



Resilience

English

1. Futures definition

Resilience is the ability of entities and systems to cope with change and resulting adverse effects. This ability can include both anticipatory and responsive processes through which entities and systems can make sense of change and maintain, return to, or develop new ways of operating that are functional. These processes may involve the dynamics of withstanding, absorbing, or modifying change and its effects; adapting to them; self-transformation; or a mix of these dynamics. Developing or cultivating resilience is often a desired outcome of futures projects.

2. General definitions

In general terms, resilience is understood as the ability or capability to recover one's original shape and size after being deformed and, more generically, as the ability to easily adjust to and recover from adverse events or change (Merriam-Webster, n.d.-d; The Britannica Dictionary, n.d.).

In individuals, resilience can be defined as the “process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioural flexibility and adjustment to external and internal demands” (American Psychological Association, n.d.).

In organizations, systems, and cities, resilience refers to the capacity or ability to prepare, resist, or adapt to the effects of change in order to maintain their structures, functions, and services, to return to acceptable levels of performance within an acceptable time, or to build back better (International Organization for Standardization, 2019).

The exact focus on what needs to be safeguarded, and how, can vary considerably depending on the type of system under consideration. In socio-technical systems, the focus tends to be on services, and resilience can be defined as “the ability and capacity of a socio-technical system to maintain or quickly restore its services to society, even under severe stress” (IQIB, n.d.). In socio-ecological systems, economic systems, and communities, the focus tends to be on structures, functions, identities, and potentials for development and transformation. Learning, self-organization, absorption, and adaptation assume a fundamental role next to withstanding and recovering from disturbances (Intergovernmental Panel on Climate Change (IPCC) et al., 2014; Resilience Alliance, n.d.; Stockholm Resilience Center, n.d.; United Nations Office for Disaster Risk Reduction (UNDRR), 2017).

3. Etymology

The origins of the English term *resilience* lie in the present participle *resiliens*, *-enits* of the Latin verb *resilire*, meaning to jump back, to recoil. The base of the verb *resilire* in turn is formed by the Latin verb *salire*, meaning to leap, which is the etymological foundation for the words “sally” and “sommersault” in the contemporary English language (Merriam-Webster, n.d.-d). Other Germanic languages, such as German, and Romance languages, such as Italian, Castilian Spanish, and French, share this Latin origin of the term. (Académie Française, n.d.; Duden, n.d.; Real Academia Española, n.d.; Treccani, n.d.)

In Chinese languages, amongst other terms, *(rèn xìng)*, *(tán xìng)*, and *(huī fù lì)* can describe resilience (Baidu Baike, n.d.; Cambridge University Press, n.d.). *(rèn xìng)* describes resilience as a property or characteristic and is etymologically related to the word for leather (Chinese University of Hong Kong, n.d. -e, -g, -h). *(tán xìng)* also describes resilience as a property or characteristic. The term contains a variety of semantic meanings such as ball, bouncing, and playing stringed instruments that are etymologically related to the words for crossbow and bending (Chinese University of Hong Kong, -b, -f, -h). *(huī fù lì)* describes resilience as a strength or ability and contains the semantic meanings resuming, renewing, and returning (Chinese University of Hong Kong, -a, -c, -d).

4. Field of terms

Merriam-Webster differentiates between two connotations of the term *resilience*: strength and flexibility (n.d.-d). The dictionary lists *strength*, *persistence*, and *persistency* as synonyms for the former, and *flexibility*, *adaptability*, and *elasticity* for the latter.

The difference between resilience and *persistence* or *persistency* is that the latter connote a stubborn and resolute continuance that does not give in to an outside opposition (Merriam-Webster, n.d.-c).

Similarly, but with a more static connotation, *robustness* implies hardness, firmness, and strength that excludes the possibility of substantial modification by pressures (Merriam-Webster, n.d.-e).

Contrary to the former three terms, *flexibility* implies that the subject is yielding and adapting to an outside force. Differently to resilience, the term doesn't necessarily imply the possibility of returning to an original state and doesn't provide any indication of the attained level of functionality or desirability of the new state (Merriam-Webster, n.d.-b).

Adaptation and *adaptability*, on the other hand, do indicate functional adjustment to a certain environment or situation that enables a system or entity to avoid or mitigate harm and gain benefits (IPCC et al., 2014; Merriam-Webster, n.d.-a).

Transformation describes a more fundamental change than adaptation and adaptability, which takes place at the structural level and alters the elementary attributes of a system (IPCC, 2014, S. 128; Merriam-Webster, n.d.-f).

Antifragility is a more mathematical term that describes the property of a system to improve its functioning in response to harmful impacts thanks to a convex sensitivity to change or stress. Focused on a system's improvement, antifragility aims to overcome the idea of resilience, when this term is understood as a mere return to the status quo (Taleb, 2012).

When understood as strength, antonyms for resilience include *weakness, helplessness, inadequacy, impotence, and dependence*. Antonyms for resilience, when understood as flexibility, include *stiffness and rigidity* (Merriam-Webster, n.d.-d).

Resilience closely links to the Futures Glossary terms *uncertainty, complexity, and emergence* in that the change that the concept refers to occurs in complex and uncertain environments and might be emergent in nature. Because the term resilience entails the uses of imaginative and anticipatory processes, based on assumptions towards the future, to face change and resulting effects, the term links to *anticipation, imagination, and assumption*. Responsibility is another related concept that evokes the challenges, uncertainties, and unintended effects related to the cultivation of resilience in complex and unpredictable environments and to the definition of what constitutes a functioning state or equilibrium that we aspire to preserve, create or return to. Resilience also links to the field of *foresight*, that often methodologically attempts to develop or increase resilience.

5. Theoretical foundations

The *theory of anticipation* links resilience to anticipatory sense-making. According to Poli “the ability to anticipate in complex environments may improve the resilience of societies (...) by articulating insecurities through anticipatory processes.” (Poli, 2017, p. 14). Cultivating “anticipatory capabilities of individuals and communities may enhance the overall sense-making process and improve decision-making, strategy formation, and societal resilience.” (Poli, 2017, p. 15).

Similarly, in *Transforming the Future: Anticipation in the 21st Century*, Miller (2018a, p. 9; 2018b, p. 22) explains that the cultivation of a futures literacy capability enables humans to embrace complexity and to make sense of emergence, including their role in it. This capability, in turn, can enable us “to adopt strategies intended to improve our prospects for resilience as a species for humans by using the gift of human agency in ways that are more balanced between planning and creative spontaneity, between continuity-based insurance of risk and diversification that embraces uncertainty” (Miller, 2018b, p. 22). In the same volume, Ehresmann et al. (2018) also note that “FL [futures literacy], because it enhances the capacity to appreciate complexity, makes it easier to take advantage of change, to deploy everyday forms of contextual creativity, and to embrace a diversification strategy towards resilience”

The scientific origin of the term resilience lies in *material sciences*, where it was used already in the 19th century to describe how much impact or energy materials can withstand before breaking (Mallet, 1856; see McAslan, 2010). Other scientific disciplines that have made an early use of the term are *psychology*, in which the concept of resilience was introduced through the works of Garmezy (1971) and Rutter (1979) and *ecology*, where the concept was first introduced by Holling (1973) (see McAslan, 2010; see Pearson et al., 2025).

In *environmental sciences*, building on Holling’s and others’ prior work on resilience, Folke thoroughly examines the evolution and various facets of resilience in the *Oxford Research Encyclopedia of Environmental Science* (2016). He describes resilience as the combination of the abilities of complex socio-ecological systems to persist in, adapt to, and transform their development trajectories in the face of change, which can be expected or unexpected, gradual or abrupt, or a mix. Persistence can be achieved through an absorption of disruptions and an internal reorganization that doesn’t fundamentally alter the system’s structure. Adaptation, on the other hand, involves conscious changes in anticipation or reaction that more substantively alter the complex interrelationships within the system or systems, and between the system and the overall change that it faces. The transformation of a system and of its development pathway may become necessary when their resilience

has become too rigid for emergent dynamics. In these cases, the resilience of a system may imply its ability to break down its current resiliency and to build new resiliency by shifting onto emergent, still unknown development pathways or creating entirely new ones (Folke, 2016, pp. 3-6).

6. Use in practice

Resilience is a desired outcome or impact of futures work and of cultivating a futures literacy in entities and systems. Through the conscious use of different anticipatory systems, we can create future imaginaries that sensitise us for change, novelty, and emergence; allow us to make sense of and to appropriately cope with these imaginaries; and help us to identify strategies to best navigate uncertainty and complexity.

Practical examples can be found in the work of the European Commission (EC), the Organization for Economic Cooperation and Development (OECD), and the UNDRR. Each of these entities employs strategic foresight methods and components to anticipate future trends, risks, and disruptive elements to inform their actions and strategies for resilience and sometimes also for robustness (EC, 2020, 2025; OECD, 2025; United Nations for Disaster Risk Reduction, n.d.).

When cultivating resilience in practice, three potential conflicts might need to be considered. The first conflict relates to the existence of a trade-off between specified and general resilience. While specified resilience makes specific parts or dimensions of a system resilient towards specific disturbances by focusing on a set of known unknowns, the system may become more fragile in relation to novel shocks. General resilience is more sensitive towards diffuse and gradual change and aims to prepare for unknown unknowns but might not always take the immediate need of entities and systems into due account. (Folke, 2016, pp. 2, 12-13)

The second conflict regards the determination of what constitutes a resilient system or pathway. As the resilience of some entities or groups may stand in contradiction to each other or undermine resilience at the systemic level, and vice-versa, the exact definition of a resilient system or pathway is likely to entail a choice in favour of one group or system over the others (Folke, 2016, p. 6).

The third conflict concerns the risk that an overfocus on resilience may leave a blind spot for the structural conditions and causes of the adverse events towards which resilience is cultivated and for the potential need for structural transformation of these conditions themselves, which might transcend the entity or system in question (as noted specifically for the psychological resilience of individuals by Suslovic & Lett, 2024).

While the first conflict may be dealt with via a conscious and dynamic balancing between different anticipatory systems, the second and third conflict relate to wider and more fundamental political questions that future practitioners might not always be able to directly influence.

Terminologist: Alexander Plé

References

Académie Française. (n.d.). *Résilience* / *Dictionnaire de l'Académie française* / 9e édition. Retrieved <http://www.dictionnaire-academie.fr/article/A9R2046>

American Psychological Association. (n.d.). *Resilience*. Retrieved <https://dictionary.apa.org/resilience>

Baidu Baike. (n.d.). *Resilience*. Retrieved <https://baike.baidu.com/item/resilience/53095692>

Cambridge University Press. (n.d.). Resilience. In *Cambridge English-Chinese (Simplified) dictionary*. Retrieved <https://dictionary.cambridge.org/dictionary/english-chinese-simplified/resilience>

Chinese University of Hong Kong. (n.d.-a). Fù . In . Retrieved <https://humanum.arts.cuhk.edu.hk/Lexis/lexi-mf/search.php?word=%E5%A4%8D>

Chinese University of Hong Kong. (n.d.-b). Gōng . In . Retrieved <https://humanum.arts.cuhk.edu.hk/Lexis/lexi-mf/search.php?word=%E5%BC%93>

Chinese University of Hong Kong. (n.d.-c). Huī . In . Retrieved <https://humanum.arts.cuhk.edu.hk/Lexis/lexi-mf/search.php?word=%E6%81%A2>

Chinese University of Hong Kong. (n.d.-d). Lì . In . Retrieved <https://humanum.arts.cuhk.edu.hk/Lexis/lexi-mf/search.php?word=%E5%8A%9B>

Chinese University of Hong Kong. (n.d.-e). Rèn . In . Retrieved <https://humanum.arts.cuhk.edu.hk/Lexis/lexi-mf/search.php?word=%E9%9F%8C>

Chinese University of Hong Kong. (n.d.-f). Tán . In . Retrieved <https://humanum.arts.cuhk.edu.hk/Lexis/lexi-mf/search.php?word=%E5%BD%88>

Chinese University of Hong Kong. (n.d.-g). Wéi . In . Retrieved <https://humanum.arts.cuhk.edu.hk/Lexis/lexi-mf/search.php?word=%E9%9F%8B>

Chinese University of Hong Kong. (n.d.-h). Xìng . In . Retrieved <https://humanum.arts.cuhk.edu.hk/Lexis/lexi-mf/search.php?word=%E6%80%A7>

Duden. (n.d.). *Resilienz*. Retrieved <https://www.duden.de/rechtschreibung/Resilienz>

Ehresmann, A., Tuomi, I., Miller, R., Béjean, M., & Vanbremeersch, J.-P. (2018). Towards a formal framework for describing collective intelligence knowledge creation processes that 'use-the-future'. In R. Miller (Ed.), *Transforming the Future: Anticipation in the 21st Century*. UNESCO/Routledge. <https://doi.org/10.4324/9781351048002>

European Commission. (2020). *2020 Strategic Foresight Report. Chartering the course towards a more resilient Europe*. European Union. https://commission.europa.eu/strategy-and-policy/strategic-foresight/2020-strategic-foresight-report_en

European Commission. (2025). *Foresight Report 2025. Resilience 2.0: Empowering the EU to thrive amid turbulence and uncertainty*. European Union. https://commission.europa.eu/document/download/bdba60f0-abb3-42f8-b5be-fd35d693b289_en?filename=SFR2025-Report_web.pdf

- Folke, C. (2016). Resilience. In C. Folke, *Oxford Research Encyclopedia of Environmental Science*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780199389414.013.8>
- Garnezy, N. (1971). Vulnerability research and the issue of primary prevention. *American Journal of Orthopsychiatry*, 41(1), 101–116. <https://doi.org/10.1111/j.1939-0025.1971.tb01111.x>
- Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics*, 4(1), 1–23. <https://doi.org/10.1146/annurev.es.04.110173.000245>
- Intergovernmental Panel on Climate Change (IPCC), Pachauri, R. K., & Meyer, L. A. (2014). *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (p. 151). IPCC. <https://www.ipcc.ch/report/ar5/syr>
- International Organization for Standardization. (2019). *Sustainable cities and communities—Indicators for resilient cities* (ISO 37123:2019). <https://www.iso.org/standard/70428.html>
- IQIB – Institut für qualifizierende Innovationsforschung und -beratung. (n.d.). *Resilience research and climate adaptation*. Resilience Research and Climate Adaptation. Based on van Doren, D., Droste-Franke, B. and Fohr, G. (Eds.) (2026), *Towards Energy System Resilience - Theory, Governance and Practice*. Retrieved <https://www.iqib.de/en/resilience-research-and-climate-adaptation.html>
- Mallet, R. (1856). *On the Physical Conditions involved in the Construction of Artillery: An Investigation of the relative and Absolute Values of the Material Principally Employed and of Some Hitherto Unexplained Causes of the Destruction of the Canon in Service*. Longmans, Brown, Green, Longmans, and Roberts. <https://www.jstor.org/stable/pdf/30079308.pdf>
- McAslan, A. (2010). *The Concept of Resilience: Understanding its Origins, Meaning and Utility*. Torrens Resilience Institute. <https://www.flinders.edu.au/content/dam/documents/research/torrens-resilience-institute/resilience-origins-and-utility.pdf>
- Merriam-Webster. (n.d.-a). *Adapt*. Retrieved <https://www.merriam-webster.com/dictionary/adapt>
- Merriam-Webster. (n.d.-b). *Flexible*. Retrieved <https://www.merriam-webster.com/dictionary/flexible>
- Merriam-Webster. (n.d.-c). *Persist*. Retrieved <https://www.merriam-webster.com/dictionary/persist>
- Merriam-Webster. (n.d.-d). *Resilience*. Retrieved <https://www.merriam-webster.com/dictionary/resilience>
- Merriam-Webster. (n.d.-e). *Robust*. Retrieved <https://www.merriam-webster.com/dictionary/robust>
- Merriam-Webster. (n.d.-f). *Transform*. Retrieved <https://www.merriam-webster.com/dictionary/transform>
- Miller, R. (2018a). Introduction: Futures Literacy: Transforming the future. In R. Miller (Ed.), *Transforming the Future: Anticipation in the 21st Century*. UNESCO/Routledge. <https://doi.org/10.4324/9781351048002>
- Miller, R. (2018b). Sensing and making-sense of Futures Literacy: Towards a Futures Literacy Framework (FLF). In R. Miller (Ed.), *Transforming the Future: Anticipation in the 21st century*. UNESCO/Routledge. <https://doi.org/10.4324/9781351048002>

- OECD. (2025). *Foresight Toolkit for Resilient Public Policy: A Comprehensive Foresight Methodology to Support Sustainable and Future-Ready Public Policy*. OECD Publishing. <https://doi.org/10.1787/bcdd9304-en>
- Poli, R. (2017). Introducing anticipation. In R. Poli (Ed.), *Handbook of Anticipation* (pp. 1–14). Springer International Publishing. https://doi.org/10.1007/978-3-319-31737-3_1-1
- Real Academia Española. (n.d.). Resiliencia. In *Diccionario de la lengua española*. Retrieved <https://dle.rae.es/resiliencia>
- Resilience Alliance. (n.d.). *Resilience*. Retrieved <https://www.resalliance.org/resilience>
- Rutter, M. (1979). Protective factors in children’s responses to stress and disadvantage. *Annals of the Academy of Medicine, Singapore*, 8(3), 324–338.
- Stockholm Resilience Center. (n.d.). *Resilience Dictionary*. Retrieved <https://www.stockholmresilience.org/research/resilience-dictionary.html>
- Suslovic, B., & Lett, E. (2024). Resilience is an adverse event: A critical discussion of resilience theory in health services research and public health. *Community Health Equity Research & Policy*, 44(3), 339–343. <https://doi.org/10.1177/2752535X231159721>
- Taleb, N. N. (2012). *Antifragile: Things that gain from disorder*. Random House. <https://www.penguinrandomhouse.com/books/176227/antifragile-by-nassim-nicholas-taleb>
- The Britannica Dictionary. (n.d.). *Resilience*. Retrieved <https://www.britannica.com/dictionary/resilience>
- Treccani. (n.d.). *Resiliente*. Retrieved <https://www.treccani.it/vocabolario/resiliente>
- United Nations for Disaster Risk Reduction. (n.d.). Resilience. In *The Sendai Framework Terminology on Disaster Risk Reduction*. Retrieved <https://www.undrr.org/terminology/resilience>
- United Nations Office for Disaster Risk Reduction (UNDRR). (2017). *Resilience*. The Sendai Framework Terminology on Disaster Risk Reduction. <https://www.undrr.org/terminology/resilience>
- <https://futuresglossary.net/term/resilience/en>