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Observatório Interdisciplinar de Políticas Públicas «Prof. Dr. José Renato de Campos Araújo» (OIPP)

Contato

E-mail: boletimoipp@gmail.com

Rua Arlindo Bettio, 1000

03828-000

São Paulo/SP

EACH | campus capital USP LESTE
Escola de Artes, Ciências e Humanidades
Universidade de São Paulo

Sumário

Generative AI, (dis)information and elections: horizon scanning

Julie C. Ricard[1] and Ergon Cugler de Moraes Silva[2]

Scholars have proposed various concepts to capture the extent to which technology is transforming our informational ecosystem and the unintended consequences that arise from this overload of –largely digital– information, amongst them "infodemic[3]" (UNESCO, 2021) and "infocracy[4]" (Han, 2022). Within this context, Generative Artificial Intelligence (GAI) stands at the cutting-edge frontier of AI technologies that are bound to further accelerate the transformation of our information ecosystem. GAI includes systems like Large Language Models (LLMs) and Generative Adversarial Networks (GANs). Large

[1] Julie Ricard is a Ph.D. candidate in Public Administration and Government (FGV), with a Master's degree in International Relations (Sciences Po) and Gender Studies (Université Paris 7). She serves as the Director of Technology and Democracy at Data-Pop Alliance, consults for UNESCO contributing to the inter-ministerial effort for the National Strategy for Combating Disinformation, and is the Founder of the Eureka platform.

[2] Ergon Cugler de Moraes Silva holds a Master's degree in Public Administration and Government (FGV), an MBA in Data Science & Analytics (USP), and a Bachelor's degree in Public Policy Management (USP). He works as a researcher at IBICT, where he contributes to the inter-ministerial effort for the National Strategy for Combating Disinformation. He is also a member of the Political Debate Monitor in the Digital Media (USP), the Working Group on Strategy, Data, and Sovereignty (GEPSI-UNB) and the Center for Studies of Alternative Media Barão de Itararé.

[3] Infodemic is defined by UNESCO as "an overabundance of information–some accurate and some not–that makes it hard for people to find trustworthy sources and reliable guidance when needed)".

[4] Infocracy, as defined by Han (2022), refers to "the crisis of democracy in the information regime", in which the sheer amount of information unleashed by digitization constantly threatens to overwhelm citizens, and poses the risk of turning democratic processes into battlegrounds dominated by information manipulation.

Language Models (LLMs), such as Chat GPT (Open AI), Bard (Google) and Lhama (Meta) are designed to produce coherent, contextually relevant text based on probabilities and patterns learned from vast datasets. GANs also produce synthetic images, videos, text, and audio using neural networks.

Synthetic content generated by GAI has already been mistaken for authentic human-generated content, including in electoral contexts. Examples include the deepfake audio incidents involving US candidate Paul Vallas in 2023, or the one involving Michal Šimečka, the leader of Progressive Slovakia, which is said to have influenced election outcomes. Scholars argue that this growing difficulty in distinguishing real from synthetic content will intensify, making pieces of content generated by AI increasingly indistinguishable from those created by humans (Nightingale & Farid, 2022).

Overall, the potential of GAI transcends the mere generation of content; it poses pivotal questions related to the credibility of information, with the potential to further exacerbate widespread societal distrust. This paper seeks to reflect on "what are the implications of Generative Artificial Intelligence for disinformation in elections?". To do so, a "horizon scanning" is proposed, which is a forward-looking methodology used to systematically explore emerging trends, threats, opportunities, and innovations.

Horizon scanning & surveying the field

"Horizon scanning" is a methodology that allows to go beyond academic literature, and include data from a wide range of sources, such as expert opinions, industry insights, news articles, and more in order to "identify signals" (Amanatidou et al., 2012). Taking into account publication timelines, traditional

academic literature may not be up-to-date with the latest technological capabilities and challenges –as illustrated by the limited number of results obtained using the keywords "generative artificial intelligence" in this search. In that sense, horizon scanning was chosen to allow for including content about the emerging trends that might not yet be extensively documented in academic literature (Hines et al., 2019), anticipating future challenges and opportunities (Amanatidou et al., 2012), which better aligns with the goal to provide useful insights for elections.

The first step was to perform a search on the two main academic databases: Web of Science (WoS) and Scopus, using a set of keywords described in Table 1 below. We filtered by year, to obtain results from 2022-2023 only – since the scope of this project is the most recent GAI developments. We obtained 15 results for WoS and 38 for Scopus, a total of 53 articles. After cleaning the duplicates, we obtained 38 results for title and abstract screening.

Table 1: Concepts used in search query on Web of Science and Scopus

misinformation OR disinformation OR "fake news" OR "false information" OR "information manipulation" OR "information disorder" OR "deep fakes"
AND
"artificial intelligence" OR "generative AI" OR "generative artificial intelligence" OR "large language models" OR "generative adversarial networks" OR "variational autoencoder" OR "large language models" OR "chat gpt" OR "dall-e" OR "midjourney" OR "bard"
AND
elections OR "electoral campaign" OR campaign

Source: Elaborated by the authors.

To narrow down the list of articles obtained from WoS and Scopus, we conducted a screening of the titles and abstracts of the 38 articles, following the inclusion and exclusion criteria described in Table 2 below.

Table 2: Exclusion and inclusion criteria

<table>
<tr><th>SCREENING STAGE</th><th>INCLUSION CRITERIA</th><th>EXCLUSION CRITERIA</th></tr>
<tr><td>Title screening</td><td colspan="2">No article was included or excluded based solely on its title.</td></tr>
<tr><td>Abstract screening</td><td rowspan="2">The core motivation of the article is to understand the implications of GAI for (dis)information.</td><td>The study 1) uses AI to identify, characterize or debunk disinformation, OR 2) it does not provide any insights about the societal and/or political challenges at the intersection of GAI and disinformation.</td></tr>
<tr><td>Full article screening</td><td>The implications of GAI for (dis)information are not an important nor central object of the article and/or the article was not freely available.</td></tr>
</table>

Source: Elaborated by the authors.

Finally, we broadened the research scope to incorporate additional articles, both academic and grey literature, found

through field experts' recommendations and scanning the list of references of the articles mentioned above. The grey literature selected was contingent on being authored or published by an esteemed and relevant organization, such as the Organisation for Economic Co-operation and Development (OECD) or the European Union (EU). As part of this phase, we included an additional four (4) articles.

Codification process

Following the categorization, each article was coded based on the following predefined categories. The encoded data segments were then exported via MAXQDA. The defined categories are:

Type of GAI: types of Generative Artificial Intelligence studied in the selected articles, namely text, audio, images and video (also known as deep-fakes).

Production of (dis)information: implications of GAI in terms of producing information broadly and disinformation more specifically.

Distribution of (dis)information: implications of GAI in terms of distributing and disseminating information broadly and disinformation more specifically.

Consumption of (dis)information: implications of GAI for individuals/users that consume (dis)information, including (but not limited to) the credibility of information

Impacts: both concrete and theoretical effects, both immediate and long-term, of GAI for (dis)information

Type of Generative Artificial Intelligence

Overall, the literature distinguishes between two main types of content: textual content and multimedia content. The release of Chat GPT in November 2022 has put the spotlight on LLMs,

and their capabilities of producing text that mirrors human quality and nuances across an array of contexts (Kreps et al., 2022). In June 2023, Spitale et al. (2023) stated that "GPT-3, the latest iteration of the generative pretrained trans-formers developed by OpenAI, is arguably the most advanced system of pretrained language representations". In October 2023, OpenAI unveiled GPT-4, which had more users than both Bing (ranking second) and Bard (ranking third), as reported by The Economist (The Economist, 2023).

The progress of deep learning methods, particularly Generative Adversarial Networks (GANs) has been pivotal for the realm of visual and audio media. GANs can create images, audio or videos impersonating individuals or creating individuals that don't exist in reality. Such affordances pose real challenges, particularly regarding the production of deceptive content, often referred to as "deep fakes". The term "deepfake" traditionally referred to videos, but can be applied to various forms of media:

Images: Manipulated or entirely generated photos that can depict scenes or people in ways that never actually occurred (Boutadjine et al., 2023).

Video: Altered videos where the appearance and actions of a person can be changed, often making them say or do things they never did. This includes facial manipulations such as identity swapping or generating entirely non-existent identities (Nour & Gelfand, 2022).

Audio: Synthetic voices that can mimic real individuals, making it sound as though they said things they never actually did (Karinshak & Jin, 2023).

Overall, deepfake technology has become much more accessible and is expected to continue evolving towards being increasingly harder to differentiate from authentic content.

Production of (dis)information

The primary implications of GAI that we identified are related to the reduction of costs and resources for (dis)information production, and enhanced quality of both text and multimedia (deepfakes in particular) content. Up until now, the orchestration of disinformation was bound by the limitations of human resources (Kreps et al., 2022). Such campaigns relied on manual content production, which is resource-intensive and therefore requires paying people to write content. This had two implications: the production was limited by the resources, and the quality of content varied greatly (especially if non-native speakers were producing it). However, GAI tremendously facilitates digital content creation on a monumental scale, since it has effectively lowered the skills, cost and resources needed to produce any time of content (text, video, audio). This means that the production of disinformation can be significantly scaled up, and flood our information ecosystem, to the point of saturation or even to the extent of altering narratives (Karinshak & Jin, 2023).

As mentioned, GAI writes high quality content in a broad variety of languages, which allows it to ensure the quality of fabricated text content. Models like GPT-4 have demonstrated the ability to mimic human language and nuances, making it challenging to differentiate it from human-generated content (Spitale et al., 2023). A Twitter experiment conducted by Spitale et al. (2023), yielded that “respondents were unable to distinguish between tweets generated by AI and those posted by real Twitter users”. This rise in the quality means fewer errors and a heightened mimicry of human-produced content, paving the way for GAI generated content that's not just widely abundant but also

very credible. That being said, perhaps the most alarming evolution in the realm of (dis)information is the advancement of high-quality deepfakes. With today's advancements, creating deepfakes requires minimal technical know-how and limited resources (Bohacek & Farid, 2022). The combination of advanced algorithms and user-friendly applications has facilitated the replication and swapping of facial expressions and even voice imitations (Karinshak & Jin, 2023).

Distribution of (dis)information

Since the advent of social media platforms, artificial intelligence has played a fundamental role in distributing (dis)information. As individuals increasingly rely on platforms for information and news consumption, AIs such as recommendation algorithms and search engines determine ranking of content and thus the information received by users. The opaqueness of platform-level algorithmic designs, whether they're recommendation algorithms or search engines, creates an environment where the average user remains largely unaware of the mechanisms driving their content consumption. Within that context, the perspective is that generative AI will allow for increased targeting and amplification through automation. The main challenges associated with GAI, is pairing "high-quality content creation with automatic dissemination through digital channels" (Karinshak & Jin, 2023). This is especially worrisome because it increases the possibility of hyper-targeted and hyper-tailored content. As explained:

> Through microtargeting, malicious actors can employ such automation technologies to generate individualized content and target specific groups in a divisive manner (Kertysova, 2018); such content can then be amplified by automated social bots (Assenmacher et al., 2020), which can be leveraged to artificially engage with divisive content,

> creating impressions of popularity and agreement and distorting perceptions of legitimacy (e.g., Shao et al., 2018). (Karinshak & Jin, 2023).

It is expected that automated tools such as social bots, will increasingly play a crucial role in content propagation. These algorithms, designed to mimic human interaction, can create and engage with content, drastically altering the dynamics of online ecosystems.

Consumption of (dis)information

As of today, the affordances of GAI have blurred the line between content created by humans vs. synthetically. Studies have shown that already, users often cannot differentiate between different types of human-written and AI-generated content (Spitale et al., 2023). A study even shows that individuals rated AI-generated public health messages as higher in quality compared to those from trusted sources like the CDC (Karinshak & Jin, 2023). Another study on synthesized faces concluded that AI-generated faces not only appeared highly photorealistic but were also deemed more trustworthy than actual human faces (Nightingale & Farid, 2022). The high credibility of GAI-generated content has implications in terms of potential for deception, increased propensity to believe disinformation and increased distrust in society.

Indeed, the credibility of synthetic text and media is a condition of possibility for its use for deception. Scholars have shown that how content is overall perceived by users can be influenced by various factors such as the credibility of the source, the aesthetics of the message, and the linguistic composition of the content. GAI introduces an added layer of complexity, with its capability to mimic human-generated content.

Scholars have shown that repeated exposure to information, even if false, can lead to increased perceptions of its accuracy (Pennycook et al., 2018). It is expected that GAI will allow (dis)information production to scale – thus intensifying exposure of users to the same pieces of content on multiple platforms, ranging from open social media platforms to mobile instant messengers. Additionally, a study has shown that GAI-generated content has demonstrated an ability to inform (or misinform) more effectively than human-created content: "the results suggest that GPT-3 may be more efficient at conveying information because it can generate text that is easier to read and understand compared to text written by humans (Spitale et al., 2023).

It is expected that 90% of the content online will be synthetically generated by 2026 (Alvarez et al., 2023). Historically, images, videos, and audio recordings have been considered tangible proof of events and statements. However, as we approach this predicted saturation of synthetic content, we are on the brink of a post-reality era. In this new digital landscape, simply seeing or hearing will no longer be enough as confirmation. Instead, every piece of media will necessitate thorough vetting and verification to retain its evidential value, amplifying the challenges of discerning truth in an already complex information ecosystem. Recent cases such as the edited family image of Princess Kate Middleton illustrate the additional layer of complexity and potential broad societal confusion that the looming possibility of a content being generated or not can trigger, to the point of nurturing conspiracy theories (Warzel, 2024).

Impacts

Overall, there are gaps in the literature regarding the systematic and/or real-life impact of disinformation. That being said,

scholars do point towards significant disruptions associated with advancements in AI technologies, notably the likes of GPT-4. While these technological capabilities can have benign applications, malevolent uses such as fraud, damaging reputations, and producing false content have been highlighted (Boutadjine et al., 2023). Scholars point to the transformation of online environments and consumer search behaviors (Karinshak & Jin, 2023). There is also a common understanding that disinformation has already undermined public health (recently in the context of the Covid-19 pandemic), and influenced elections – thus having implications for the very core of democracy across the globe (Karinshak & Jin, 2023).

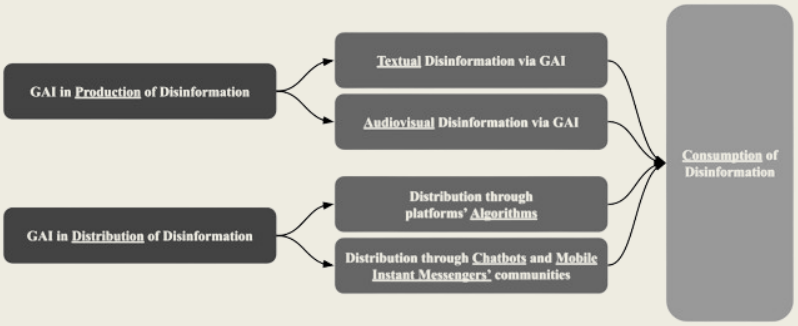
Moreover, the impact of disinformation extends beyond mere information distortion. It penetrates societal structures, affecting trust in institutions and social cohesion (Boutadjine et al., 2023). For instance, studies have shown how disinformation campaigns, particularly those propagated through social media platforms, have sown seeds of doubt in democratic processes and contributed to political polarization (Karinshak & Jin, 2023). In addition, the dissemination of false health information has not only jeopardized public health efforts but also eroded trust in scientific expertise (Karinshak & Jin, 2023). Furthermore, the economic repercussions of disinformation are profound, as seen in cases of market manipulation and financial scams fueled by false narratives (Boutadjine et al., 2023). The current ecosystem, where AI-generated content can be mistaken for organic material, has critical implications for the democratic process. Disinformation campaigns, empowered by AI, can compromise elections, manipulate candidates' campaigns, spread propaganda, and erode public trust in media (Boutadjine et al., 2023).

Discussion: The implications for elections

The rapid development of generative AI represents a pivotal moment for the future of elections and democracy. As the results outlined above highlight, these technologies introduce unprecedented capabilities to generate hyper-realistic and customized political messaging and media at massive scale, affecting the full cycle of information ranging from production, to distribution to consumption.

Based on these reflections, we seek to systematize, in the following Figure 1, the potential implications of GAI in elections. GAI can be used for producing both textual and audiovisual content, including images (Boutadjine et al., 2023), video (Nour & Gelfand, 2022), and audio (Karinshak & Jin, 2023), with the potential to dramatically increase the sheer amount and quality of (dis)information. In terms of distributing and disseminating disinformation, GAI can be leveraged for both platform-level algorithmic designs, as well as for mobile messenger apps that rely on automated social bots (Karinshak & Jin, 2023). Finally, regarding consumption, GAI is already amplifying the challenges of discerning truth in our complex information ecosystem. Overall, GAI can directly affect citizens, leading to disinformation consumption (Spitale et al., 2023) with damages to individuals' lives (Boutadjine et al., 2023) and influence elections (Karinshak & Jin, 2023).

Figure 1: The implications of Generative Artificial Intelligence (GAI) for disinformation in elections



Source: Elaborated by the authors.

In addition to further exacerbating the ongoing infodemic, it is fair to expect that GAI will be weaponized to fuel distrust, a sentiment often and easily weaponized by populists and/or "technopopulists" (a term coined by Giuliano da Empoli) characters, such as authoritarian and/or populist leaders (such as Duterte, Bolsonaro, Magufuli, Kolélas, Trump, Salvini, Erdoğan) – which are themselves associated with a decrease (or loss) of trust in institutions and each other.

According to the OECD (Lorenz et al., 2023) and the European Parliament (Alvarez et al., 2023), the pace of development in generative AI means legacy approaches to combating disinformation will likely prove inadequate in the short term. Existing fact-checking, content moderation, and media literacy efforts cannot scale to the pace and volume of synthetic content possible. While technical mitigation measures like watermarking and AI detection systems are being explored, these remain limited, particularly in the short-term. This means that the upcoming elections will be particularly vulnerable to disinformation fueled by generative AI.

Looking ahead, key priorities include transparency and provenance tracking for AI-generated content, limitations on micro-targeted political messaging, digital literacy programs, and renewed commitments to factual campaigning. We will also need macro-level efforts to counter polarization and ultimately renew trust in democratic institutions, and each other. In other words, we face monumental governance challenges posed by GAI's collision with the information ecosystem. As the technology continues advancing rapidly, deepening research and informed debate on mitigating future harms while enabling benefits remains key.

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Fechando as portas de políticas públicas de sucesso – o efeito dispersão geracional

Ivana Diniz Machado[5]

Por que a humanidade fecha portas de conquistas consolidadas? Existiria um desgaste geracional, ou seja, uma geração buscando afastar-se de atitudes que julga pertencer a gerações mais velhas, como na moda? Poderiam os mais jovens escapar dos primeiros impactos positivos de uma campanha virtuosa e minimizar riscos, julgando-os ultrapassados? Estatísticas indicam que sim. Chamarei esse efeito, no presente texto, de dispersão geracional.

Vejamos, como exemplo, o Programa Nacional de DST e Aids. Criado em 1999, teve tanto sucesso que elevou o Brasil à categoria de formulador internacional de políticas de saúde. Seus coordenadores foram alçados aos cargos mais importantes de estruturas como a Organização Mundial da Saúde (OMS) e a Organização Pan-Americana da Saúde (Opas).

No entanto, dados recentes revelam que, apesar da redução geral de casos, cresce o número de jovens infectados. O Boletim Epidemiológico de 2020 confirma queda nas infecções por Aids entre 2012 e 2019. A taxa passou de 21,9 casos por 100 mil habitantes, em 2012, para 17,8 por 100 mil habitantes em 2019. Apesar da redução, aumentou em 21,7% o índice de gestantes infectadas. E o maior número de novas infecções ocorre entre jovens de 20 a 24 anos (27,6% dos casos). O alto índice de jovens ges-

[5] Mestranda de Políticas Públicas da FGV.

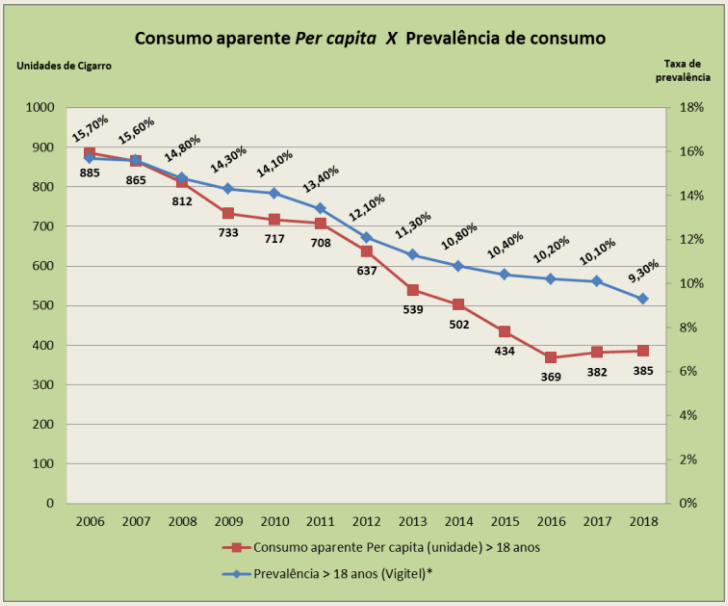
tantes contaminadas se reflete nas estatísticas referentes a crianças. Segundo relatório divulgado pelo Fundo das Nações Unidas para a Infância[6] (Unicef, na sigla em inglês) em 29 de novembro de 2021, ao menos 310 mil crianças foram infectadas pelo HIV em 2020, ou uma criança a cada dois minutos.

Quadro semelhante ameaça a campanha do Brasil contra o Tabaco. Os números do Relatório de 2019 da pesquisa Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico (Vigitel/MS). A taxa de jovens entre 18 e 24 anos fumantes saltou de 7,4% em 2016, para 8,5% em 2017 (ver Gráfico 1).

Mesmo considerando o crescimento de pouco mais de um dígito, "o número alcançou a taxa registrada há seis anos nessa faixa etária e preocupa os médicos, afinal, adquirir o vício ainda na juventude aumenta o tempo de exposição do organismo ao cigarro e, com isso, cresce também o risco de o fumante desenvolver câncer de pulmão", afirma o Inca (Instituto Nacional do Câncer).

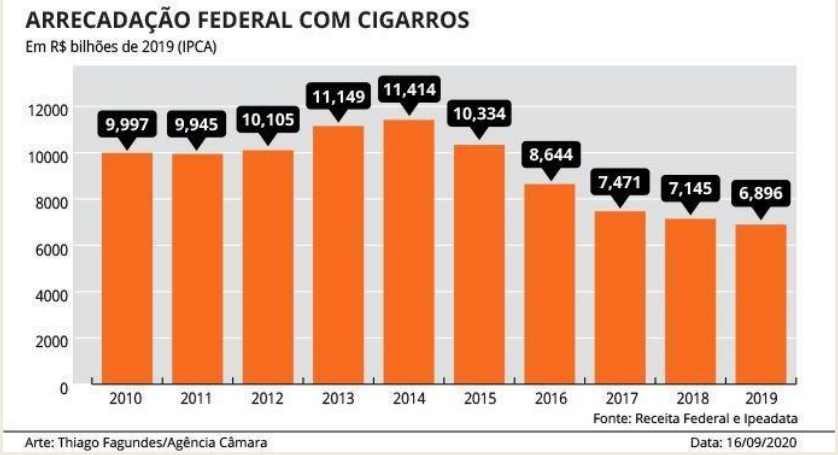
[6] A child was infected with HIV every two minutes in 2020 – UNICEF

Gráfico 1: Consumo de cigarros *per capita* no Brasil



Fonte: Elaborado pela SE-CONICQ
*Iniciada em 2006

Políticas, leis e campanhas anti-fumo foram massivamente adotadas nos anos 1980 e 1990. Outra estratégia foi a progressão da tributação sobre o fumo, ratificada pela Convenção-Quadro de Controle do Tabaco, da OMS. No entanto, observa-se no Brasil, concomitantemente ao aumento do consumo, o recuo dessa estratégia de 2016 a 2019 (Gráfico 2).



Em julho de 2023, relatório da Organização Mundial da Saúde (OMS) coloca a epidemia de tabagismo entre as maiores ameaças à saúde pública já enfrentadas pela humanidade. Hoje, no mundo, há 1,3 bilhão de fumantes e o tabaco mata mais de 8 milhões por ano.

A aquisição do aprendizado

Na busca sobre como os seres humanos adquirem conhecimento, várias teorias surgiram dentro de duas grandes vertentes: as de cunho biológico (Peter Marler, 1987) – ligadas aos padrões inatos de ação (instintos) e reflexos incondicionados – e as teorias ambientais ou de experiência do indivíduo, relacionadas aos padrões culturais aprendidos. Entre as teorias da aprendizagem destaca-se o Behaviorismo (Watson, B. John, 1878-1958). Aos comportamentalistas somaram-se os cientistas da Reflexologia, como Ivan Sechenov (1829-1905), Vladimir Bechterev (1857-1927) e Ivan Pavlov (1849-1936). O mais radical behaviorista foi Burrhus Frederic Skinner (1904-1990), para quem o indivíduo nasce sem qualquer conhecimento, exceto poucos reflexos biológicos inatos. Ele corroborou a metáfora da Tábula Rasa, do filósofo inglês John Locke (1632-1704), tese epistemológica que fundamentou o empirismo.

Skinner (1904-1990) descreveu e aplicou com sucesso seu conceito de Condicionamento Operante por meio de experimentos que comprovaram os efeitos de reforços positivos e de punição para construir comportamentos. Do outro lado da corrente apresentaram-se os cognitivistas, como Jean Piaget (1896-1980) e Lev Vygotsky (1896-1934), e os humanistas Abraham Harold Maslow (1908-1970) e Carl Rogers (1902-1987).

Atualmente, a visão humanista cedeu espaço para abordagens focadas na biologia e na genética (como a Neuropsicologia). O Behaviorismo mostra força nas chamadas "Terapias Cognitivo-Comportamentais", indicadas para Transtornos Obsessivos-Compulsivos (TOC); depressão, Síndrome do Pânico e transtornos alimentares, entre outros. A pergunta, dentro dessas premissas, é: comportamentos sociais coletivos podem ser aprendidos, reforçados e extintos, como acontece com os indivíduos?

Conclusão

Todo aprendizado ocorre dentro de cabeças humanas individuais, lembra Herbert Alexander Simon (1916-2001). A partir dali, se expressa por ações e obras que interferem no mundo real e se difundem no tempo por intermédio da organização cultural, administrativa e econômica de cada civilização. Mas Simon observou que a aprendizagem acumulada pelos indivíduos dentro das organizações não era estável e sofria alterações ligadas à rotatividade de pessoal, fenômeno que cunhou de "erosão natural da memória organizacional".

Neste artigo, sugerimos que os grupos humanos, como coletividades, também estão sujeitos, no decorrer das gerações, a uma erosão na memória do seu repertório comportamental (mesmo que não haja perda formal da cultura registrada em documentos), o que afetaria a efetividade das políticas públicas em curtos espaços históricos de tempo, como duas ou três décadas.

Os referenciais de reforço positivo para os comportamentos coletivos desejados se fragilizariam, na medida em que o grupo social alcança um consenso ilusório de "objetivo atingido" e os reforços cessam (campanhas, palestras, estudos e outras divulgações sobre fumo e Aids decresceram a partir dos anos 2000), resultando na erosão do repertório meio à dispersão geracional

(novos indivíduos não seriam impactados pelos reforços positivos originais, que afetaram a geração anterior).

Portanto, políticas públicas, mesmo consideradas “de sucesso”, precisariam não apenas ser periodicamente reaplicadas, mas amplamente republicadas e redivulgadas, a partir de avaliações detalhadas sobre o grau de corrosão dos resultados anteriormente alcançados, a fim de reduzir os efeitos da dispersão geracional.

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Matopiba: Historical, geographic and socioeconomic aspects

Giliarde Benavinuto Albuquerque Cavalcante Virgulino Ribeiro Nascimento e Gama[7], Nilton Marques de Oliveira[8] e Jessica Painkow Rosa Cavalcante[9]

This writing seeks to address the general aspects involving the history, geography and socioeconomic context of MATOPIBA. To this end, a brief theoretical explanation will be presented based on the contributions of Arilson Favareto, a brazilian researcher, in contextualizing the region.

The dissemination of the territorial approach to development in public policies and development studies, especially in the rural context, throughout the 21st century, is a discursive line that is being used. Of particular note is the polysemy associated with the concept of territory and the predominance of a normative focus in research, which tends to view territorial development as an intervention project, with an innovative *framework* for understanding the evolution of territorial dynamics, based into a theory of long-term change, a medium-range theory of rural territorial dynamics and a theory of the articulations between social structures and forms of sociability. This *framework* is applied in empirical studies conducted by the authors in different territories in Brazil, aiming not only to describe, but also to critically analyze the development dynamics and the possibilities

[7] PhD student in Regional Development at the Federal University of Tocantins. Master Teacher at the law school of the State university of Tocantins, Brazil.
[8] Doctor in Regional Development and Agribusiness (Unioeste)
[9] Doctor in Right Public (Unisinos)

of overcoming the forms of domination present in these regions (Favareto et al. , 2015).

The literature on territorial development applied to rural regions in Latin America gained significant prominence in the early 2000s, reflecting European debates such as those inaugurated by Bagnasco on the Third Italy and the European Union's *Leader program.* In the Latin American context, Schejtman and Berdegué published an influential work. In Brazil, studies by Veiga and Abramovay were pioneering and influenced the creation of the Territorial Development Secretariat of the Ministry of Agrarian Development in 2003. However, for Favareto (2019), subsequent literature often presented a normative bias, treating rural territories as mere units of planning and policy application without a critical analysis of their constitutive structures (Favareto, 2019).

In response to this gap, the Rural Territorial Dynamics research program was conducted in nineteen cases in eleven Latin American countries between 2008 and 2013. One of the main conclusions of this study was the formulation of a middle-range theory to understand territorial dynamics in rural regions. This program sought to answer two main questions: whether, during the 1990s, there were locations capable of simultaneously reducing poverty, inequality and experiencing economic growth; and which factors explained this positive performance, as pointed out by Favareto (2019).

The study found that, even in the context of the 1990s, some locations achieved this positive convergence in social and economic indicators. As for explanatory factors, an innovative hypothesis was raised, highlighting the importance of local institutions in determining development trajectories. It was obser-

ved that institutional changes were not only driven by exogenous forces, but also emerged from endogenous processes, such as the formation of social coalitions (Favareto , 2019).

Furthermore, the program identified five critical domains that influence territorial dynamics, including structure of access to natural resources, dynamic markets, productive structure, relations with cities and public policies. The interaction between these domains results in different compositions of territorial performance in terms of inequality, poverty and economic growth, highlighting the complexity of rural territorial dynamics in Latin America (Favareto , 2019).

According to Favareto (2019), the five main factors that shape territorial dynamics in rural areas are the following, in summary: the structure of access and use of natural resources, dynamic markets, the productive structure, relations with cities and public policies.

The structure of access to natural resources is a crucial element. Territories with less concentrated access to natural resources tend to have lower inequality and can achieve more inclusive economic growth.

Dynamic markets play a significant role in attracting external income, boosting the local economy and raising living standards.

The productive structure also influences territorial dynamics. Territories with a more diversified production structure tend to favor the participation of small producers. On the other hand, those who are more specialized may experience economic growth but face greater inequality and vulnerability.

Relations with cities are another important aspect. Territories that have important urban centers are more likely to diversify their production. However, those lacking urban centers face capital flight, limiting local investment opportunities.

Finally, public policies play a crucial role in shaping the social and economic dynamics of territories. They can both reinforce existing structures and promote change. However, it is important to note that these policies are also shaped by pre-existing territorial conditions.

In short, the formation of broad coalitions that value territory as a basis for social reproduction is more common in less concentrated and diversified territories. In more concentrated territories, coalitions tend to be more restricted and prioritize external insertion to the detriment of territorial cohesion. These factors combined result in different territorial performances in terms of inequality, poverty and economic growth.

Favareto *et al.* (2015) and Favareto (2019) schematically illustrate the typical trajectories as follows:

Figure 1 - Adapted scheme of typical trajectories

Source: Adaptation carried out by the author (2024), based on the work of Favareto *et al.* (2015) and Favareto (2019).

There is an approach to the idea that the identification of exemplary trajectories does not mean that a territory is condemned to a certain type of performance in terms of growth, poverty and inequality based on its initial conditions. It is noteworthy that there is a path dependence that begins with the way in which natural resources are appropriated throughout the history of territories, influencing the productive structure and the relationship with urban centers. However, it is noteworthy that there is still room for coalitions to challenge dominant forces or for external forces to partially alter these structures or their results, as institutions are not fixed and there are always contradictions between them and the external context that can be explored. for social action.

This approach provides an understanding of the heterogeneity of Latin American territories, especially in their rural regions, filling an analysis gap. By highlighting the role of typical structures in these regions, such as access and use of natural resources and relations between rural areas and urban centers, it offers a more substantial reading of the factors that influence territorial formations. Furthermore, Favareto (2019) combines elements:

> [...] inspired by recent and rarely put into dialogue approaches such as the capabilities approach (SEN, 1998), institutionalism (NORTH *et al.*, 2009), with approaches that explore the interdependencies between actors, assets and institutions and their results in terms of social and economic performance. (Favareto, 2019, p. 48).

This combination provides a more comprehensive and in-depth understanding of the social and economic dynamics of the territories. Favareto (2019) discusses the specific case of MATOPIBA, a region that has undergone transformations in its territorial trajectory, as set out in the following illustration:

Figure 2 - Adapted diagram of the typical trajectories - MATOPIBA Case

Source: Adaptation carried out by the author (2024), based on the work of Favareto *et al.* (2015) and Favareto (2019).

It is described that the MATOPIBA area moves from type 5, dynamically, between types 3 and 4 of the schematic figure, indicating the existence of municipalities that connect or become medium-sized cities, while others remain distant from these connections. This distinction results in different dynamics: in some cases, there is a transformation of productive structures, leading to a reduction in poverty, while in others poverty persists despite the generation of wealth. This occurs due to the presence of elites who influence the territory, but who act in a restricted manner and often do not represent the interests of local society as a whole, resulting in unequal territories and difficulty in social inclusion (Favareto, 2019).

In short, based on Favareto (2019), there is a shift of MATOPIBA from type 5 to types 3 and 4 in terms of territorial trajectory. This movement implies a transition from a dynamic

characterized by coexistence between large estates and smallholdings, without access to dynamic markets and virtuous relationships with medium-sized cities, to a situation in which some municipalities establish links or transform into medium-sized cities, while others remain distant from these connections. . This displacement directly influences the productive structure, relations with cities and local coalitions, affecting patterns of growth, poverty and inequality in the region. The next topics will address the MATOPIBA region more specifically, exploring these changes and their impacts in greater detail.

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