



ORIGINAL PAPER

Communicating Resilience, Transformative Resilience, Transformative Change and Transformative Adaptation Policies in Eco-Social Systems Management Literature

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Abstract:

The study discusses the occurrence and conceptual association of “resilience”, “transformative resilience”, “transformative change” and “transformative adaptation” phrases set within the wider context of the management of change literature. The purpose of the study and objectives stem from the need of conceptual tracking, conceptual occurrence tracing and the identification of conceptual associations in the scientific literature over a period of time. The research design deploys a three-stage applied methodology: (S₁) identifying conceptual longitudinal developing use in the scientific literature of resilience, transformative resilience, transformative change and transformative adaptation using the *Google Ngram Viewer* instrument, (S₂) identifying the concept frequency in scientific articles and comparison across citation metrics databases *Crossref* and *Google Scholar*, and (S₃) identifying the conceptual associations and related frequency for selected concepts employing the *Google Ngram Viewer* tool. The study succeeds in identifying occurrences in the scientific literature for the selected phrases resilience, transformative resilience, transformative change and transformative adaptation, in comparing the related concepts and phrases frequency in scientific papers, and in identifying the conceptual associations for representative concepts in the field of eco-social systems management of change literature.

Keywords: *communication, resilience, transformative resilience, transformative change, transformative adaptation, policy.*

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1. Literature review

Coining the concepts of “resilience”, “transformative resilience”, “transformative change” and “transformative adaptation” within the wider context of the management of change literature has developed innovative strands of research (Olimid, Georgescu, Gherghe, 2022: 38-51; Georgescu, Olimid, Gherghe, 2022: 82-96). Conceptualising the differences between resilience and transformation has fueled the work of many researchers pinpointing resilience-driven changes in practices while acknowledging the role of deep transformation in institution design (Hordijk, Sara, Sutherland, 2014: 130-146). Consequently, within the overall discussion of deploying responsibility and change sustainability, the concepts of resilience, incremental change and transformation appear as gradient facets leaning on participatory action (Olimid, Georgescu, 2017: 42-56).

1.1 Employing “capacity building” for “transformative adaptation”

The literature around the terms “transformative adaptation” and “adaptive change” has dwelt heavily during the recent period with the “capacity building” actions intertwined at community level inducing the policy response (Ziervogel, Enqvist, Metelerkamp, van Breda, 2022: 607-622).

1.2 Conceptualizing “transformative change” as “path development”

The conditionality on immersing into change has preoccupied scholars who studied “grand societal challenges” that society needs to address. Transformative change as such has received peculiar attention from the literature, one direction of research being guided by the connection to “innovation policy” at different levels through “path development”, manifesting itself including at micro- or macro-regional level through technical advances, logistics innovation and financing, regulating legal matters and other aspects of social life policy options (Martin, 2020: 2409-2427). Studies rooted in addressing environmental concerns and climate change have targeted thoroughly the social-ecological allegiance as a milieu for transformative change in their efforts to foster efficient eco-social governance (Gillard, Gouldson, Paavola, Van Alstine, 2016: 251-265). “Sustainability transformation” is an innovative concept deeply connected to society in its capacity as “transformative agent” amongst ethics, responsibility and awareness-based sustainability concerns (Moriggi, Soini, Franklin, Roep, 2020: 281-298; Mitu, 2016: 77-87). Transformative agency was studied along the two-phased “participatory development of activity” in which the first phase is triggered by an initial need for change, while sustainability is maintained through a subsequent long-term involvement in transformative actions (Haapasaari, Kerosuo, 2015: 37-47).

1.3 Bonding resilience and structural transformative change

Structural transformative change in its deep reforming capacity was studied in areas such as: (1) community action towards “social justice”, and also society’s transforming potential knowledge-based actions towards addressing climate change (Rosengren, Raymond, Sell, Vihinen, 2020: 427-444; Barbu, Florea, Ogarcă, Barbu, 2018: 373-387) and water management (Pahl-Wostl, 2020: 397-415); (2) transformative practices within a certain institutional milieu (Hebinck, Galli, Arcuri, Carroll, O’Connor, Oostindie, 2018: 398-413); (3) international bodies climate action, especially within the

context of EU climate governance, and the political actors' potential for leverage (Kreienkamp, Pegram, Coen, 2022: 731-748).

A significantly growing interest has been lately directed towards recovery, after crises in general and pandemics in particular, in its double capacity as resilience or as structural transformative change operating under a complex governance framework involving selected transformative principles (Kamstra, 2020: 763-773; Greyling, Patel, Davison, 2017: 52-65) encompassing different layers from the societal realm, supporting the economy, building critical infrastructure, addressing climate issues, supporting public health (McClelland, Shaw, O'Grady, Fattoum, 2022; Sorea, Csesznek, Rățulea, 2022).

In the context of change, society's role becomes crucial, being manifest in studies from participating in transformative change in education and entrepreneurial policies (Walker, Loots, 2018: 166-181; Cunningham, Menter, 2021: 343-364) with a special focus to higher education and the academia (Bularca, Nechita, Sargu, Motoi, Otovescu, Coman, 2022), the economy, enterprises and consumers' consumption behaviour (Burlea-Schiopoiu, Mihai, 2019; Burlea-Schiopoiu, Ogarca, Barbu, Craciun, Baloi, Mihai, 2021) to sustainable transformative change and the environment (Lidskog, Stranding, White, 2022: 255-266), transformative adaptation to the challenging context represented by the environment and climate change (Fedele, Donatti, Harvey, Hannah, Hole, 2019: 116-125) and the intricate relationships between communication and adaptation (Vlăduțescu, 2014).

Fostering resilience and adaptation

Adaptation as a form of transforming response was intensely addressed in the climate change governance literature within the background of incrementalism (Magesa, Pauline, 2019: 745-754), or together with increased learning (Orderud, Naustdalslid, 2020: 15-27) through the agency of eco-social systems (Colloff, Wise, Palomo, Lavorel, Pascual, 2020: 137-150). The literature has also coined the term "adaptive capacity" and "transformational adaptation" in relation to environmental governance in general and water management in particular (Ross, Chang, Cantor, 2022). Furthermore, the literature focused on "adaptation planning" in relation to building resilience (Lyles, Berke, Heiman Overstreet, 2018: 1994-2014; Shi, Chu, Debats, 2015: 191-202; Walawalkar, Hermans, Evers, 2022). Thus, the relations between resilience and adaptation are built in strong connection to the environment and action framework (Wong-Parodi, Fischhoff, Strauss, 2015: 1-7).

2. Problem statement

The current study explores the concept stretch in anchoring resilience, transformative resilience, transformative change and transformative adaptation policies in eco-social systems by de-constructing the theoretical frames of communication and information constructs. The research employs the conceptual scheme among "resilience", "transformative resilience", "transformative change" and "transformative adaptation" to investigate the theoretical and scientific display of eco-social systems dynamics. As such, the study encompasses the academic dimension of conceptual theoretical framing within the scientific literature pertaining to the communication and information scheme.

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2. Purpose and objectives of the study

The study aims at identifying and discussing the conceptual and communication dynamics of resilience, transformative resilience, transformative change and transformative adaptation policies within the eco-social systems management literature. In this sense, the objectives of the study stem from the overall purpose of tracking the promotion and amplification of resilience, transformative resilience, transformative change and transformative adaptation concepts use: (O₁) resilience, transformative resilience, transformative change and transformative adaptation policies concept tracing; (O₂) resilience, transformative resilience, transformative change and transformative adaptation concept use dynamics within the eco-social systems management literature; (O₃) the inter-connectedness with other concepts in related disciplines and fields of research.

3. Applied methodology and research design

The research methodology deploys a three-fold study condensed on three stages: (S₁) firstly, identifying the footprints of resilience, transformative resilience, transformative change and transformative adaptation conceptual longitudinal developing use in the scientific literature using the *Google Ngram Viewer* instrument, (S₂) secondly, identifying the concept frequency in scientific work and comparison across citation metrics databases *Crossref* and *Google Scholar*, and (S₃) thirdly, identifying the conceptual associations and related frequency for selected concepts also employing the *Google Ngram Viewer* tool.

4. Launching the research questions

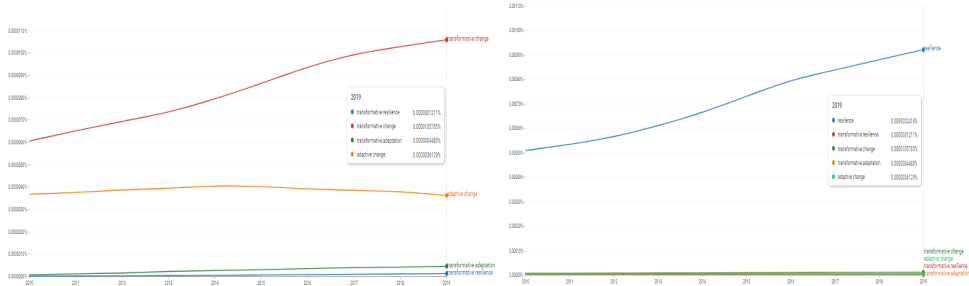
At this stage of the research process, a set of three research questions guide the analysis: (Q₁) What is the depth of resilience, transformative resilience, transformative change and transformative adaptation policies concept tracing? (Q₂) Can we determine the concept use dynamics of resilience, transformative resilience, transformative change and transformative adaptation policies within the eco-social systems management literature? (Q₃) Can we trace the inter-connectedness with other concepts in related disciplines and fields of research?

5. Results and discussions

5.1 Concept identification in scientific literature citation databases

The first stage of the analysis aims at identifying the use of resilience, transformative resilience, transformative change, adaptation and transformative adaptation conceptual use in the corpus of scientific literature during 2010-2019 period employing the *Google Ngram Viewer* search and occurrence measurement tool.

Figure 1. Resilience, transformative resilience, transformative change, adaptation and transformative adaptation conceptual use in the scientific literature



Source: Author’s contribution based on Google Ngram Viewer

5.2 Concept frequency in scientific articles

The second stage of research consisted in the identification of resilience, transformative resilience, transformative change and transformative adaptation and other related concepts in scientific literature citation databases, following the selection of several tags from the literature review: (1) resilience and transformative resilience, (2) transformative change, with the add-ons transformative change in education, transformative change in environment, transformative change and climate change, transformative change and water management, transformative change in health, transformative change and urbanization, transformative change and urban planning, transformative change and civil society, transformative change and social capital, transformative change and social entrepreneurship, (3) transformative innovation and transformative innovation policy, (4) transformative principles, (5) adaptive capacity, adaptation planning, transformative adaptation and adaptive transformation. For this goal, we deployed a documentation using the search engines of *Crossref* and *Google Scholar* databases which were selected due to their associated citation metrics within the scientific literature. Table 1 subsequently presents the results associated to this search.

Table 1. Concept frequency in scientific papers

Concept	Value		Percentage difference
	<i>Crossref</i>	<i>Google Scholar</i>	
Resilience	85,703	3,740,000	191.04%
Transformative resilience	103,675	461,000	126.56%
Transformative change	777,436	3,630,000	129.44%
Transformative change in education	3,010,814	3,240,000	7.33%
Transformative change in environment	1,637,806	2,740,000	67.29%
Transformative change and climate change	967,479	1,020,000	5.28%
Transformative change and	4,822,775	643,000	152.94%

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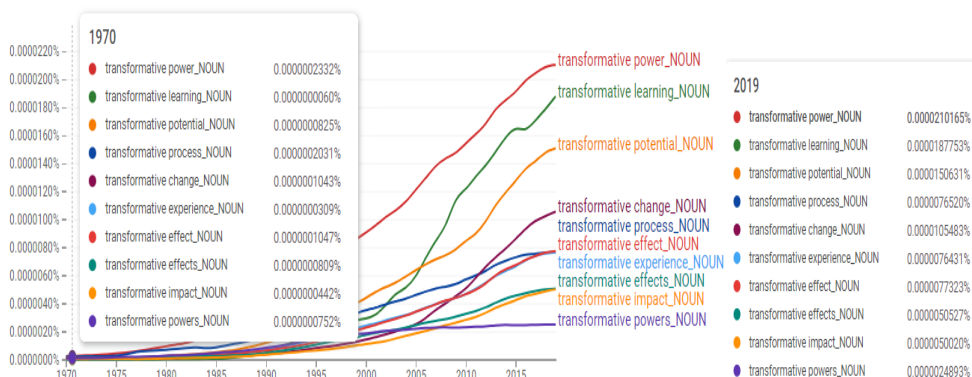
water management			
Transformative change in health	3,367,030	2,630,000	24.58%
Transformative change and urbanization	797,153	130,000	143.91%
Transformative change and urban planning	1,719,985	683,000	86.31%
Transformative change and civil society	4,829,343	1,140,000	123.61%
Transformative change and social capital	2,998,476	1,270,000	80.99%
Transformative change and social entrepreneurship	2,934,904	207,000	92.95%
Transformative principles	330,641	2,170,000	147.11%
Transformative innovation	404,171	1,670,000	122.06%
Transformative innovation policy	1,302,062	1,270,000	2.49%
Adaptive capacity	574,236	4,260,000	152.49%
Adaptation planning	653,890	4,750,000	626.42%
Transformative adaptation	178,200	809,000	353.98%
Adaptive transformation	639,915	5,890,000	160.80%

Source: Author’s contribution based on *Crossref* and *Google Scholar* databases comparison.

5.3 Concept stretch and relatedness

The third stage of the research targeted the longitudinal identification of conceptual associations within the corpus of literature. The wild card noun search using *Google Ngram Viewer* has revealed the following conceptual associations for the term “transformative” for the reference period 1970-2019: “transformative power”, “transformative learning”, “transformative potential”, “transformative change”, “transformative process”, “transformative experience”, “transformative effect”, “transformative impact”.

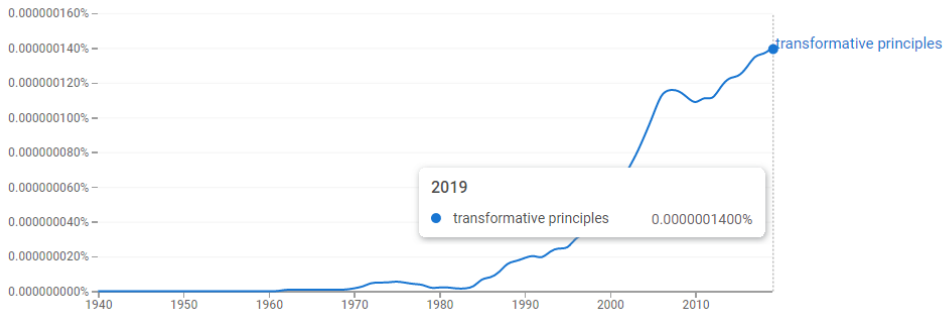
Figure 2. Conceptual associations for the “transformative” and noun wild card search



Source: Author’s contribution based on *Google Ngram Viewer*

Moreover, the study applied *Google Ngram Viewer* in order to detect the frequency of transformative principles in the scientific corpus of literature, the results showing a growing research interest and occurrence, the peak being registered in 2019 (0.0000001400%).

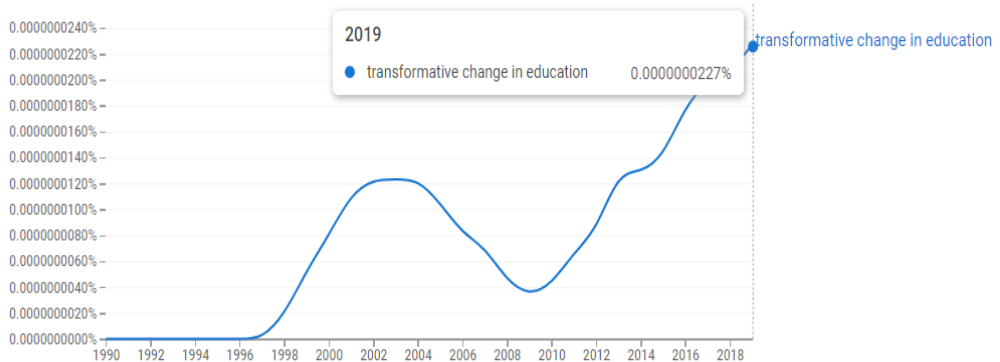
Figure 3. Analyzing the occurrence of transformative principles



Source: Author’s contribution based on Google Ngram Viewer

Next, the online instruments involved in the research rendered the occurrence of “transformative change in education” phrase, which reached its highest value in 2019 (0.0000000227%) while on an ascending trend.

Figure 4. Analyzing the occurrence of transformative change in education

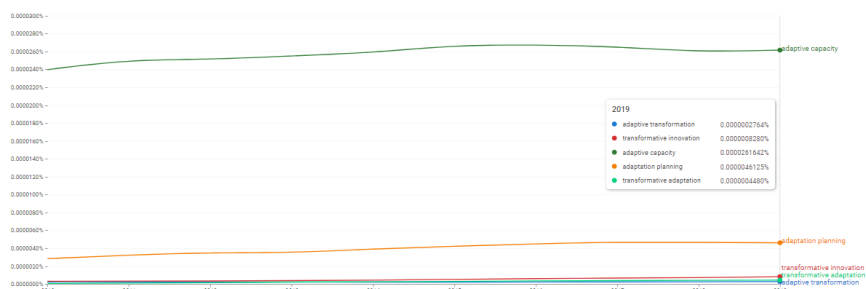


Source: Author’s contribution based on Google Ngram Viewer

Further, the analysis involved the identification of the conceptual association occurrences amongst adaptation, transformation and related concepts, such as: adaptive capacity, adaptive transformation, adaptive planning, transformative innovation, and transformative adaptation selected from the literature review phase of the research.

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Figure 5. Analyzing the conceptual associations amongst “adaptation”, “transformation” and related concepts



Source: Author’s contribution based on Google Ngram Viewer

Conclusions

All in all, the study succeeds in attaining its stated purpose and research goals, by identifying occurrences in the scientific literature for the selected phrases resilience, transformative resilience, transformative change and transformative adaptation, by comparing the related concepts and phrases frequency in scientific papers, and by identifying the conceptual associations for representative concepts in the field of eco-social systems management of change literature. However, the discussions remain open as to delve deeper the conceptual use in related disciplines, especially crisis governance and recovery from calamities, following the shift of meaning among adaptation, building resilience and structural transformative change. Moreover, it is expected to further the analysis when the results of conceptual occurrences of the corpus of literature become available in order to sketch a more detailed picture of the concepts in question use during the pandemic crisis.

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