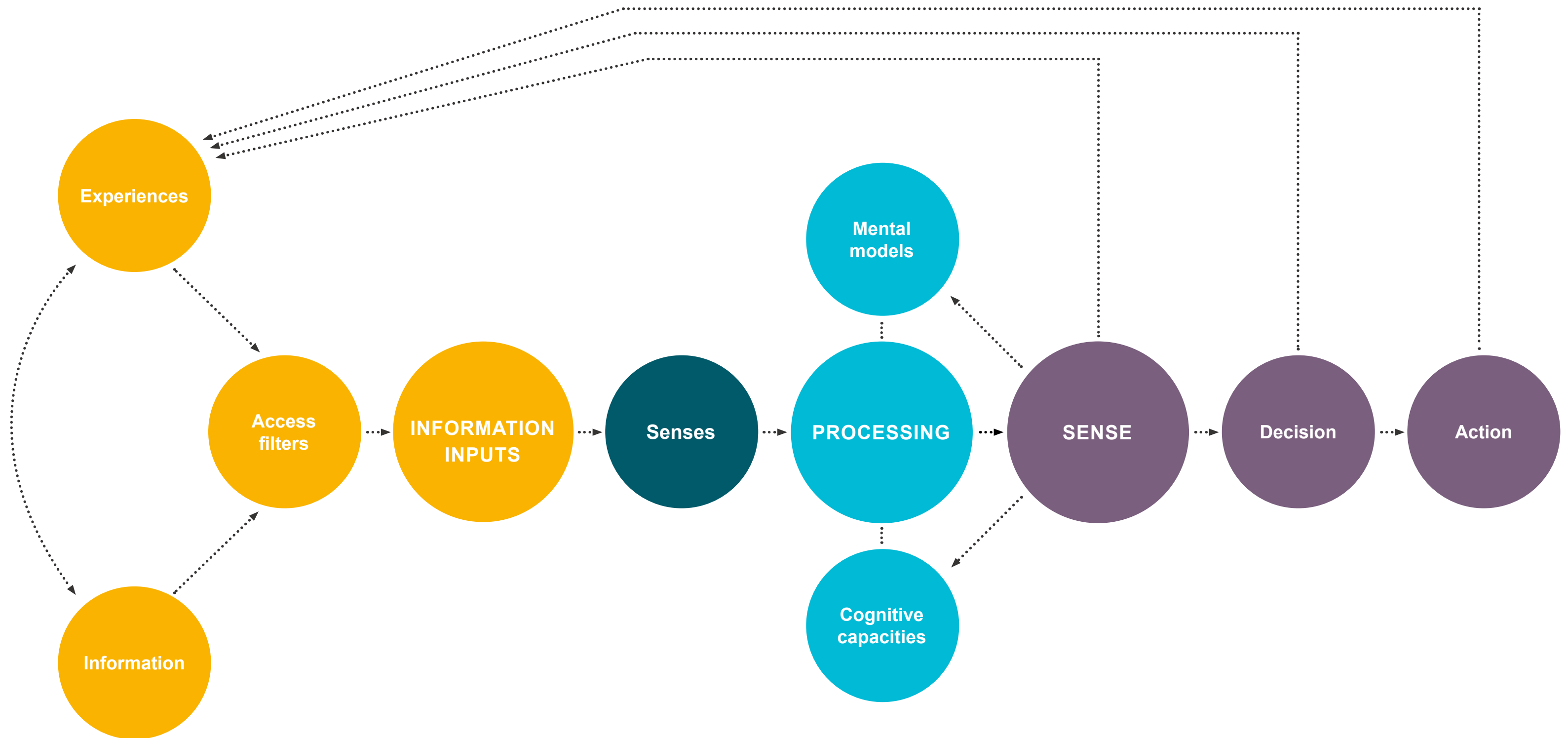
WHY DO FORESIGHT ABOUT SENSE-MAKING?

Powerful disruptions to sense-making could change where Canadians find information, what and who they trust, and how they tell facts from lies. Changes in our sense-making could also affect Canadians' ability to understand and willingness to engage with government policies, as well as their desire to participate in programs. The COVID-19 pandemic has highlighted the importance of sense-making in precisely these areas.

AMONG OTHER THINGS, THESE DISRUPTIONS COULD AFFECT CANADIANS':

Capacity and willingness to act in the face of collective challenges

Political and economic decisions

Relationship to the environment

CHANGES IN SENSE-MAKING

Parenting behaviours

Choices about affiliation

Lifestyles

Sense-making is at the heart of challenges to communicating public health information in ways that reach Canadians and encourage their compliance. It is also an opportunity to enhance overall trust in government and academic experts, with long-term implications for Canadians' views on democratic institutions and science.

AREAS OF CHANGE

We were already seeing powerful changes in sense-making when the COVID-19 pandemic struck. Many of these changes accelerated and strengthened. Meanwhile, the twin challenges of communicating vital public health information to Canadians and their varied responses to it highlighted the real-world importance of sense-making.

In figure 2 on the following page, we describe some areas of important change in sense-making. We have grouped these changes into five categories that reflect and interact with the sense-making system: knowledge production and power; digital disruption; shared narratives and experiences; sensing, feeling, and thinking bodies; and mental models and ways of knowing. While the direction and impact of some changes are clearer than others, each may disrupt the sense-making system and should be studied.

FIGURE 2:

AREAS OF CHANGE IN SENSE-MAKING
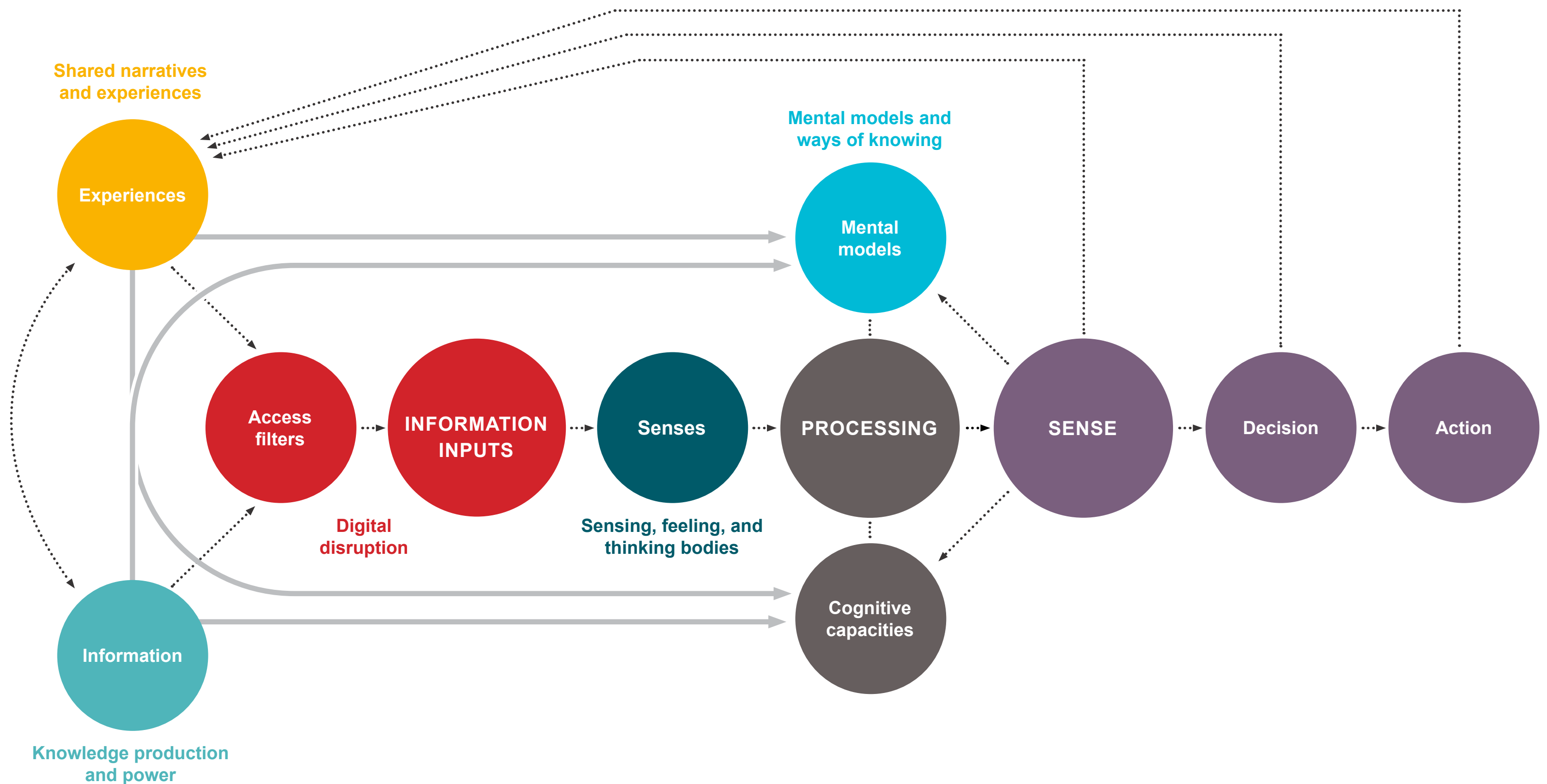
KNOWLEDGE PRODUCTION AND POWER

Ongoing technological and social developments could disrupt the way we create, distribute, and validate knowledge, as well as the authority of experts and the organization of institutions.

….. **Authority in transition.** Technological and social changes have weakened the power of traditional sense-making authorities such as the press, academic experts, and government. New sense-making participants, such as social media influencers, have gained greater prominence. These changes have also opened spaces for the voices of excluded and marginalized communities. The erosion of previous sense-making authorities also puts into question the traditional knowledge norms that helped us tell real from fake, information from disinformation, and sense from nonsense.

….. **Access to knowledge.** Public access to the research ecosystem is flourishing thanks to citizen science initiatives, the Open Access and Open Data movements, and efforts to make cultural heritage accessible in digital formats. However, the vast research and information holdings of technology firms remain private preserves. Uneven digital infrastructure may also sustain barriers to cutting-edge knowledge, as could publishers and institutions keen to protect profits derived from intellectual property.

….. **Trust in research.** Controversy over the reliability of some social science research could help spread anti-science, anti-expert sentiments among the public. Diminishing public trust in academic research could not only weaken popular commitment to public health directives and climate action, but also reduce public support for government research funding. Fluctuating public trust in health sciences driven by COVID-19 could hurt or boost popular support for research.

….. **Production of knowledge.** The merging of new digital communications technologies, the breakdown of disciplinary silos, and the spread of new tools and ideas are transforming knowledge creation. As we find new ways to explore the universe and ourselves, we may create knowledge and insights that were once unimaginable and could transform our lives for the better. At the same time, COVID-19 has paused many important knowledge collaborations. Long or permanent disruptions could slow or shift the character of knowledge creation and all the constructive activities it supports.

····   **Digitally mediated education.** As COVID-19 accelerated the shift to online learning, it underscored weaknesses in traditional systems of formal education, which seem to clash with our digitally mediated lives. Access to quality digital infrastructure is now a core concern, given its profound effects on social equity. Digital skills and critical frameworks have become concerns for teachers, learners, and educational planners. Experiencing the pandemic also showed the continuing value of social interactions, physical activity, and nature exposure as supports for learning. Transforming education in response to these concerns could supercharge future generations' sense-making capacities, with knock-on benefits for creativity, innovation, and competitiveness.

····   **Misinformation marketplace.** Creating sophisticated mis- and disinformation is becoming easier and cheaper. This helps explain why there is so much supply. Demand for such content appears to be growing among a large part of the public as well. Should supply and demand continue to grow, false content could flood the information landscape. Fact and truth could become harder to detect, masking valuable signals in a surge of noise, increasing anxiety about the future, and feeding conspiracy theories.

····   **Evolution of the media.** Aside from a few blue chip and public outlets, traditional print and broadcast media continue to decline in the face of competition from giant social media platforms. That said, big platforms are not the only players competing for attention and revenues. Sprawling networks of small, hyper-local and hyper-partisan outlets—some with links to political interests or foreign states—are also emerging. This shift in the media landscape could bring a revision of journalistic and editorial norms, with inevitable effects on the information available to Canadians.

····   **Geopolitics of knowing.** Increasingly confident Asian states are exerting greater cultural and economic influence on neighbours and the world. Africa's most dynamic states could play similar roles in the near future. This could change the global influence of certain sense-making norms and mental models (e.g. neoliberalism, collectivism, democracy). New geopolitical blocks rooted in shared sense-making perspectives may also follow, shifting strategic priorities, diplomatic practices, and trade relations.

DIGITAL DISRUPTION

Rapid changes in the digital landscape are changing the way Canadians create, access, and process information. This could greatly affect our social lives and institutions.

…. **Ubiquitous artificial intelligence (AI).** Algorithms shape what we see and engage with online. They are also central to how we deal with complex situations and large amounts of information. Continued advances in machine learning may improve AI's ability to understand context and create original content. Humans may struggle to understand why or how AI makes analytical or creative choices, even as we benefit from new perspectives rooted in non-human logic.

…. **Rich in-game experiences.** Immersive, online multiplayer games are becoming deeper, richer, and more engrossing ways of sharing social, aesthetic, and intellectual experiences. What happens "in game," and the structure of various game "realities," might strongly influence how people make sense of their "out-of-game" experience, if that distinction even continues to hold.

…. **Surveillance and social sorting.** Our interactions with online tools, household electronics, and workplaces, as well as our consumer transactions, involve us in complex systems of big data and surveillance. These can help us make sense of our context, but they can also help others make sense of us for their own purposes. The resulting data can be used to create crucial social knowledge, for example, to track the spread of disease. It can also be used to sort us into groups, evaluate us against criteria, and offer (or target us for) individualized treatment. In an emerging "knowing society," rich data about who and what we should trust can empower us. We might also find ourselves rewarded or penalized according to the judgments of reputation systems. Our ability to make sense of our worlds may increasingly depend on what we can know or understand about surveillance and social sorting, and how we react to them.

…. **Information overload.** Massive amounts of data flowing along multiple channels provide unprecedented access to knowledge. However, they also challenge our ability to absorb and make sense of the information we encounter daily. We may experience overload, fatigue, and anxiety as our minds struggle to cope with floods of digital information.

..... **Changing communication practices.** The moves from text to voice search and from verbal to visual representation disrupt traditional ways of sending, receiving, and interpreting information. We are seeing new forms of expression containing symbolic value. Some, such as memes, seem unthreatening and have become mainstream modes of expression. Others, such as deepfakes, provoke anxiety about the state of the information landscape. In the future, the new communications norms that evolve from these practices could provoke changes in sensory and cognitive processes, as well as the design of communication networks.

SHARED NARRATIVES AND EXPERIENCES

Shared narratives and experiences sustain our identities and shape our interpretation of the world. Disruptions to either could disturb the foundations of Canadians' sense-making.

.... **Pervasive uncertainty and anxiety.** Prior to COVID-19, concerns over changes such as deepening inequality and accelerating climate change were powerful drivers of anxiety. The pandemic offers even more reasons for feeling anxious; it disrupted assumptions about social life, health, childcare, and work. Physical distancing rules transformed rituals such as graduations, weddings, and funerals that comfort us and help us make sense of major transitions in our lives. Loss of these stabilizing traditions and institutions could amplify collective anxiety, possibly making it a dominant frame for social life. In turn, this could increase the appeal of conspiracy theories or ideologies that promise the comfort of certainty.

.... **Revision of shared narratives.** Shared narratives, such as the "discovery" of the Americas by Europeans or the triumph of science, shape interpretations of everyday experiences and information. They also support collective identities. Compelling counter-narratives (e.g. post-colonial histories and reconciliation) and collective experiences (e.g. of the pandemic) are challenging these stories, and could lead us to revise our shared identities in constructive ways. At the same time, new media business models and changing audience practices are transforming how, where, and with whom we experience the stories that shape much of our sense-making.

.... **Abundance of sense-communities.** Some communities are defined by shared sense-making frameworks, such as religious doctrine, conspiracy theories, or commitment to scientific thinking. The distribution of Canadians among these communities appears to be changing. Certain established sense-making communities (e.g. some traditional religious denominations) are declining. Meanwhile, others (e.g. environmentalism) are growing and new ones (e.g. the Black Lives Matter movement) are appearing. This could redistribute power among the common frameworks (e.g. neoliberalism, social justice, authoritarianism) people use to understand the world.

..... **Nostalgic inertia.** Nostalgia for simpler, more certain times may in part explain the popularity of activities such as baking and board games during the pandemic. Prior to that, we saw other forms of nostalgia such as backlash against digital technologies and growing interest in agricultural lifestyles. Increasing use of nostalgic sense-making frames could make it harder to see and embrace innovative solutions to familiar challenges (such as climate change) and to new disruptions (such as a pandemic). Conflicting nostalgias between groups who also disagree about the nature of current challenges could worsen social divisions.

SENSING, FEELING, AND THINKING BODIES

Sense-making ultimately depends on our senses and embodied processes—it all happens in and through our bodies. Changes in our sensing capacities, bodies, and physical environments could change how we make sense of ourselves, others, and the world.

•••••   **Human enhancement.** Digitally enhanced prosthetics, technologies that provide touch feedback (haptics), and virtual/augmented reality could extend the range of our physical senses or create entirely new ways of sensing. This could radically transform human sense-making in relation to our built and natural environments, as well as to both digital and organic beings.

•••••   **The roots of social behavior.** Emerging research on biology and social neuroscience is clarifying how biological systems and social behaviours interact. New technology can image the brains of multiple people as they interact in real-world situations, revealing the hidden ways we influence one another and how that shapes the way we interpret experiences and information. It could also uncover new ways to nudge human behaviour for prosocial purposes or commercial gain.

•••••   **The biological effects of social experience.** Social epigenetics is revealing how powerful social experiences such as nurturing and trauma may "get under the skin," and affect our physiological and psychological development. We are constantly learning more about how our experiences and exposures may change us at the molecular level and modify how our genes are expressed. This could suggest novel approaches to mental health and human development, as well as new design parameters for built environments and human-machine interfaces.

..... **Convergence of the digital and physical.** Digital mediation is changing the ways we relate to objects. Haptics, augmented reality (AR), and virtual reality (VR) allow us to experience virtual objects as tangible. If the distinction between virtual and physical continues to fade in ways that privilege virtual experiences, the virtual world could soon rival the physical as a primary frame of reference. People who relate to objects and environments through digital experiences could find the "unaugmented" physical world deeply uncomfortable. But they might also bring creative thinking to their interactions with physical objects and spaces. The way we see value could also shift, making virtual goods and economies as important as their physical counterparts.

..... **Environments of sense.** Even in societies where layers of infrastructure insulate humans from nature, environmental conditions help regulate our bodies and emotions. These factors in turn affect much of our sense-making. Environmental disruption due to climate change could shake the environmental conditions that support our emotional and physical equilibrium. Climate concerns could feel more urgent when we feel them first-hand. This discomfort could push us towards systems and solutions that promote synergy with nature rather than isolation from it. Alternatively, this discomfort could cause some to double down on their disconnection from natural environments.

MENTAL MODELS AND WAYS OF KNOWING

Mental models and ways of knowing filter and frame our information-seeking activities and lived experiences. Changes to either could transform the foundations of sense-making.

..... **Indigegogy.** Some Indigenous people are using Indigegogy, a transfer of knowledge rooted in Indigenous traditions, to help their communities prioritize Indigenous ways of knowing. This is part of projects to rebuild social systems, such as child welfare and education, and to invigorate Indigenous cultural expression. While a broad range of Indigenous worldviews inform Indigegogy, many share holistic worldviews, put people at the centre, see both humans and the land as medicine, and evaluate decisions against long-term historical and future backdrops (e.g. seven generations).

..... **Reconciliation and decolonization.** Indigenous peoples express their cultures, values, languages, and ways of knowing in many ways across multiple channels. Indigenous futurism, activism, community development, and scholarship show the continuing vitality of Indigenous ways of knowing. Increased awareness of Indigenous worldviews could help Canadians recognize and re-evaluate colonial ways of thinking. Accepting Indigenous ways of knowing could inspire new perspectives on political economy, institutional reform, the environment, and social policy.

..... **Economics in question.** There is dispute, even in mainstream policy conversations, about whether core economic concepts such as GDP, the future discount rate, and externalities are useful. These doubts are growing along with concerns about climate change, the digital transformation of the economy, historically-rooted inequalities, and COVID-19's unequal impacts on various parts of society. At the same time, alternative economic concepts such as the Happiness Index, zero growth, and sustainable finance are growing in some circles. Shifts in how we make sense of the economy could transform business processes, government revenue and spending policies, and the social conditions Canadians experience on a daily basis.

..... **Shared reality in question.** Most healthy, functioning societies live within shared realities rooted in common knowledge norms. While never complete, perfect, or permanent, shared realities help us build the consensus we need to act collectively. In some plausible futures, that common ground fades, allowing competing sense-making silos to multiply—especially online. If groups based on particular sense-making norms cannot understand others' realities, social divides may deepen. In other plausible futures, collective reality becomes too closed or confined, as powerful platforms, technologies, global powers, or dominant ideologies crowd out differing or less powerful perspectives.

POLICY-RELEVANT QUESTIONS

Since sense-making shapes so much of what people think and do, it cuts across many—if not all—policy domains. Here are just a few policy-relevant questions that emerge as policy makers engage in foresight about the future of sense-making.

EDUCATION AND RESEARCH

- **Research funding:** How might changes to Canada's information landscape affect the role and aims of government research funding?
- **Skills and literacies:** What skills and literacies might Canadians need to make sense of new digitally mediated environments? What new opportunities may arise for training and skills acquisition?

INFRASTRUCTURE

- **Sense-making in public places:** How could technologies such as augmented reality change the way Canadians engage with national symbols and spaces (e.g. monuments, museums, federal buildings, and national parks)? How much control, if any, will institutions want or be able to assert over the way we experience those physical spaces?
- **Digital tools and infrastructure:** Could digital tools and networks become so essential to sense-making and social lives that Canadians consider them essential public infrastructure or even rights?
- **Spaces for public engagement:** Could Canadians come to see non-traditional communications environments, such as multiplayer video games, as spaces for civil life as well as recreational activities?

ECONOMY

- **Making sense of the economy:** How will Canadians make sense of the economy and their own economic wellbeing in the future? What metrics will best help us evaluate policies, track economic performance against collective goals, and grasp new opportunities?
- **Digital goods/consumers:** How might Canadian consumer culture shift as digital goods transform exchange systems and the way we perceive value?
- **Intellectual property (IP):** How might the context for IP rules change as machines start creating cultural products such as art or music, and making discoveries on their own?

ENVIRONMENT

- **Climate change:** In a new sense-making environment, how might Canadians use collective intelligence to make sense of our changing climate, and prepare to mitigate and adapt effectively?
- **Making sense in ecosystems:** How might new tools and mental models change the way we make sense of nature and the land?

PUBLIC COMMUNICATIONS AND ENGAGEMENT

- **Disinformation and harmful speech:** Are our current policy assumptions and tools well suited to a rapidly changing information landscape littered with disinformation, hate speech, and conspiracy theories?
- **Emergency response:** How will Canadians make sense of and communicate about emergencies in the future, both during and after the pandemic?
- **Broadcasting and communications media policy:** How might Canadians' needs and experiences in the information environment shift their expectations for public broadcasters and communications policy?
- **Culture and communications:** How might shared challenges such as growing uncertainty and anxiety affect the way government addresses communications and supports culture?
- **Geopolitics of sense-making and the influence of foreign states:** As Canadians spend more time in digital spaces, including those outside of Canadian jurisdiction, could foreign government interference in their lives change in intensity and style?

NARRATIVES AND IDENTITY

- **National identity, narratives, and symbols:** How might Canadians' attachment to Canada and their relationship to Canadian histories change?
- **Indigenous ways of knowing:** Besides policy traditionally concerned with Crown-Indigenous relations, what other areas of government might be influenced by wider acceptance of Indigenous ways of knowing?
- **Languages:** How might the rise of natural language technologies affect the promotion of official languages, continuity of Indigenous languages, and opportunities for individuals who speak languages other than French or English?
- **Public safety:** How might changes in the sense-making environment, especially in how we form sense-making communities, affect the way Canadians understand and respond to violent extremism?

GOVERNANCE

- **Government decision making and sense-making machinery:** How might automated sense-making tools affect government's internal operations and decision making? What will Canadians consider meaningful access to information in the future?
- **Public Trust:** How might institutions earn and sustain trust in emerging sense-making environments?
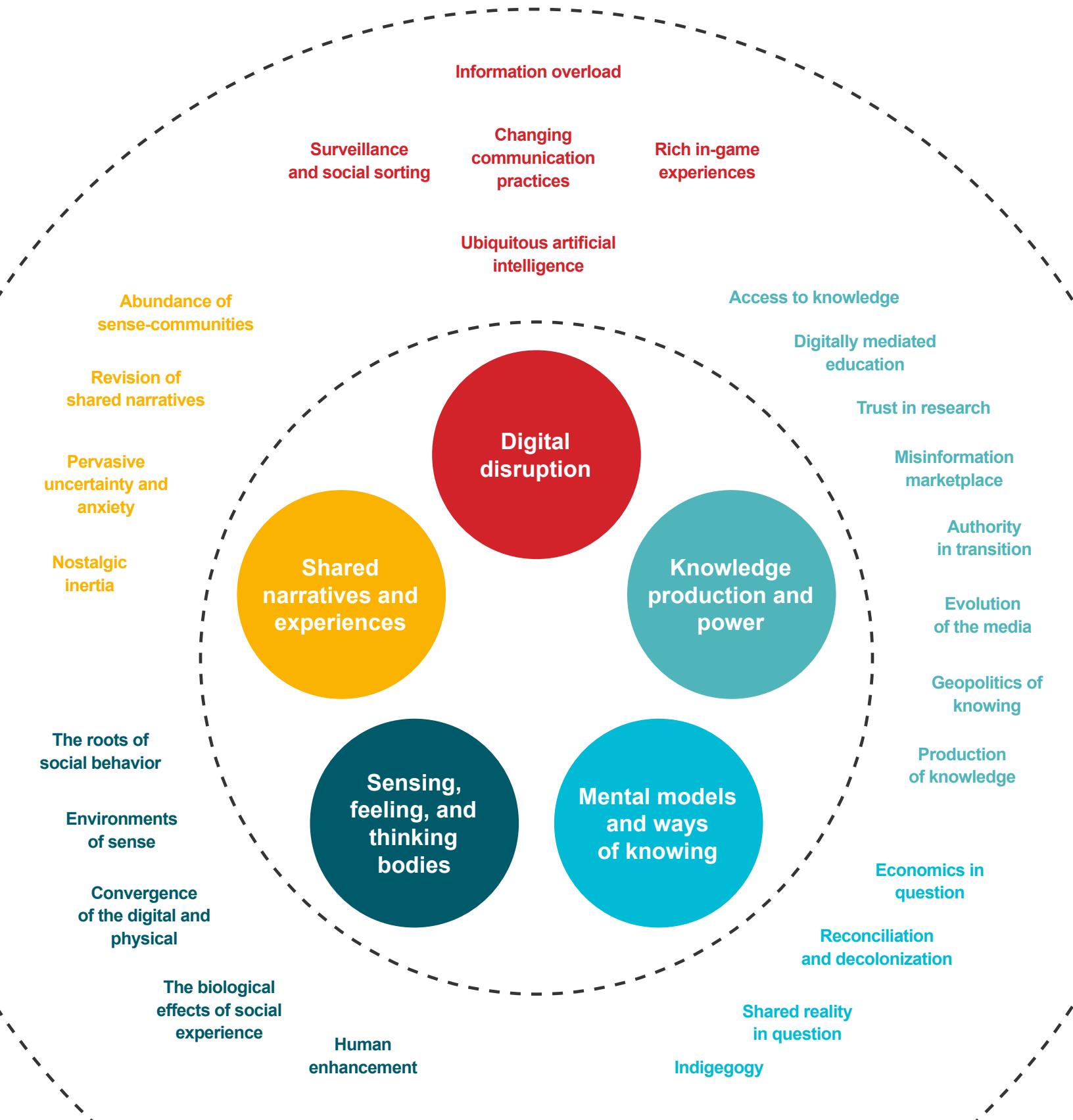
CONCLUSION

Canadians are living through major changes to where they get information, how they filter and interpret it, and who they trust. The future seems likely to hold more changes—possibly even radical disruptions. Big or small, these changes could ripple through Canadians' lives, leading to a number of different plausible sense-making futures. As the forces of change identified in this paper intersect, collide, strengthen, or oppose one another, they may remake our shared sense-making system. Important changes to the way Canadians think, act, and plan for the future could follow.

We hope early awareness of these changes and their potential implications will help policy professionals as they consider the future policy landscape. As Policy Horizons' sense-making study moves forward, we will continue to develop robust, policy-relevant foresight that describes plausible sense-making futures, and highlights the challenges and opportunities they could present.

ANNEX 1
AREAS OF CHANGE IN SENSE-MAKING

Information overload

Surveillance and social sorting

Changing communication practices

Rich in-game experiences

Ubiquitous artificial intelligence

Access to knowledge

Digitally mediated education

Trust in research

Misinformation marketplace

Abundance of sense-communities

Revision of shared narratives

Pervasive uncertainty and anxiety

Nostalgic inertia

Authority in transition

Evolution of the media

Geopolitics of knowing

Production of knowledge

Digital disruption

Shared narratives and experiences

Knowledge production and power

Sensing, feeling, and thinking bodies

Mental models and ways of knowing

The roots of social behavior

Environments of sense

Convergence of the digital and physical

Economics in question

Reconciliation and decolonization

The biological effects of social experience

Human enhancement

Shared reality in question

Indigegogy

ACKNOWLEDGEMENTS

We look forward to further collaboration with partners and stakeholders as our study of the future of sense-making moves ahead.