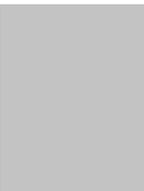




FUTURE TRENDS

Report

Issue no. 4 - November 2024



Future Trends Report

Future Trends Report, published in English and Arabic by TRENDS Virtual Office in Montreal, stands out as a distinctive publication dedicated to highlighting:

1. the most important forward-looking studies that aim to identify future trends, analyze various variables that may influence these trends, and determine the best future scenarios.
2. the most important applied studies that explore the application of knowledge, scientific theories, and information to solve current problems and overcome future challenges.
3. the most important illustrative and graphic forms that visually summarize significant studies, helping readers understand the trends and challenges of the future world.

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1 Prospective research

Transition 2050, choisir maintenant, agir pour le climat, rapport ADEME 2021

<https://librairie.ademe.fr/ged/6531/transitions2050-rapport-comprese2.pdf>

The report "Transition 2050, Choisir Maintenant, Agir pour le Climat" was published in 2021 by the Agence de la Transition écologique (ADEME), the French government agency responsible for guiding society's decisions towards a more ecological and sustainable future.

This report is the result of two years of forward-looking research, aimed providing solutions for France to become carbon-neutral by 2050. It brings together technical, economic and environmental knowledge, in order to envision sustainable transformations for society.



ADEME proposes scenarios inspired by the 2018 report published by the United Nations Intergovernmental Panel on Climate Change (IPCC), assessing the social, economic and environmental stakes of different paths toward carbon neutrality. The authors start from the premise that it is "essential to accelerate the debates now, given the time needed to make decisions in a democratic framework, as well as to implement them" (p.7). ADEME thus seeks to illustrate the possible options for the future, by highlighting the decisions that will soon become inevitable.

The four scenarios presented are: 1) Frugal generation; 2) Territorial cooperation; 3) Green technologies; 4) Restorative bet. They are all presented first from the point of view of lifestyle (society, food, housing and personal mobility), then from a technical, governance and territorial angle, to finally analyze the potential impacts on the economy, whether from a macro-economic or industrial perspective.

"Four coherent and contrasting 'typical' paths to lead France towards carbon neutrality." The first scenario, "Génération frugale", imagines a chosen but also constrained frugality, with 50% organic food consumption, limited construction and reduced mobility. It

also proposes to give pride of place to "low-tech", as well as "demetropolization", and a focus on medium-sized towns and rural areas. Industry would focus on needs, and prosperity indicators would be different (income disparities, quality of life, etc.).

Scenario 2, "Territorial cooperation", is based on a sharing economy and lifestyle changes, such as halving meat consumption. It also calls for shared governance and environmental taxation, supported by the "reindustrialization" of certain sectors, and dynamic local markets.

Scenario 3, "green technologies", proposes more new technologies, such as in the field of housing, with low-energy rebuilding, or in the field of mobility, by proposing new infrastructures that would manage car-sharing initiatives, for example. The scenario is based on "competitive technologies to decarbonize" (p.10), as well as on "green growth" that would drive international innovation.

Finally, scenario 4, the "restorative bet", is based on the near-stability of certain factors, such as mass consumption, the eternal quest for speed, and urbanization. It is based on the idea that the decarbonization of industry will occur via a carbon growth approach or targeted carbon taxation.



"If it is vital to keep the rise in average global temperatures below +2°C, or even +1.5°C, because beyond that, the scale and unpredictability of the impacts may be such that it will be difficult to define adaptation trajectories." (p.61)



"It is imperative to act quickly: the socio-technical transformations to be carried out are of such magnitude that they will take time to produce their effects."

Socioemotional wealth in family business: what are the impacts?

Smajić, H., Palalić, R., & Ahmad, N. (2023). Future perspective of socioemotional wealth (SEW) in family businesses. *Journal of Family Business Management*, .954-13(4), 923

The article examines the concept of socio-emotional wealth (SEW), which is essential for distinguishing family from non-family businesses. The three authors, from the College of Economics and Political Science, Sultan Qaboos University, Muscat, Oman (Management Department and Economics and Finance Department), and from the International University of Sarajevo, Bosnia and Herzegovina (Department of Economics), review the literature to demonstrate the importance of SEW in family business.



Despite its increasing prominence in family business literature since its introduction in 2007, research on SEW remains fragmented. The study aims to organize knowledge on SEW through a systematic literature review of 185 articles.

Four research questions guide the analysis: 1) The evolution of SEW literature shows a rising trend since 2007; 2) Citation analysis identifies influential journals and key authors in SEW research, guiding future scholars on collaboration and publication opportunities; 3) Thematic analysis reveals existing research themes and highlights overlooked areas; and 4) Examination of the top 25 most cited SEW articles provides insights into methodologies and future research directions.

Research on SEW and financial performance has produced mixed results. While some studies highlight that family firms often prioritize SEW over financial performance, other research suggests that SEW influences management and governance, impacting financial performance in various ways. For instance, while family employment may increase sales but reduce profitability in micro and small enterprises (Cruz et al.,

2012), having a family CEO can improve financial performance in industrial districts but negatively impact publicly listed companies (Naldi et al., 2013).

The real value of this article lies in the advice it provides for future research. Whether on the methodological aspect, or on the conceptual aspect, the authors develop very clear advice on the path that research should take, with, for example, an improved understanding of the SEW concept itself, and its links with various dimensions. Performance issues also require further development, since "ownership preferences affect CEO succession, scapegoating, and organizational turnaround efforts" (p.946). The authors also advise that future research should look at the links between SEW and internationalization, as it seems to be very complex, between risk-willing and risk-averse.

The study concludes that SEW is a relatively underexplored concept, emphasizing its importance for future research in family business dynamics. It encourages further investigation into SEW's relationship with family firm performance and other critical areas.

Cruz, C., Justo, R. and De Castro, J.O. (2012), "Does family employment enhance MSEs performance?", *Journal of Business Venturing*, Vol. 27 No. 1, pp. 6276-, doi: 10.1016/j.jbusvent.2010.07.00.
Gomez-Mejia, L.R., Haynes, K.T., Nunez-Nickel, M., Jacobson, K.J.L. and Moyano-Fuentes, J. (2007), "Socioemotional wealth and business risks in family-controlled firms: evidence from Spanish olive oil mills", *Administrative Science Quarterly*, Vol. 52 No. 1, pp. 106137-, doi: 10.2189/asqu.52.1.106.
Naldi, L., Cennamo, C., Corbetta, G. and Gomez-Mejia, L. (2013), "Preserving socioemotional wealth in family firms: asset or liability? The moderating role of business context", *Entrepreneurship Theory and Practice*, Vol. 37 No. 6, pp. 13411360-, doi: 10.1111/etap.12069



"Socio-emotional wealth refers to the non-financial goals of the family business that satisfy the family's affective need (Gomez-Mejia et al., 2007)" (p.924).



"SEW (having a family CEO) is positively related to the financial performance of family firms in industrial districts but is negatively associated with the financial performance of publicly listed companies." (p.943)

Prospective research

Knowledge management: how to make the most out of it?

<https://www.hbrfrance.fr/strategie/la-gestion-des-connaissances-retour-vers-le-futur-60479>

“Given that knowledge resides mainly in the minds of employees, it is estimated that on average organizations lose 70% of their know-how every night when employees leave the company. In fact, only 30% of knowledge is documented in any way.” (Knowledge Management Report, The Delphi Group, 1998). The author of this article, Vincent Ribi re, practitioner-researcher and lecturer at Bangkok University (Thailand), looks at knowledge management (KM). He begins by explaining why companies invest in KM, which enables them to gain considerable efficiency by reproducing certain scenarios with customers.



Ribi re defines KM as “the process of capturing a company’s collective expertise, knowledge and skills, wherever they may be - in people’s heads, on paper or in data/information repositories - and distributing them where they can contribute to the greatest benefit”. It is more a question of sharing knowledge than controlling or retaining it for no purpose. The author begins with a brief history of KM. He recalls that the 90s saw a growing interest in technologies to improve the circulation of knowledge. However, without a clear strategic objective, many of these initiatives ultimately failed. Then, in the 2000s, it became clear that the focus should be on the people themselves. Communities of practice are an example of what began to be put in place to retain, share and improve knowledge. Technology became the “enabler, not the main driver.” The creation of an ISO standard (30401) in 2018 has continued to consolidate the importance of KM for organizations. This standard “sets requirements and provides guidelines for establishing, implementing, maintaining, reviewing and improving an effective management system for knowledge management in organizations.” The article refers to a recent survey (American Productivity Quality

Consortium, 2024) which shows that knowledge management is perceived “as a tool for improving operational efficiency and process improvement within organizations.” Another study conducted by the International Data Corporation (IDC) concludes that KM’s benefits include improvements in several key areas: operational performance, customer service, satisfaction and engagement, and employee performance. The importance of KM is now undeniable. In fact, international awards such as the Global Most Innovative Knowledge Enterprise Award and the APQC Excellence in Knowledge Management Award annually recognize organizations that excel in KM. Ribi re concludes with the increasingly practical use of AI as a KM tool. He notes that “AI will help improve, perfect and automate some tedious knowledge management processes, such as content cleansing, content tagging and content restructuring.” “Becoming a learning organization, an organization that continuously and systematically manages knowledge at different organizational levels (individual, team, organization, ecosystem) is a key factor in organizational agility and productivity.”



In fact, only 30% of knowledge is documented in any way.” (Knowledge Management Report, The Delphi Group, 1998).

“Becoming a learning organization, an organization that continuously and systematically manages knowledge at different organizational levels (individual, team, organization, ecosystem) is a key factor in organizational agility and productivity.”

Note for the designers: please note there are many interesting graphs in the report itself

Importance of data anonymization: the current situation

https://www.obvia.ca/sites/obvia.ca/files/resources/202408-OBV-Pub-Rapport_Symposium_Adesdonn%C3%A9es_0.pdf

The Data Anonymization Symposium Report was published in April 2024 by the International Observatory on the Societal Impacts of AI and Digital (OBVIA) and the Quebec Bar Foundation. It is based on perspectives presented at an interdisciplinary event held on April 29, 2024, at the Université de Montréal, in partnership with the L.R. Wilson Chair, the CRDP, OBVIA, the Fondation du Barreau du Québec, and GERAD. The presentations provided an overview of the state of anonymization techniques, the needs and challenges faced by stakeholders in the sector, and the legal and political issues surrounding data governance.



The authors begin by revisiting the concept of "data anonymization," emphasizing that it should not be seen as "a concept that can be reduced to a binary representation, where data is either anonymized or not" (p.6). Several presentations linked anonymization to data identifiability, noting that there are various methods and thresholds that determine what constitutes an "acceptable risk of re-identification." Several anonymization methods can be used to reduce risk: aggregation (combining several records into a single one), pseudonymization (replacing identifiers), k-anonymization (generalizing or deleting quasi-identifiers) and I-diversity. New tools are emerging to provide a framework for anonymization. Bill 25 in Quebec (Canada) is supposed to protect individuals' personal information. However, some researchers question its effectiveness, notably because it sees data anonymization only as an alternative to the destruction of personal information. Canada's National Standards are another tool that could help improve the quality of personal information protection. However, their limitations are also presented here, such as the fact that they are "non-binding" standards, meaning that organizations cannot be forced to comply with them. Moreover, while they provide a standard in the form of a certifying label,

they are not free of charge, which can be an obstacle for many organizations. In the third part of the report, the authors present data on governance. Mentioning first of all issues of legitimacy and social acceptance, the researchers criticize "governance by legislative delegation" (through official standards, for example), asserting their ineffectiveness. In their view, the fact that these standards are not binding makes them highly ineffective. For the researchers, the solution lies in "participative governance", where committees could represent interests by category, taking their inspiration from the institutions created by the European RGPD, and tailoring them to the cultural specificities of Canada. The report concludes by examining the challenge of data anonymization for Fintechs, or companies that operate within the financial and banking technology sectors. For these companies, anonymization as just another obligation, but also recognize its limitations, such as the irreversibility of the process, or the consequences of potential lawsuits or sanctions. The point of view of consumers, who have little interest in the issue, indicates that one of the current challenges should be to find solutions to make consumers aware of their privacy rights.



"As there is no such thing as zero risk of re-identification, data can never be completely anonymized." (p.6)

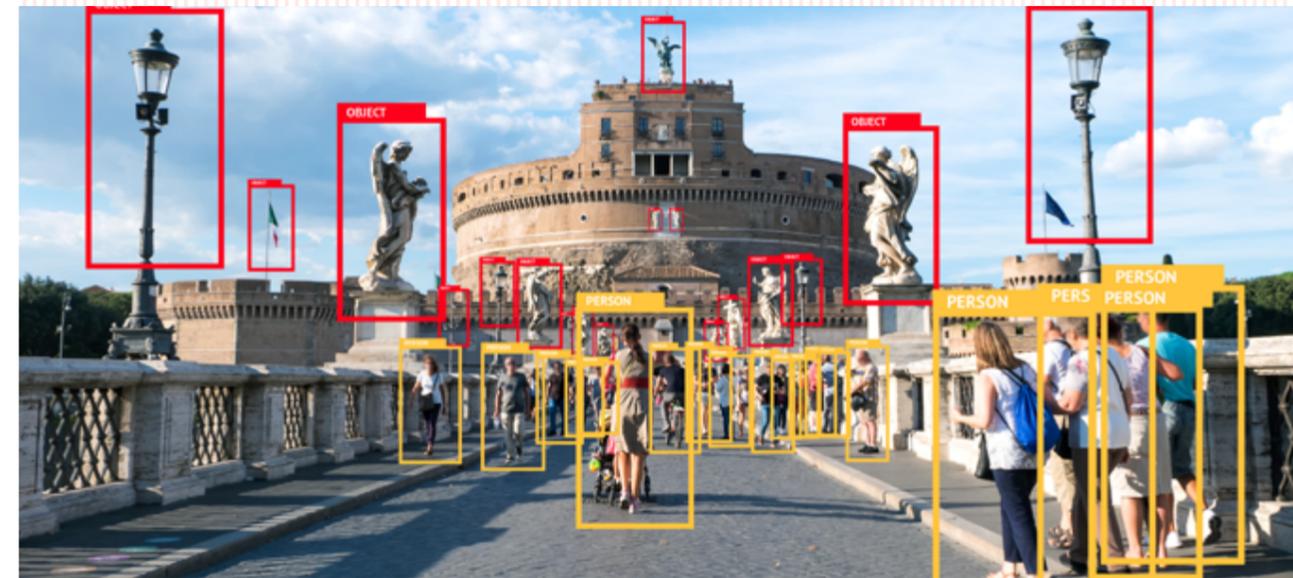


One of the current challenges should be to find solutions to make consumers aware of their privacy rights

Do algorithms shape us?

<https://podcast.ausha.co/la-jungle-des-miroirs/episode-4-algorithme>

This podcast, which aims to raise awareness, understanding and critical thinking skills, attempts to decipher what is meant by the term "algorithm." This episode, the third in a series of 20, aims to understand how algorithms shape perceptions of the contemporary world.



The speakers start from the observation of what a company can put in place to manipulate information, taking the example of Cambridge Analytica and the outcry it created at the time of Donald Trump's election in the United States. The question here is: when you open your networks and access content instantly, how is that content chosen? Content that seems random but is in fact skillfully decided by an algorithm. In fact, the sites' creators analyze your likes, shares and all your online actions in order to understand who you are, your values, beliefs, political opinions, tastes and so on. Here, the guest mentions the striking example of a book published in 2022, *Toxic Data*, by David Chavalarias, which aims to reflect on digital manipulation via social networks as a threat to democracy. The author, a mathematician and director of research at the Centre d'analyse et de mathématique sociales (CNRS) and the Institut des systèmes complexes de Paris Ile-de-France, is dedicated to the analysis of social networks and online political activism. His book suggests ways of resisting the intoxication of opinion at individual level, and of collectively protecting democracy by adapting it to the new digital order. One of the examples

taken from the book and mentioned in *La Jungle des Miroirs* is that of an author who decides to "like" all possible publications and links on Facebook related to extremist postures. He notices that after just 48 hours, his News Feed offers him only extremist suggestions. Every social network implements this kind of tool. The algorithms play on three psychological concepts: 1) reinforcement or confirmation bias: opinion is reinforced when we are exposed to things we already believe; 2) the filter bubble: it's impossible to be exposed to contradictory information, so we don't see opposing thoughts; and 3) negativity bias: on representations of your fears, indignation generates much more engagement than other ways. These are all addictive mechanisms, generating a maximum of emotions, and playing on the dopamine release phenomena they imply. The podcast concludes that the social networking system is based on a "vicious model", and that we need to be aware that data is now worth its weight in gold. The guests, despite the anxiety-inducing discussion they publish here, offer some hope for the future, mentioning that the solution lies in knowledge: we need to train, read and learn, so as to sharpen a critical mind that "is our only possible shield."



"The 19th century was the century of the gold rush, the 20th century was the century of the oil rush, the 21st century is and will be the century of the rush for the world's personal data."



"The solution lies in knowledge: we need to train, read and learn, so as to sharpen a critical mind that "is our only possible shield."

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2 Applied research

Out-of-distribution detection in multi-label classification: a crucial theoretical framework

Zhang, Dell, and Bilyana Taneva-Popova. "A Theoretical Analysis of Out-of-Distribution Detection in Multi-Label Classification." ACM, 2023. <https://doi.org/10.1145/3578337.3605116/>.

The article "A Theoretical Analysis of Out-of-Distribution Detection (OOD) in Multi-Label Classification" by Dell Zhang and Bilyana Taneva-Popova explores the theoretical foundations of detecting out-of-distribution (OOD) inputs specifically within multi-label classification contexts. The need for effective OOD detection is critical for the safe deployment of machine learning models, especially in real-world applications like medical diagnostics and financial fraud detection, where encountering inputs significantly different from training data can lead to severe consequences.



Traditionally, OOD detection research has concentrated on multi-class classification problems, where each input belongs to only one class. In contrast, multi-label classification involves scenarios where a single input can belong to multiple classes simultaneously, complicating the OOD detection process. This paper aims to bridge this gap by analyzing existing methods and providing a deeper understanding of their mechanisms.

The authors systematically review various OOD detection methods such as Maximum Softmax Probability (MSP), Maximum Logit, and JointEnergy. They classify these methods based on two dimensions: label-wise scoring functions (e.g., softmax probabilities, logistic probabilities) and aggregation functions (e.g., maximum, sum, average). Interestingly, they find that some methods yield equivalent results under appropriate conditions, such as MaxProb and MaxLogit, indicating that multiple approaches can achieve similar performance outcomes.

A significant contribution of the paper is the proof that JointEnergy is the optimal probabilistic solution for OOD detection in scenarios where class labels are conditionally independent. This insight offers a more rigorous interpretation of JointEnergy's effectiveness compared to its original joint-likelihood interpretation, emphasizing that its performance relies

more on the independence of labels than on their interrelationships.

The paper discusses practical implications for deploying OOD detection methods in multi-label classification tasks, especially in fields where inputs can be ambiguous or multifaceted. The findings suggest that understanding the underlying assumptions and relationships of various methods can lead to better model designs and improved detection accuracy.

The authors highlight potential future research areas, including the exploration of label relationships in OOD detection and the development of new models that can effectively leverage these relationships. They call for further empirical studies to validate the theoretical findings and enhance the practical applicability of OOD detection techniques in multi-label settings.

In summary, this paper provides a crucial theoretical framework for understanding OOD detection in multi-label classification. By analyzing existing methods and establishing the optimality of JointEnergy under specific conditions, the authors contribute valuable insights that could lead to advancements in machine learning practices, particularly in safety-critical domains. The exploration of label relationships and the proposed future research avenues underscore the importance of ongoing inquiry into this complex area of machine learning.

Effective OOD detection is critical for the safe deployment of machine learning models, especially in real-world applications like medical diagnostics and financial fraud detection.



Understanding the underlying assumptions and relationships of various methods can lead to better model designs and improved detection accuracy.

The Migration Experience: A Conceptual Framework

Kreienkamp, J., Bringmann, L. F., Engler, R. F., de Jonge, P., & Epstude, K. (2024). *The Migration Experience: A Conceptual Framework and Systematic Scoping Review of Psychological Acculturation..* 28(1), 81- 116.

The authors, all based in the Netherlands, address a challenge in psychological acculturation research: the multitude of theories and their heterogeneity. This diversity in the literature represents a challenge for “researchers, practitioners, and policymakers in the field”. To tackle this, the authors propose to categorize psychological acculturation into four distinct aspects of human experience: wanting, feeling, thinking and doing. This conceptual framework not only simplifies the process of organizing research but also allows for more effective examination and comparison of the various conceptualizations involved.



The adoption of such a framework, beyond facilitating the categorization and understanding of research and its results, will enable all concerned to make better-informed decisions for the future. For example, policy development and intervention design can greatly benefit from such a tool.

The authors discover that the more intimate, internal aspects of acculturation, such as emotions and motivations, have been little covered in the literature.

The framework targets three key areas related to psychological acculturation: theoretical literature, psychometric literature, and empirical studies. First, it examines broad theoretical works to uncover underlying assumptions. Second, it evaluates validated acculturation measures to create a database that categorizes scales by their focus on various psychological aspects. Finally, it analyzes empirical literature to explore operationalizations of psychological acculturation, facilitating comparisons across different fields and research subjects.

Building on recent advancements in the field, the authors demonstrate the framework's organizational and comparative

value by conducting a systematic scoping review of existing theoretical, psychometric, and empirical literature. Their findings indicate that the framework effectively organizes previous research, revealing that very few articles fall outside the ABCD model (Affect, Behavior, Cognition and Desire). Additionally, it highlights significant gaps in the literature, such as a critical disconnect between theoretical insights and empirical application. This framework also aids in future theoretical developments and practical applications by facilitating novel predictions and interventions. Overall, it serves as a solid foundation and a valuable resource for both researchers and practitioners seeking to deepen their understanding of psychological acculturation.

“Culture consists of explicit and implicit patterns of historically derived and selected ideas and their embodiment in institutions, practices, and artifacts; cultural patterns may, on one hand, be considered as products of action, and on the other as conditioning elements of further action.” (based on Kroeber & Kluckhohn, 1952, p. 181)

“Psychological acculturation experience can be understood in terms of affects, behaviors, cognitions, and desires.”



“Culture consists of explicit and implicit patterns of historically derived and selected ideas and their embodiment in institutions, practices, and artifacts; cultural patterns. (based on Kroeber & Kluckhohn, 1952, p. 181)”

Kroeber, A. L., & Kluckhohn, C. (1952). *Culture: A critical review of concepts and definitions*. Peabody Museum Press. <https://iif.harvard.edu/manifests/view/drs:42769295515i>

Applied research

Refugee mothers in Canada: unique challenges

Omar, L. (2023). Foreclosed futures and entangled timelines: conceptualization of the ‘future’ among Syrian newcomer mothers in Canada. *Journal of Ethnic and Migration Studies*, 49(5), 12101228-.

The article examines how Syrian refugee mothers resettled in Canada conceptualize the future, focusing on how their past experiences, cultural contexts, and current challenges shape their perceptions. The authors differentiate between dreams, hopes, and concrete plans, noting that many mothers express broad aspirations—like their children achieving stability—without specifying detailed personal plans.



Hadeel, for instance, embodies a sense of agency by connecting relating her dreams to her current situation, while others, like Heba, voice deep concerns about an uncertain future marked by instability and lack of permanent employment. The psychological burden of securing their children’s futures in a new context contributes significantly to the stress these mothers experience.

The concept of “foreclosed futures” is central to understanding these mothers’ experiences. Many explicitly state that their futures are intertwined with those of their children, prioritizing their children’s well-being over their own aspirations. This contrasts with the individualistic mindset prevalent in North American society. Alia, a mother who feels more respected in Canada than in Syria, reflects this by asserting that her life is “over” but her children’s futures remain her primary concern. Similarly, Samia expresses that her opportunities have passed, choosing to focus on her children’s potential instead. Despite their self-sacrifice, some mothers do find optimism in their new lives. They appreciate the safety and opportunities available in Canada compared to the hardships they endured in their home country and during their transitions. The narrative reveals that while some mothers delay their personal goals, they still express hope for their children’s education and

future success.

The article also discusses the idea of “entangled timelines,” where mothers’ perceptions of the future are intricately linked to their past traumas and present struggles. This entanglement complicates their ability to envision a separate future, as their narratives often reflect a longing for the stability of the past alongside aspirations for their children’s success.

The article concludes that understanding the temporal aspects of refugee mothers’ experiences is essential for comprehending their integration challenges. It suggests that their futures cannot be viewed in isolation but must be understood through the lens of their pasts and present circumstances. This highlights the complexity of migration and resettlement and calls for further research on how different variables—such as individual backgrounds and trauma—impact these mothers’ future projections. Overall, the findings highlight the unique challenges faced by refugee mothers, their prioritization of their children’s futures, and how cultural, temporal, and psychological factors intersect to shape their experiences after resettlement. The article advocates for deeper exploration of these themes, recognizing the diverse experiences among mothers and the implications for their integration into Canadian society.



Many mothers explicitly state that their futures are intertwined with those of their children, leading them to prioritize their children’s well-being over their own aspirations.



Refugee mothers grapple with feelings of inadequacy and dislocation in a new society that challenges their cultural values and parenting practices

AI in education: impacts

Nguyen, N. D. (2023). Exploring the role of AI in education. London Journal of Social Sciences, (6), 84- 95.

In this paper, Nguyen explores the role of Artificial Intelligence (AI) in education. Published in 2024 in the London Journal of Social Sciences, this paper reflects on AI applications in education, focusing on the approaches adopted up to the 2020s, in order to better plan their use in the future. The impacts of AI in education are categorized into three aspects: "guidance", "teacher" and "student".



The "Guidance" AI approaches refer to programs that support students and teachers in making decisions. These applications can, for example, facilitate academic choices for students with certain learning disabilities. The author gives the example of a study published in 2021, where "AI was used to predict students at risk of failing to provide intervention" (Hlosta et al., 2021). Here, AI helps to fill certain gaps in education, and to promote a more accessible and adapted education for all. The "Student" AI approaches refer to technological and educational tools that improve the quality of education, such as 'learning AI', which implements innovative learning tools, such as game-based learning or learning analytics. "According to the Entertainment Software Association, 65% of Americans, or 212.6 million, play at least 1 hour of video games a week" (Pierre-Louis, 2023). Therefore, it's easy to see why using the appeal of video games in education can help make the learning experience more adapted, efficient, and engaging. The "Teacher" AI approaches are all technologies that help teachers to teach. AI tools become true partners for the teaching staff, who see their preparation time reduced, and can therefore devote

more of their time to the teaching itself. For example, "automated essay scorers", which use machine learning and natural language processing to score essays, enable teachers to spend less time grading papers by hand, and more time interacting with their students. Nguyen demonstrates the importance of categorizing the impacts of AI in education.

The paper does, however, put the results into perspective with some of the drawbacks that the use of AI in education could represent, notably in relation to questions of lack of human interaction, costs, or even ethics in relation to privacy and data security.

The author concludes that the rapid development of AI call for careful examination of its applications and regulations in education, as AI could become integral to the sector in the coming decades. The categorization of AI applications can help developers in creating targeted solutions while leveraging existing principles. However, it is essential to address ethical concerns, technical limitations, and costs to ensure the safe and effective implementation of AI in education.

The impacts of AI in education are categorized into three aspects: "guidance", "teacher" and "student".



"65% of Americans, or 212.6 million, play at least 1 hour of video games a week, highlighting the appeal of video games in making the learning experience more adapted, efficient, and engaging."

Pierre-Louis, S. (2023, July 6). Essential Facts -Entertainment Software Association. Retrieved from <https://www.theesa.com/2023-essential-facts/>.

Applied research

The Olympic Games and the theory of spectacle in modern societies

MacAloon, J. J. (2023). Olympic Games and the theory of spectacle in modern societies. In *The Olympics* (pp. 80107-). Routledge.

John J. MacAloon, an anthropologist and Professor Emeritus at the University of Chicago, focuses on cultural performance theory, particularly in relation to the modern Olympic Movement and Games. In his paper, MacAloon categorizes the Olympic experience into four genres: spectacle, festival, ritual, and game, arguing that these genres are central to understanding Olympic ideology.



He begins by defining "spectacle," a less understood genre of cultural performance. Spectacles prioritize visual sensory experiences and require both actors and spectators. Unlike rituals, which may not necessitate an audience, spectacles demand public displays of grandeur. MacAloon emphasizes that while outsiders might confuse rituals with spectacles, it is crucial to maintain a clear distinction for analytical purposes. The Olympic Games exemplify spectacle through their blend of visual grandeur and audience engagement, highlighting the importance of spectators in both performance and organization. Next, MacAloon contrasts "festival" with spectacle. The term "festival" comes from Latin roots meaning joy and celebration, and is marked by planned observances that evoke a festive mood. Festivals emphasize participation, whereas spectacles elicit a broader range of emotions, often focusing on visual awe. Festivals are typically regular and joyous, while spectacles can be spontaneous and

prone to moral ambiguity. The Olympic Games incorporate both elements, with organizers aiming to foster a celebratory atmosphere despite the complexities and controversies that arise. Ultimately, both genres serve as frameworks for various cultural performances. MacAloon then explores the "ritual" aspect of the Olympics. Pierre de Coubertin, the founder of the modern Olympic Games, highlighted the importance of rituals in distinguishing the Olympics from mere athletic competitions. He believed rituals invoke sacred forces and facilitate social transformation. The Olympic ritual's foundation is human kindness, representing shared humanity among diverse national identities. Coubertin advocated for "true internationalism," celebrating cultural diversity rather than erasing it. Olympic ceremonies, structured around rites of passage, incorporate national symbols while promoting a transnational identity, aiming to unite participants and spectators emotionally.

"In merely eighty years, the Olympic Games have grown into a cultural performance of global proportion." (p.80)

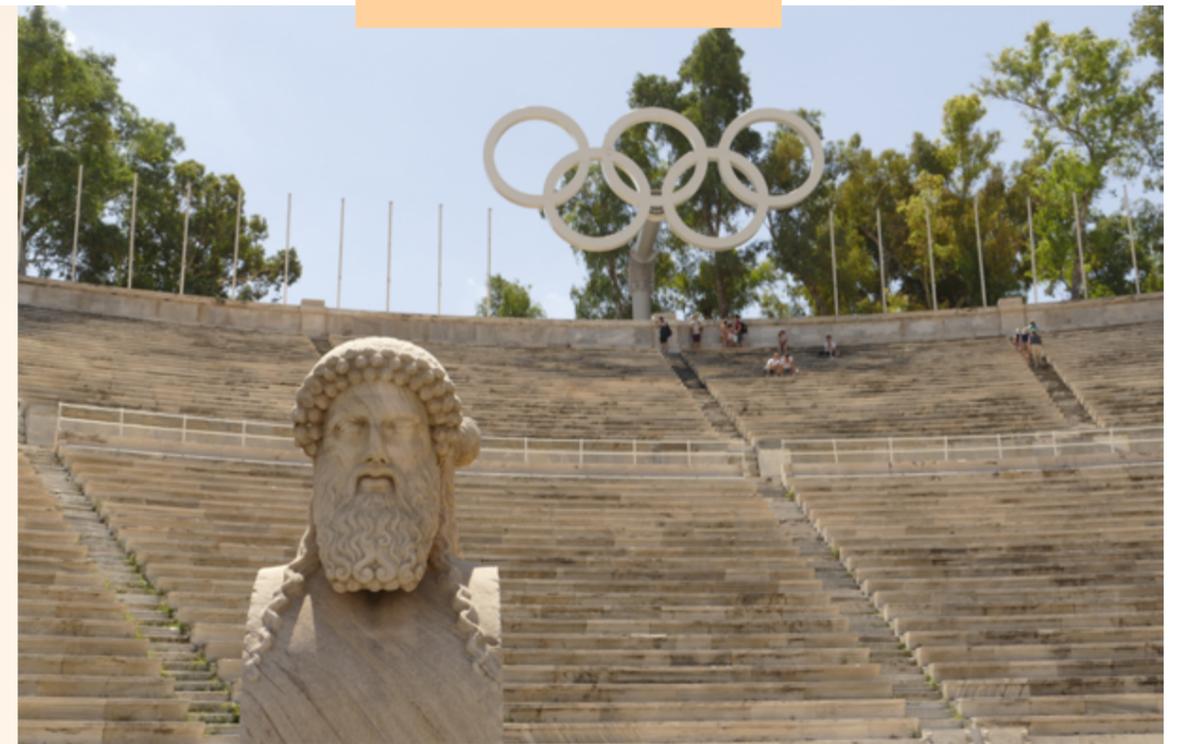


MacAloon categorizes the Olympic experience into four genres: spectacle, festival, ritual, and game.

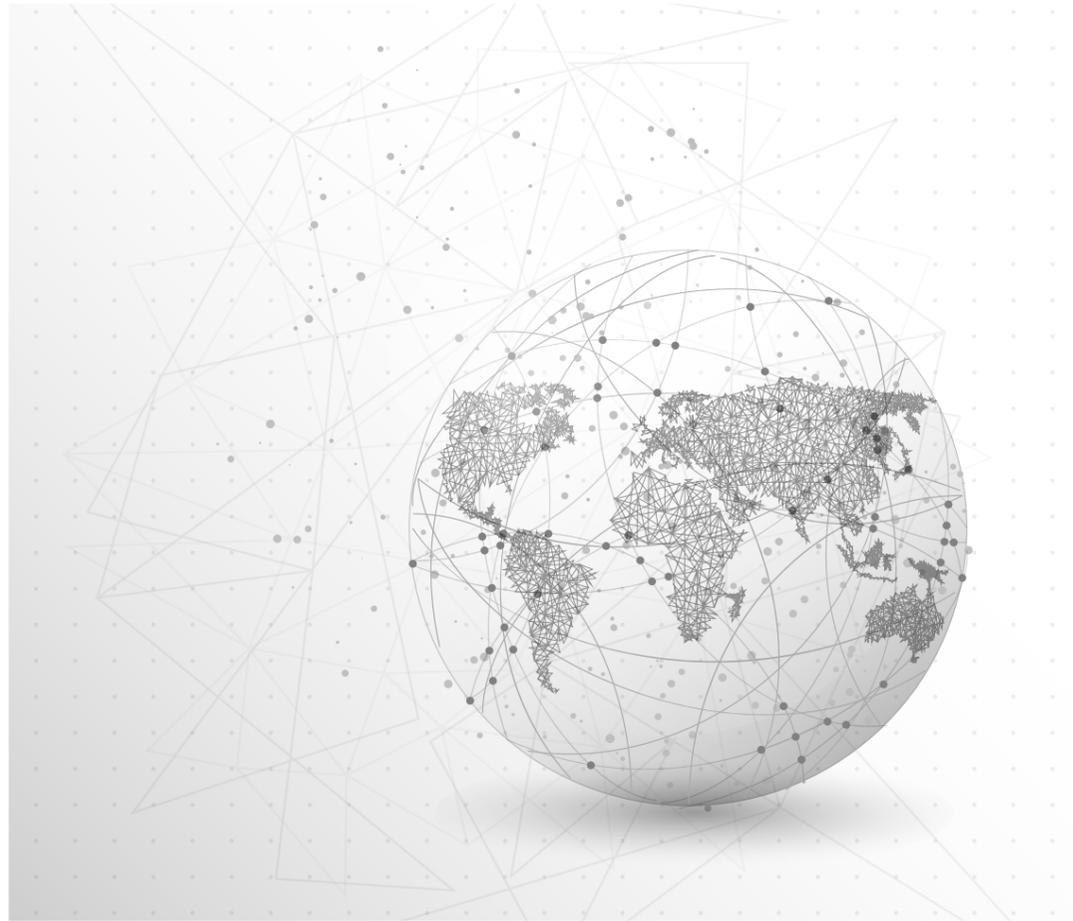


Lastly, MacAloon addresses the "games" genre. Anthropologists are increasingly acknowledging the importance of games and sports in modern society, a realization that has lagged behind psychological insights. Historically focused on "primitive" societies, anthropology has often overlooked organized sports' evolving role. Games embody paradoxes: they have fixed rules but allow individual autonomy, providing structured competition alongside moments of sincerity. Coubertin viewed the Olympics as a means to transcend materialism, promoting education and cultural exchange. He believed games could unite diverse peoples, serving as a universal language that celebrates both differences and shared humanity.

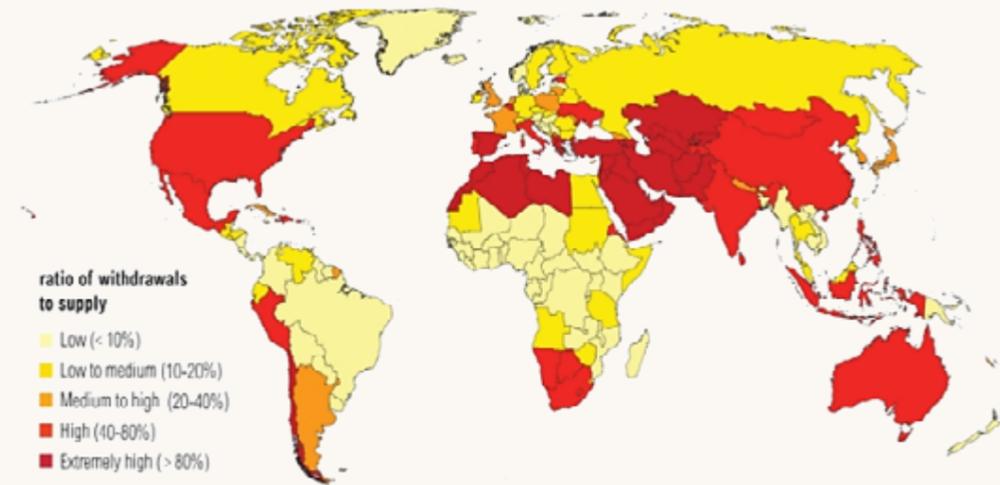
In conclusion, MacAloon's paper examines why the Olympic Games are framed as spectacle rather than merely as a festival. He argues that the spectacle allows for emotional distance and passive observation, aligning with modern values of individual choice and skepticism. Drawing on cultural critiques from Daniel Boorstin and Guy Debord, MacAloon highlights the prevalence of manufactured imagery in contemporary life. Ultimately, the Olympic Games illustrate a complex interplay of illusion and reality, prompting critical reflections on identity, morality, and societal values, revealing how spectacles can both alienate and stimulate genuine engagement.



3 The future in numbers



Water stress of 2040

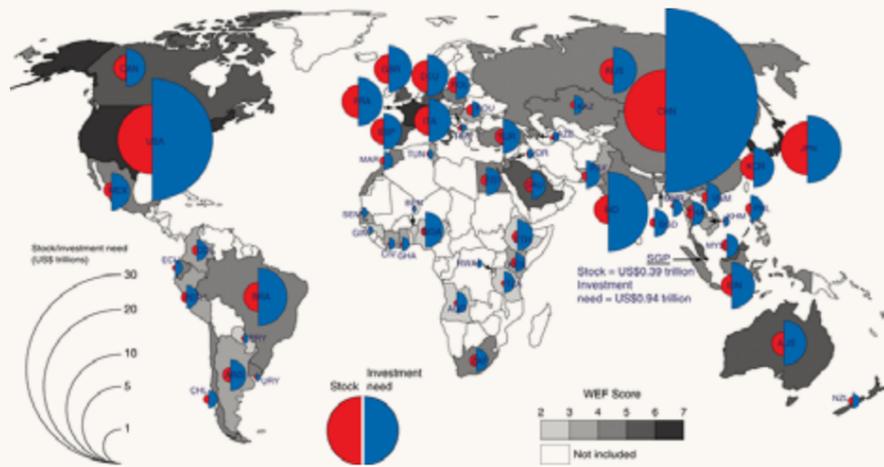


NOTE: Projections are based on a business-as-usual scenario using SSP2 and RCP8.5.

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Current infrastructure stock and forecast future needs to 2040



Nature Sustainability

Comparison of regional demographics (2020- 2040)



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