

THINKING-IN-TIME



Glossary

Glossary

Thinking-in-Time Glossary of Terms

Terms for Thinking-in-Time	Reference	Codes
Age - a particular period of history; <i>the nuclear age, the ice age, the stone age</i>	Britannica. (2019). Age. In <i>Encyclopedia Britannica</i> . https://www.britannica.com/search?query=age	General Term
Aggregate- is to compile and summarize data; to disaggregate data is to break down aggregated data into component parts or smaller units of data.	The Glossary of Education Reform. (2015). Aggregate Data. In <i>The Glossary of Education Reform</i> . https://www.edglossary.org/aggregate-data	Technique
Allegory-a symbolic fictional narrative that conveys a meaning not explicitly set forth in the narrative. Allegory, which encompasses such forms as fable, parable, and apologue, may have meaning on two or more levels that the reader can understand only through an interpretive process.	Britannica. (2019). Allegory. In <i>Encyclopedia Britannica</i> . https://www.britannica.com/art/allegory-art-and-literature	Technique
Analogical Thinking/Reasoning- thinking characterized by extrapolations from the familiar to the unfamiliar, rather than by the use of formal logic or consecutive reasoning. It is particularly important in problem solving and learning, in which known similarities between aspects of certain entities are used to make assumptions about other aspects or entities.	American Psychological Association. (n.d.). Analogical Thinking. In <i>APA Dictionary of Psychology</i> . https://dictionary.apa.org/analogical-thinking	Analogy / Technique
Analysis - The ability to breakdown a situation into its constituent elements or parts so that relationships and significance or the parts are understood.	Battle Command (Draft 2.1), (Fort Leavenworth, Kansas 1994)	Doctrine
Analytical - examining or liking to examine things in detail, in order to discover more about them	Cambridge Dictionary (dictionary.cambridge.org)	

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Anchoring Bias- the tendency, in forming perceptions or making quantitative judgments under conditions of uncertainty, to give excessive weight to the starting value (or anchor), based on the first received information or one’s initial judgment, and not to modify this anchor sufficiently in light of later information.	American Psychological Association. (n.d.). Anchoring Bias. In <i>APA Dictionary of Psychology</i> . https://dictionary.apa.org/anchoring-bias	Bias
Anticipation - Identifying, accumulating, and maintaining the assets and information necessary to conduct operations at the right times and places to maintain balance, retain initiative, and synchronize activities in depth. (FM 100-5)	Battle Command (Draft 2.1), (Fort Leavenworth, Kansas 1994)	Doctrine
Apolitical - not interested in or connected with politics, or not connected to any political party	Cambridge Dictionary (dictionary.cambridge.org)	General Term
Applied history- is the explicit attempt to illuminate current challenges and choices by analyzing historical precedents and analogues.	https://www.belfercenter.org/project/applied-history-project/publication?q=Applied%20History	General Term
ADM - Army design methodology is a methodology for applying critical and creative thinking to understand, visualize, and describe problems and approaches to solving them. ADM is particularly useful as an aid to conceptual planning, but it must be integrated with the detailed planning typically associated with the MDMP to produce executable plans and orders. There is no one way or prescribed set of steps to employ the ADM. There are, however, several activities associated with ADM including framing an OE, framing problems, developing an operational approach, and reframing when necessary. ADM includes interconnected thinking activities that aid in conceptual planning. By first framing an OE and its associated problems, ADM helps	U.S. Army. (2019, July 31). <i>The Operations Process</i> . ADP 5-0.	Doctrine

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<p>commanders and staffs to think about the situation in depth. This in-depth thinking enables them to develop a more informed approach to solve or manage identified problems.</p>		
<p>Assimilate - To absorb into the system. To take into the mind and thoroughly comprehend, (Websters). Typically the first step in the process used by commander's to turn information into decisions.</p>	<p>Battle Command (Draft 2.1), (Fort Leavenworth, Kansas 1994)</p>	<p>Doctrine</p>
<p>Availability Heuristic (Bias)- a common strategy for making judgments about likelihood of occurrence in which the individual bases such judgments on the salience of the information held in his or her memory about the particular type of event: The more available and relevant information there is, the more likely the event is judged to be. Use of this strategy may lead to errors of judgment when information that is highly available in memory (e.g., about well-publicized events, such as plane crashes) leads people to believe that those kinds of events are more probable than they actually are, or when the relative unavailability of information (e.g., about less well-publicized causes of death, as from diabetes) leads people to believe that those kinds of events are less probable than they are.</p>	<p>APA Dictionary (https://dictionary.apa.org)</p> <p>Tversky, A. & Kahneman, D. (1982). Availability: A Heuristic for Judging Frequency and Probability. In Kahneman, D., Slovic, P., & Tversky, A. (Eds.), <i>Judgment Under Uncertainty: Heuristics and Biases</i> (pp. 163-178). Cambridge University Press.</p>	<p>Bias</p>
<p>Axiomatic Thinking - a problem-solving strategy that is guided by axioms, and is closer to traditional methodologies in science. Generally speaking, when searching for solutions to a given problem, axiomatic thinking aims to find solutions that can satisfy all the axioms, i.e., all the desirable properties that a solution needs to satisfy.</p>	<p>Enrique, A., Fang, H., Stefano, M., & Chengxiang, Z. (2020). Axiomatic thinking for information retrieval: Introduction to special issue. <i>Information Retrieval</i>, 23(3), 187-190. doi:http://dx.doi.org/10.1007/s10791-020-09376-y</p>	<p>Technique</p>

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Base Rate (outside thinking) casting around to what is similar in history; the naturally occurring frequency of a phenomenon in a population.	APA Dictionary (https://dictionary.apa.org)	Technique
Battle Analysis - The U.S. Army Command and General Staff College developed the battle analysis methodology to help its students structure their studies of battles and campaigns. The format can be easily applied by any military professional seeking insight from historical battles and campaigns to help deepen his/her understanding of warfare and the profession of arms.	https://www.armyupress.army.mil/Portals/7/educational-services/military-history/CSI_BM_BattleAnalysis_Handout1.docx	Technique
Behaviors- a person’s values, attitudes, and temperament as evidenced through their actions.	(KSB P source https://www.army.mil/article/241467/the_so_what_behind_ksb)	Code
Black Swan- something that cannot be predicted - The seemingly improbable but highly consequential surprises that turn our familiar ways of thinking upside down.	Posner, K. (2010). <i>Stalking the Black Swan: Research and Decision Making in a World of Extreme Volatility</i> . Columbia University Press. ProQuest Ebook Central. https://www.proquest.com/legacydocview/EBC/908205?accountid=8289 . p. ix	Condition/ Event
Blind spots- a lack of insight or awareness—often persistent—about a specific area of one’s behavior or personality.	APA Dictionary (https://dictionary.apa.org)	Bias
Campaign Analysis - a method involving the use of a model and techniques for managing uncertainty to answer questions about military operations. The method comprises six steps: (1) question selection, (2) scenario development, (3) model construction, (4) value assignment, (5) sensitivity analysis, and (6) interpretation and presentation of results.	Tecott, R., & Halterman, A. (2021). The Case for Campaign Analysis: A Method for Studying Military Operations. <i>International Security</i> , 45(4), 44–83. doi: https://doi.org/10.1162/isec_a_00408	Technique

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<p>Case Method- re-enactment a real-world strategic challenge with all the uncertainty and imperfect information that confronted the original players. Case method does not immediately reveal what actually happened, eliminating hindsight bias. (Jennings, 1996). Case method instructors generally use the Socratic method, teaching strategy by asking questions.</p>	<p>Gavetti, G., & Rivkin, J. W. (2005). How strategists really think: Tapping the power of analogy. <i>Harvard Business Review</i>, 54-63.</p>	Technique
<p>Case Studies (historical)-The case study method is a learning technique in which the student is faced with a particular problem, the case. The case study facilitates the exploration of a real issue within a defined context, using a variety of data sources.</p>	<p>Baxter, P., & Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. <i>The Qualitative Report</i>, 13(4), 544-559.</p>	Technique
<p>Center of gravity analysis - As an element of operational art, a center of gravity analysis helps commanders and staffs understand friendly and enemy sources of strength and weakness. This understanding helps to determine ways to undermine enemy strengths by exploiting enemy vulnerabilities while protecting friendly vulnerabilities from enemies attempting to do the same. Understanding friendly and enemy centers of gravity helps the commander and staffs identify decisive points and determine an operational approach to achieve the end state.</p>	<p>U.S. Army. (2019, July 31). <i>The Operations Process</i>. ADP 5-0.</p>	Technique
<p>Chronology - the order in which a series of events happened, or a list or explanation of these events in the order in which they happened</p>	<p>Cambridge Dictionary (dictionary.cambridge.org)</p>	General Term
<p>Cognitive Bias- is a systematic error in thinking that occurs when people are processing and interpreting information in the world around them and affects the decisions and judgments that they make. The human brain is powerful but subject to</p>	<p>What Is Cognitive Bias? (verywellmind.com) Related Term- Cognitive/Intellectual Traps/Pitfalls</p>	Bias

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<p>limitations. Cognitive biases are often a result of your brain's attempt to simplify information processing. Biases often work as rules of thumb that help you make sense of the world and reach decisions with relative speed.</p>	<p>Miller, C. C., Burke, L. M., & Glick, W. H. (1998). Cognitive Diversity among Upper-Echelon Executives: Implications for Strategic Decision Processes. <i>Strategic Management Journal</i>, 19(1), 39–58. http://www.jstor.org/stable/3094179</p>	<p>Cognitive Diversity</p>
<p>Command Historians- The command historian or unit historian advises the commander on historical matters relating to the command; documents the command's history; provides historical perspective to the commander and staff during planning and execution of operations; assists with professional development and training of officers and Soldiers; and supports the Army Historical Program through the collection of historical documents and artifacts.</p>	<p>https://history.army.mil/fieldHistorians/index.html#ComHist</p>	<p>Other</p>
<p>Complexity- reflects the number of actions, dependencies among actions, and temporal dependencies needed for successful task performance. "This complex global environment involves operations among human populations, decentralized and networked threat organizations, information warfare, and true asymmetries stemming from unpredictable and unexpected use of weapons, tactics, and motivations across all of the training domains" Complex systems science includes factors of unpredictability and nonlinearity, interactivity, interdependency, emergence, and capacity to adapt to change</p>	<p>Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. <i>Psychological Bulletin</i>, 119(2), 254-284.</p>	<p>Technique</p>

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<p>Concepts - are ideas for a significant change based on proposed new approaches to the conduct of operations or technology. They become part of the Army’s institutional processes for incorporating change into operations. These ideas propose significantly different methods the force might use in the future, usually 5 to 15 years hence. The Army evaluates concepts through a series of tests. Over time, the Army discards some concepts and keeps others. Those concepts deemed to meet operational needs become validated concepts. The Army incorporates validated concepts into DOTMLPF solutions, often in doctrine. Leaders and Soldiers should avoid confusing concepts with doctrine. Concepts are proposals and the basis for experiments on conducting future operations whereas doctrine addresses how Army forces actually operate today.</p>	<p>U.S. Army. (2019, July 31). <i>Doctrine Primer</i>. ADP 1-01.</p>	
<p>Conditions/Factors – a circumstance, fact, or influence that contributes to a result or outcome (Oxford Dictionary). Specifies the limits under which a behavior is performed. Conditions may include the use of specific equipment provided to perform a task during which the behavior will be demonstrated. Conditions may also be information provided to guide action a specific way.</p>	<p>U.S. Army. (2021, April 15) <i>Training and Educational Development in Support of the Institutional Domain</i>. TRADOC Pamphlet 350-70-14.</p>	Code
<p>Confirmation Bias - A trap that humans often fall into —we tend to look for evidence that supports the conclusion we’ve made prematurely, not realizing that evidence can often support <i>several</i> hypotheses. “No matter what we humans think about, we tend to pay more attention to stuff that fits in with our beliefs than stuff that might challenge them...” In the process, inclined to “see what we expect to see,” we actively dismiss evidence that contradicts our conclusion. It is this phenomenon that lends importance to the active search for <i>disconfirming</i> evidence:</p>		

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evidence that would disprove the conclusion we've formed.		
Context/Contextualize - generally, the conditions or circumstances in which a particular phenomenon occurs/ to interpret an event within a preexisting mental framework.	APA Dictionary (https://dictionary.apa.org)	Technique
Contingency- a future event or circumstance, which is possible but cannot be predicted with certainty. A provision for an unforeseen event or circumstance. A recognition of the non-inevitable aspects of history.	Oxford Dictionary/Mihm	Technique
Continuities - the quality or state of being unending or connected into a continuous whole. Continuity vs discontinuity - the scientific debate over whether developmental change is gradual (continuous) or relatively abrupt (discontinuous).	APA Dictionary (https://dictionary.apa.org)	Technique
Convergence - is an outcome created by the concerted employment of capabilities from multiple domains and echelons against combinations of decisive points in any domain to create effects against a system, formation, decision maker, or in a specific geographic area.	FM 3-0 2022 https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN36290-FM_3-0-000-WEB-2.pdf	Doctrine
Counterfactuals/Counterfactual History- a modality of thinking or investigation that focuses on what could have been, what should have been rather than what actually happened or has been recorded or generally accepted as happening, In this sense, all counterfactuals have contrary-to-fact antecedents. 2. Counterfactuals offer a very useful way of understanding the past, and by extension, the present and future.	Starr, W., & Zalta, N. E. (Ed.). (2021, Summer). Counterfactuals. In <i>The Stanford Encyclopedia of Philosophy</i> . https://plato.stanford.edu/archives/sum2021/entries/counterfactuals/ . 2. Mihm, 2021, Fearon, 1991; Kahneman & Varey, 1990; Lebow, 2010; Lebow, 2015; Roese & Olson, 1995; Tetlock & Belkin, 1996	Technique

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Critical Thinking - a form of directed, problem-focused thinking in which the individual tests ideas or possible solutions for errors or drawbacks. It is essential to such activities as examining the validity of a hypothesis or interpreting the meaning of research results.	APA Dictionary (https://dictionary.apa.org)	General Term
Cultural- relating to the habits, traditions, and beliefs of a society	Cambridge Dictionary (dictionary.cambridge.org)	General Term
Cynefin Framework - allows executives to see things from new viewpoints, assimilate complex concepts, and address real-world problems and opportunities. Using this approach, leaders learn to define the framework with examples from their own organization's history and scenarios of its possible future. This enhances communication and helps executives rapidly understand the context in which they are operating.	https://hbr.org/2007/11/a-leaders-framework-for-decision-making	General Term
Deep Dive - an exhaustive investigation, study, or analysis of a question or topic.	Merriam Webster Dictionary (merriam-webster.com)	Technique
Delphi Method - The Delphi method was developed by RAND in the 1950s to forecast the effect of technology on warfare. It has since been applied to health care, education, management, and environmental science.	https://www.rand.org/topics/delphi-method.html	Technique
Dimensions of Time - past, present, and future.	Derived from ARI definition of Thinking-in-Time. Thinking-in-Time is a cognitive reasoning skill by which the <i>dimension of time</i> (past, present, and future) is used to support the decision-making process.	General Term
Discontinuities - a change or stop that means something does not continue in the same way. Continuity vs discontinuity - the	Cambridge Dictionary (dictionary.cambridge.org)	Technique

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scientific debate over whether developmental change is gradual (continuous) or relatively abrupt (discontinuous).		
<p>Doctrine - Every profession develops a unique body of knowledge. For the Army Profession, this body of professional knowledge is doctrine. United States (U.S.) Army doctrine is about the conduct of operations by Army forces in the field (and to a limited extent the guidelines for training for operations). Doctrine is the body of professional knowledge that guides how Soldiers perform tasks related to the Army's role: the employment of landpower in a distinctly American context. Doctrine establishes the language of the profession.</p>	<p>U.S. Army. (2019, July 31). <i>Doctrine Primer</i>. ADP 1-01.</p>	Doctrine
<p>Drivers - forces that bring about change; can include economy, technology, society, and environment.</p>	<p>https://www.iso.org/strategy2030/drivers-of-change.html</p>	General Term
<p>Duration - In warfare as coined by Clausewitz refers to the length of a conflict.</p>	<p>Antonini, M. (2018). <i>Speed Kills? Fighting and Thinking in Time</i> [Thesis, Air University School of Advanced Air and Space Studies]. Defense Technical Information Center. https://apps.dtic.mil/sti/pdfs/AD1079464.pdf</p>	Characteristic of time
<p>Ego - the self, particularly the conscious sense of self (Latin, "I"). In its popular and quasi-technical sense, ego refers to all the psychological phenomena and processes that are related to the self and that comprise the individual's attitudes, values, and concerns.</p>	<p>APA Dictionary (https://dictionary.apa.org)</p>	Behavior

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<p>Emergent Phenomena - an emergent phenomenon is defined as the macroscopic layers of patterns and structures that appear as a result of cooperative phenomena between autonomously behaving elements. A group of elements creates a self-organizing structure, which governs the individual micro rules and creates a new macro structure. Therefore, consecutive micro–macro recurrent self-organization is defined as an emergent phenomenon.</p>	<p>Life as an emergent phenomenon: studies from a large-scale bold simulation and web data</p> <p>Takashi Ikegami, Yohichi Mototake, Shintaro Kobori, Mizuki Oka and Yasuhiro Hashimoto</p> <p>Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences Volume 375, Issue 2109</p> <p>Published:13 November 2017 https://doi.org/10.1098/rsta.2016.0351 https://royalsocietypublishing.org/doi/10.1098/rsta.2016.0351</p>	Technique
<p>Empathy - understanding a person from his or her frame of reference rather than one’s own, or vicariously experiencing that person’s feelings, perceptions, and thoughts.</p>	<p>APA Dictionary https://dictionary.apa.org</p>	Behavior
<p>Ends, Ways, Means - how (the ways) to use military capabilities (the means) in time and space to achieve objectives (the ends) within an acceptable level of risk.</p>	<p>Department of Defense. (2020, October 22). <i>Joint Planning</i>, JP 5-0.</p>	Technique
<p>Epochs - a long period of time, especially one in which there are new developments and great change</p>	<p>Cambridge Dictionary dictionary.cambridge.org</p>	Technique
<p>Estimate- A running estimate is the continuous assessment of the current situation used to determine if the current operation is proceeding according to the commander’s intent and if planned future operations are supportable ... running estimate focused on how its specific areas of expertise are postured to support future operations. Because an estimate may be needed at any time, running estimates must be developed, revised, updated, and maintained</p>	<p>U.S. Army. (2019, July 31). The Operations Process. ADP 5-0.</p> <p>U.S. Army. (2019, July 31). Mission Command. ADP 6-0.</p>	Technique

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continuously while in garrison and during operations		
Experience (Personal) - Leaders are a product of their experiences. Army professionals learn from experience—both good and bad—develop good judgment and leadership, and strive for continuous improvement. Experience informs intellect. Experiences form the basis of how people react to certain situations. Leaders require self-awareness if they are to accurately assess their own experience and competence as well as earn the trust of those they influence. Influences such as background, beliefs, education, and experiences affect all Soldiers and DA Civilians.	U.S. Army. (2019, July 31). <i>Army Leadership and the Profession</i> . ADP 6-22.	Doctrine
Experience Bias - <i>Take one's perception to be the objective truth</i> . Other people see the world slightly differently than we do. Experience bias occurs when we fail to remember that fact. We assume our view of a given problem or situation constitutes the whole truth.	https://neuroleadership.com/your-brain-at-work/seeds-model-biases-affect-decision-making/#:~:text=Experience%20bias%20occurs%20when%20we,reframe%20the%20situation%20at%20hand.	
Expectancy Bias – also known as the <i>observer expectancy effect</i> , also known as the experimenter expectancy effect, refers to how the perceived expectations of an observer can influence the people being observed. This term is usually used in the context of research, to describe how the presence of a researcher can influence the behavior of participants in their study.	https://thedecisionlab.com/biases/observer-expectancy-effect	Bias
Experiential Reflection - Retrieving lessons learned from relevant personal experiences to identify and fill information gaps in the present situation, while acknowledging there	ARI Definition	Facet of Thinking-in-Time

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are differences between past experiences and the present situation.		
Explanation Bias- tendency of historical accounts to trace a clear causal path when contemporary forecasts would have recognized massive uncertainties.	Mukharji, A., & Zeckhauser, R. (2019). Bound to Happen: Explanation Bias in Historical Analysis. <i>Journal of Applied History</i> , 1, 5-27.	Bias
Farsightedness - the ability to anticipate and plan for the future	Merriam Webster Dictionary (merriam-webster.com)	Future
Field historians (Army) - are more than observers, recorders, and collectors of information and artifacts. They plan and perform operations. They may perform historical analysis of past military operations in the area of operations, research historical cases where previous Army commanders face similar conditions or provide historical insights on operational concepts, tactics, or techniques applied in the past and offer relevancy to current operations.	U.S. Army. (2014, June 9). <i>Military History Operations</i> . ATP 1-20.	Doctrine
Forecasting - Envisioning multiple likely futures to achieve a desired end state, and comparing the likelihood of these futures taking place.	ARI Definition	Facet of Thinking-in-Time
Foreknowledge - Integrating knowledge about known or safe-to-assume futures (e.g., budgeting, troop movements, terrain, and seasonal variations in weather) in the planning process.	ARI Definition	Facet of Thinking-in-Time
Foresight - prescience, human anticipation of the course of events	Merriam Webster Dictionary (merriam-webster.com)	Future
Foresight Risks. The risks stemming from inaccurate predictions, including unforeseen shocks in the security environment. Chief among these: The rate at which a competitor	2022 National Defense Strategy (OCT 2022) https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-	Doctrine (Strategy Document)

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<p>modernizes its military, and the conditions under which competitor aggression manifests, could be different than anticipated. Our threat assessments may prove to be either over- or underestimated. We might fail to anticipate which technologies and capabilities may be employed and change our relative military advantage. A new pandemic or the impacts of climate change could impair operations or readiness. Foresight risks can be hedged and of course must be managed when they arise. Hedging options include continuing to exercise the Joint Force against multiple contingencies and developing new, more resource-efficient concepts of operation, in light of continuously updated intelligence and security assessments.</p>	<p>NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF</p>	
<p>Framing (the environment) There is no “one-way” or set of steps for framing an OE. There are, however, several activities that help the commander and staff develop an environmental frame including: Understand higher guidance and direction; Understand the current state of an OE; Project how an OE may trend in the future; Discern desired future states of other actors; Envision a desired end state.</p>	<p>U.S. Army. (2015, July 1). <i>Army Design Methodology</i>. ATP 5-0.1.</p>	<p>Doctrine</p>
<p>Framing Causal Chains: Identifying and hypothesizing causal sequences of decisions and actions (e.g., chains of actions, reactions, counteractions, and outcomes) based on current information.</p>	<p>ARI Definition</p>	<p>Facet of Thinking-in-Time</p>
<p>Framing Causal Chains- (variously called logic models, log frames, conceptual models, result chains, or theory of change) is an approach to identifying logical and ordered sequences of effects on how a system responds to interventions, actions, or perturbations. Despite being used in a range of disciplines and policy domains, there is</p>	<p>Qiu, J., Game, E. T., Tallis, H., Olander, L. P., Glew, L., Kagan, J. S., Kalies, E. L., Michanowicz, D., Phelan, J., Polasky, S., Reed, J., Sills, E. O., Urban, D., & Weaver, S. K. (2018). Evidence-Based Causal Chains for Linking Health, Development, and Conservation</p>	

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remarkable variation in the purpose, structure, terminology, and methodology associated with causal chains, presenting a significant obstacle to cross-disciplinary integration.	<p>Actions. <i>Bioscience</i>, 68(3), 182–193. https://doi.org/10.1093/biosci/bix167</p> <p>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6019009/#:~:text=Causal%20chains%20(variously%20called%20logic,interventions%2C%20actions%2C%20or%20perturbations.</p>	
Friction and Fog - friction referring to physical impediments to military action, fog to the commander's lack of clear information.	https://www.clausewitz.com/bibl/Kiesling-OnFog.pdf	Condition/ Event
Futuring- Futuring is the field of using a systematic process for thinking about, picturing possible outcomes, and planning for the future. Futurists are people who actively view the present world as a window on possible future outcomes. They watch trends and try to envision what might happen.	<p>Futuring - strategy, system, examples, advantages, model, disadvantages, system (referenceforbusiness.com)</p>	Future
Gambler’s Fallacy- the belief that past events can affect future probabilities.	<p>Tversky, A., & Kahneman, D. (2002). Judgment under Uncertainty: Heuristics and Biases. In Levitin, D. (Ed.), <i>Foundations of Cognitive Psychology</i> (pp. 585-600). Pearson College Division.</p>	Bias
Gestalt Thinking - the position that the whole is entirely different from a sum of the parts, indeed is prior to the parts; wholes are integrated, segregated systems that have an inherent structure of their own, and the structure of the whole in fact determines the nature of the parts. Integrated structures or systems are in dynamic interrelation with their constituent parts and with the whole.	<p>Moilanen, J. H. (2012). Intuitive decision making: tacit knowing in action by U.S. Armed Forces officers in 2011. <i>Kansas State University</i>.</p>	General Term
Graphical skills - are presentation techniques that use specific graph paper to represent	https://sites.google.com/site/piggraphy/home/graphical-skills	Technique

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specific sets of data. They often show relationship between variables. (<i>Rich Picture Methodology-RPM</i>)?		
Group Think - a pattern of thought characterized by self-deception, forced manufacture of consent, and conformity to group values and ethics.	Merriam Webster Dictionary (merriam-webster.com)	Bias
Heuristic processes - a mode of thinking that is based on simple decision rules, or if-then associations, that people use to judge the quality or nature of an object.	https://sk.sagepub.com/reference/socialpsychology/n255.xml	Bias
Heuristics- in cognition, an experience-based strategy for solving a problem or making a decision that often provides an efficient means of finding an answer but cannot guarantee a correct outcome.	APA Dictionary (https://dictionary.apa.org)	Bias
Hindsight Bias- the tendency, after an event has occurred, to overestimate the extent to which the outcome could have been foreseen. Hindsight bias stems from (a) cognitive inputs—people selectively recall information consistent with what they now know to be true; (b) metacognitive inputs—people may misattribute their ease of understanding an outcome to its assumed prior likelihood; and (c) motivational inputs—people have a need to see the world as orderly and predictable.	Tetlock, P. E., & Parker, G. (2006). Counterfactual thought experiments. In Tetlock, P.E., Lebow, R. N., & Parker, G. (Eds.), <i>Unmaking the West: “What-if?” scenarios that rewrite world history</i> (pp. 14-46). University of Michigan.	Bias
Historical Amnesia - (Amnesia) the selective overlooking or ignoring of events or acts that are not favorable or useful to one's purpose or position.	Merriam Webster Dictionary (merriam-webster.com)	Bias
Historical context- the circumstances that form the setting for an event, statement, or idea, and in terms of which it can fully understood and assessed.	Oxford Dictionary/Mihm	Technique

Terms for Thinking-in-Time	Reference	Codes
<p>Historical Knowledge- Historical knowledge exists in all human societies. It is the cognitive appropriation of socially-determined material transformations necessary for life process. We must begin with this fact. It is a form of social consciousness, a socially-determined interpretation of the movement of those transformations. Historical knowledge exists in different degrees of elaboration, of truth character, of accuracy, as well as of scope.</p>	<p>Cambridge University Press (2014) https://www.cambridge.org/core/journals/history-in-africa/article/abs/how-is-historical-knowledge-recognized/0CE06944511C6D4D67203C18BCF9DC28</p>	<p>General Term</p>
<p>Historical legacy - reflects "an outcome that is not fully explainable from causes contemporaneous with that outcome, a cause or correlate that existed prior to the outcome, and potential (or at least speculative) links between the antecedent and the outcome." (p369) Although a legacy implies some continuity with the past, it cannot exist without a discontinuity of causal factors; as such, an aftereffect of an antecedent cause which no longer operates. Related term – Institutional legacy- is a component that may explain how organizations respond based on how the organization responded in the past?</p>	<p>Wittenberg, J. (2015). Conceptualizing Historical Legacies. <i>East European Politics & Societies</i>, 29, 366-378 https://doi.org/10.1177/0888325415577864</p>	<p>General Term</p>
<p>Historical Mindedness/Awareness- is a skill set used to cast our minds backwards by helping strategist to sharpen their thinking and asking better questions to see more accurately when we look forward. Historical mindedness is agnostic to the depth of historical knowledge.</p>	<p>Neiberg, M. S. (2021). Reflections of change: Intellectual overmatch through historical mindedness. <i>USAWC</i>.</p>	<p>Behavior</p>
<p>Historical Perspective-Taking - Understanding the actions of people, groups, or organizations within the context of their own history by taking the perspective of that person, group, or organization (including social, cultural, intellectual, and emotional factors).</p>	<p>ARI Definition</p>	<p>Facet of Thinking-in-Time</p>

Terms for Thinking-in-Time	Reference	Codes
<p>Historical Perspective Taking - a historical reasoning competency conceptualized as an understanding of the “social, cultural, intellectual, and emotional setting that shaped people’s lives and actions” (Huijgen et al., 2014, p. 655). Within the historical reasoning literature, historical perspective-taking is often contrasted with presentism, or the cognitive bias “...by which people assume that the same goals, intentions, attitudes, and beliefs existed in the past as they exist today” (Huijgen et al., 2014, p. 655).</p>	ARI/FMG Literature Review	Competency
<p>Historical Reasoning – (Note – this is in lieu of <i>analogical reasoning</i>) Comparing the present situation to relevant past situations, mapping perceived similarities and differences from the past to the present, and making inferences about the present situation based on this mapping.</p>	ARI Definition	Facet of Thinking-in-Time
<p>Historical Reconnaissance - a term (metaphor) coined to support Thinking-in-Time for the emerging senior leader. As the doctrinal definition for reconnaissance suggests, "A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or adversary, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area. Also called RECON. (JP 2-0) Historical reconnaissance is looking backwards to secure data useful to Thinking-in-Time.</p>	Department of Defense. (2013, October 22). <i>Joint Intelligence</i> , JP 2-0.	Technique
<p>Historiography - the writing of history <i>especially</i>: the writing of history based on the critical examination of sources, the selection of particulars from the authentic materials, and the synthesis of particulars into a narrative that will stand the test of critical methods. 2: the product of historical</p>	Merriam Webster Dictionary (merriam-webster.com)	Technique

Terms for Thinking-in-Time	Reference	Codes
writing : a body of historical literature survey of the country's <i>historiography</i>		
Hubris - arrogant pride or presumption. In Greek tragedy, hubris is specifically the overweening pride that leads to the destruction of the protagonist.	APA Dictionary (https://dictionary.apa.org)	Behavior
Humility - the quality of being humble, characterized by a low focus on the self, an accurate (not over- or underestimated) sense of one's accomplishments and worth, and an acknowledgment of one's limitations, imperfections, mistakes, gaps in knowledge, and so on.	APA Dictionary (https://dictionary.apa.org)	Behavior
Information Overload - The confounding effect that occurs when the commander or other decision maker is bombarded by a large volume of information, most of which may be accurate and timely but not relevant to the mission or decision at hand. Results in commander or other decision maker being bogged down or derailed. Contributes to confusing the urgent with the important.	Battle Command (Draft 2.1), (Fort Leavenworth, Kansas 1994)	Doctrine
Information shortfalls - The difference between what the commander needs to know to decide within his comfort-zone and what he knows at the time the decision is made. Results from gaps in existing information, missing new information, or information that is not timely or accurate.	Battle Command (Draft 2.1), (Fort Leavenworth, Kansas 1994)	Doctrine
Institutional memory- 1. The information held in employees' personal recollections and experiences that provides an understanding of the history and culture of an organization, especially the stories that explain the reasons behind certain decisions or procedures. 2. A term often used interchangeably with <i>institutional knowledge</i> and <i>organizational memory</i> , institutional memory is defined as a	1. https://dictionary.archivists.org/entry/institutional-memory.html#:~:text=n.,behind%20certain%20decisions%20or%20procedures . 2. "Knowing Where the Bodies Are Buried: The Psychology of Institutional Memory," Psychologistmimi, 3 December	General Term

Terms for Thinking-in-Time	Reference	Codes
“collective set of experiences, lessons learned and best practices that a person or a group of people in the workplace have accumulated over time.”	2012, http://psychologistmimi.com/2012/12/03/knowning-where-the-bodies-are-buried-the-psychology-of-institutional-memory/	
Intellectual curiosity - to seek out, engage in, enjoy, and continuously pursue opportunities for effortful cognitive activity” and “understand the environment”	Von Stumm, S., & Ackerman, P. L. (2013). Investment and intellect: A review and metanalysis. <i>Psychological bulletin</i> , 139(4), 841-869. doi:10.1037/a0030746	Behavior
Intelligent Opportunism- is strategic thinking that is held to be more synthetic, holistic, adaptive, informal, and creative, rather than structured or rigid process.	Liedtka, J. M. (1998). Strategic thinking: Can it be taught? <i>Long Range Planning</i> , 31, 120-129.	Technique
Intuition - 1. The ability to demonstrate immediate understanding of the important aspect of a situation without evident rational thought and inference. Born from the range of experiences and reflections upon similar occurrences by the commander in the course of his development as a leader. Closely related to imagination and creativity. Provides a commander the rapid insight into problems. speeding up his decision-making and better equipping him to handle the pace of modern operations. Fragile, can easily be undermined by stress, unreliable information or the overbearing pressure to make a rapid decision. 2. Insight that rapidly dismisses the impractical solution and moves to the feasible COA. 3. Knowing what the enemy is about to do and playing that against him.	Battle Command (Draft 2.1), (Fort Leavenworth, Kansas 1994)	Doctrine
Knowledge - A topically organized set of facts and information acquired by a person through experience, education, or training, which supports work related performance.	(KSB P source https://www.army.mil/article/241467/the_so_what_behind_ksb)	Code

Terms for Thinking-in-Time	Reference	Codes
Lens of Causation: study of history to understand why an event occurred.	Andrews, T. (2007) <i>What Does It Mean to Think Historically?</i> https://www.historians.org/publications-and-directories/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically "	Technique
Lens of Change: study of history to see change over time in terms of growth, decay, and continuity.	Andrews, T. (2007) <i>What Does It Mean to Think Historically?</i> https://www.historians.org/publications-and-directories/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically "	Technique
Lens of Complexity: Never fully know what happened, nothing has just one cause and we not know all causes	Andrews, T. (2007) <i>What Does It Mean to Think Historically?</i> https://www.historians.org/publications-and-directories/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically "	Technique
Lens of Context: study of history to interpret the past in context, but also actively create context for others.	Andrews, T. (2007) <i>What Does It Mean to Think Historically?</i> https://www.historians.org/publications-and-directories/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically "	Technique
Lens of Contingency: study of history to determine what might have happened—with aleatory events (luck, etc.). This involves using one’s imagination in relation to potential causes and effects.	Andrews, T. (2007) <i>What Does It Mean to Think Historically?</i> https://www.historians.org/publications-and-directories/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically "	Technique
Lens of Continuity: study of history for indications of continuity	Andrews, T. (2007) <i>What Does It Mean to Think Historically?</i> https://www.historians.org/publications-and-directories/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically "	Technique

Terms for Thinking-in-Time	Reference	Codes
	tions-and-directories/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically"	
Lens of: Components of historical thinking	https://www.boisestate.edu/history/history-tool-kit-2/	Technique
Lifelong Learning - the process of gaining knowledge and skills throughout your life, often to help you do your job properly	Cambridge Dictionary (dictionary.cambridge.org)	Behavior
<p>Levels of War - The levels of warfare are a framework for defining and clarifying the relationship among national objectives, the operational approach, and tactical tasks. The purpose of the levels of warfare is to focus a headquarters on one of three broad roles—creating strategy, synchronizing and sequencing battles and engagements, or conducting tactical tasks. They help commanders visualize a logical arrangement and synchronization of operations, allocate resources, and assign tasks to the appropriate command. The levels of warfare correlate to specific levels of responsibility. They are about the tasks that commanders and staffs at various headquarters carry out to achieve goals set by political leaders. The levels of warfare should not be confused with effects—which can also be strategic, operational, or tactical and can be generated by any echelon, or even individuals. The fact that an echelon or individual generates a strategic effect does not mean that the echelon or individual is operating at the strategic level of warfare. A simple technique (such as executing a search pattern and planning a bombing run on an aircraft carrier at Midway) can have a theater strategic effect. But the pilot is not determining how the instruments of national power are synchronized to accomplish political end states.</p>		Doctrine

Terms for Thinking-in-Time	Reference	Codes
<p>Military history - provides the foundation for Army training, education, esprit de corps, and decision-making. The lessons of the past form the doctrines of the future. History is a way to learn about armed conflict in all dimensions. Soldiers and units bond and fight with a common historical heritage. History is valuable training for everyone from the individual Soldier to the highest-level leaders to make decisions about the Army's future. The recording, analysis and dissemination of past operations and institutional changes, unit lineages, and command decisions at all levels are essential for the Army to meet future demands.</p>	<p>U.S. Army. (2014, June 9). <i>Military History Operations</i>. ATP 1-20.</p>	<p>Doctrine</p>
<p>Military theory - can be described as a comprehensive analysis of all the aspects of warfare, its patterns and inner structure, and the mutual relationships of its various components/elements. It also encapsulates political, economic, and social relationships within a society and among the societies that create a conflict and lead to a war. Sound military theory explains how to conduct and win a war. It also includes the use of military force to prevent the outbreak of war.</p>	<p>Eccles, Military Concepts and Philosophy, cited in J.P. Storr, <i>Human Aspects of Command</i> (Wiltshire, UK: Directorate General of Development and Doctrine, British Army, 2003), 3; Julian Lider, <i>Military Theory: Concept, Structure, Problems</i> (New York: St. Martin's Press, 1983), 15.</p>	<p>General Term</p>
<p>Multi-disciplinary approach- (humanities, business, science, anthropological, economics) - a manner of dealing with psychological, medical, or other scientific questions in which individuals from different disciplines or professions collaborate to obtain a more thorough, detailed understanding of the nature of the questions and consequently develop more comprehensive answers.</p>	<p>APA Dictionary (https://dictionary.apa.org)</p>	<p>Cognitive Diversity</p>
<p>Narrative - a way of presenting or understanding a situation or series of events that reflects and promotes a particular point of view or set of values</p>	<p>Merriam Webster Dictionary (merriam-webster.com)</p>	<p>Technique</p>

Terms for Thinking-in-Time	Reference	Codes
Occam's Razor - the maxim that, given a choice between two hypotheses, the one involving the fewer assumptions should be preferred. In other words, one should apply the law of parsimony and choose simpler explanations over more complicated ones.	APA Dictionary (https://dictionary.apa.org)	General Term
Open-mindedness - a personality trait reflecting a relative lack of dogmatism.	APA Dictionary (https://dictionary.apa.org)	Behavior
Opportunity - is a dynamic and fleeting element of time and a time-sensitive decision point or "window of opportunity." As such, opportunity borrows from the concept of timing, and opportunity only exists for a particular moment in time. Once passed, it is lost.	Antonini, M. (2018). <i>Speed Kills? Fighting and Thinking in Time</i> [Thesis, Air University School of Advanced Air and Space Studies]. Defense Technical Information Center. https://apps.dtic.mil/sti/pdfs/AD1079464.pdf	Characteristic of time
Outside the Box Thinker/Outlier opinions/Disruptors – Outside the box thinking is an ideation form where designers freely discard common problem-solving methods to find the true nature of users' problems, falsify old assumptions and be innovative.	https://www.interaction-design.org/literature/topics/outside-the-box-thinking	Cognitive Diversity
Overconfidence Effect- a cognitive bias characterized by an overestimation of one's actual ability to perform a task successfully, by a belief that one's performance is better than that of others, or by excessive certainty in the accuracy of one's beliefs.	APA Dictionary (https://dictionary.apa.org)	Bias
Paradoxical thinking - cognition marked by contradiction of typical logical processes. Although this type of thinking can be associated with distorted thought processes, such as those present in schizoid personality disorder or some forms of schizophrenia, it can be used as a way of reframing problems or negative beliefs in a positive manner. This approach is often embraced to promote	APA Dictionary (https://dictionary.apa.org)	Cognitive Diversity

Terms for Thinking-in-Time	Reference	Codes
creativity and personal, familial, and organizational change.		
<p>Parallel Time Horizons - reflect socially constructed outcomes from the interactions between individual's temporal orientations (i.e., individuals' strategies for making meaning of and choices in relation to defined or envisioned timeframes) and social contexts that produce temporal order (which is produced in social interactions, including social norms and public narratives, and by institutions when reproduced by people acting in relation to different time-frames). The fact that individuals can envision and consider multiple timeframes, possible futures, and possible selves (i.e., representations of self in the future reflecting their aspirations and concerns for the future) can be seen as creating "parallel" time horizons.</p>	<p>Lundqvist, C. (2019). Time horizons in young people's career narratives - strategies, temporal orientations and imagined parallel futures negotiated on local settings. <i>Education Inquiry</i>. https://doi.org/10.1080/20004508.2019.1601000</p>	Condition/ Event
<p>Pattern Recognition - the ability to recognize and identify a complex whole composed of, or embedded in, many separate elements.</p>	<p>APA Dictionary (https://dictionary.apa.org)</p>	Technique
<p>Periodization - division (as of history) into periods.</p>	<p>Merriam Webster Dictionary (merriam-webster.com)</p>	Behavior
<p>Planning horizon - is a point in time commanders use to focus the organization's planning efforts to shape future events. Planning horizons may be measured in weeks, months, or years or in hours and days, depending on the echelon and situation. Organizations often plan simultaneously in several different horizons, especially at division and higher echelons. To guide their planning efforts, commanders use three planning horizons—short-range, mid-range, and long-range.</p>	<p>U.S. Army. (2022, May 16). <i>Planning and Orders Production</i>. FM 5-0.</p>	Doctrine

Terms for Thinking-in-Time	Reference	Codes
Principle - A principle is a comprehensive and fundamental rule or an assumption of central importance that guides how an organization approaches and thinks about the conduct of operations. In doctrine, principles can apply to the conduct of operations in general or apply to specific organizations or functions.	U.S. Army. (2019, July 31). <i>Doctrine Primer</i> . ADP 1-01.	Doctrine
Process – a series of things that are done in order to achieve a particular result (Oxford Dictionary). May include the how/way/techniques and sequence tasks/step(s) are performed.	(KSB P source https://www.army.mil/article/241467/the_so_what_behind_ksb)	Code
Proclivity - an inclination or predisposition toward something; especially : a strong inherent inclination toward something objectionable	Merriam Webster Dictionary (merriam-webster.com)	Behavior
Prologue - an introductory or preceding event or development	Merriam Webster Dictionary (merriam-webster.com)	General Term
Purpose/Benefit – the intention, aim or function [why] of something; the thing that something is supposed to achieve/an advantage that something gives you; a helpful and useful effect that something has.	Oxford Dictionary	Code
Recognition Primed Decision Making - How decisionmakers can recognize a plausible COA as the first one to consider by utilizing knowledge, training, and experience to help in correctly assessing a situation and developing and mentally wargaming a plausible COA, rather than taking time to deliberately and methodically contrast it with alternatives using a common set of abstract evaluation dimensions.	Ross, K. G., Klein, G. A., Thunholm, P., Schmitt, J. F., & Baxter, H. C. (2004). The recognition-primed decision model. Army Combined Arms Center Fort Leavenworth, K.S. Military Review.	General Term
Red Team - a function executed by trained, educated, and practiced team members that provides commanders an independent	https://usacac.army.mil/organizations/ufmcs-red-teaming	Cognitive Diversity

Terms for Thinking-in-Time	Reference	Codes
<p>capability to fully explore alternatives in plans, operations, concepts, organizations, and capabilities in the context of the OE and from the perspectives of our partners, adversaries, and others.</p>		
<p>Reflective interrogation- uncovering knowledge in the meaning and interpretation of events, individual practices, individual preconceptions, and individual understanding by critically examining past experiences and actions to discern potential future actions and personal development. In the context of our literature review it could be consider as a metaphor for self-study processes and a critical self-assessment of individual biases and blind spots and their impact on enacted decisions and outcomes.</p>	<p>Lyons, N., & Freidus, H. (2004). The reflective portfolio in self-study: inquiring into and representing a knowledge of practice.</p>	<p>Cognitive Diversity & Technique</p>
<p>Representativeness (bias)- sloppy analogical thinking where and when facing a new situation, most people will try to fit it into categories derived from existing experience even when the facts do not warrant such comparisons.</p>	<p>Kahneman, D., & Tversky, A. (1972). Subjective probability: A judgment of representativeness. <i>Cognitive Psychology</i>, 3, 430-454.</p>	<p>Bias</p>
<p>Rethinking - to think again about a plan, idea, or system in order to change or improve it</p>	<p>Cambridge Dictionary (dictionary.cambridge.org)</p>	<p>General Term</p>
<p>Retrospecting/Retrospective glance-relating to or being a study that starts with the present condition of a population of individuals and collects data about their past history to explain their present condition</p>	<p>https://www.merriam-webster.com/dictionary/retrospective</p>	<p>Technique</p>
<p>Risk (Assessing) - evaluating each hazard and assigning a level of risk based on the estimated probability and severity. Risk always deals with uncertainty; it involves estimating future losses, for which neither the likelihood nor impact on mission, Soldiers, Army civilian personnel,</p>	<p>U.S. Army. (2014, December 2). <i>Risk Management</i>. DA Pamphlet 385-30.</p>	<p>Doctrine</p>

Terms for Thinking-in-Time	Reference	Codes
the public, equipment, systems, or the environment is known with certainty.		
Running Estimate -See estimate	N/A	Doctrine
Safety bias - refers to the all-too-human tendency to avoid loss. Many studies have shown that we would prefer not to lose money even more than we'd prefer to gain money. In other words, bad is stronger than good. Safety biases slow down decision-making and hold back healthy forms of risk-taking. One way we can mitigate the bias is by getting some distance between us and the decision—such as by imagining a past self already having made the choice successfully—to weaken the perception of loss.	https://neuroleadership.com/your-brain-at-work/seeds-model-biases-affect-decision-making/#:~:text=Experience%20bias%20occurs%20when%20we,reframe%20the%20situation%20at%20hand.	Bias
Second and Third order Effects/Ripple effects/Downstream effects - the unexpected and profound implications of a policy or adaptation of a technology – often with negative significant consequences.	161. “Second/Third Order, and Evil Effects” – The Dark Side of Technology (Part I) Mad Scientist Laboratory (army.mil)	
Self-awareness - self-focused attention or knowledge.	APA Dictionary (https://dictionary.apa.org)	Behavior
Self-Regulation- Self-regulation is the ability to override or change one’s inner responses as well as to interrupt undesired behavioral tendencies (such as impulses) and refrain from acting on them.	Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades and interpersonal success. <i>Journal of Personality</i> , 72, 271-324.	Behavior
Sensemaking - allows people to deal with uncertainty and ambiguity by creating rational accounts of the world that enable action.; Sensemaking thus both precedes decision making and follows it: sensemaking provides the “clear questions and clear answers” (Weick, 1993, p. 636)	<p>Weick, K. E. (1993). The collapse of sensemaking in organizations: The Mann Gulch disaster. <i>Administrative Science Quarterly</i>, 38, 628–652.</p> <p>Maitlis, S. (2005). The social processes of organizational</p>	Technique

Terms for Thinking-in-Time	Reference	Codes
	sensemaking. <i>Academy of Management Journal</i> , 48(1), 21-49. (p. 21)	
Sequence - relates to the order of events and can refer to serial or parallel relationships.	Antonini, M. (2018). <i>Speed Kills? Fighting and Thinking in Time</i> [Thesis, Air University School of Advanced Air and Space Studies]. Defense Technical Information Center. https://apps.dtic.mil/sti/pdfs/AD1079464.pdf	Characteristic of time
Skill - A person's proficiency and ability to perform a job-related activity that contributes to effective performance or learning. (KSB-P source https://www.army.mil/article/241467/the_so_what_behind_ksbs). A skill designates one's ability to perform a job-related activity, which contributes to the effective performance of a task performance step. There are two types of skills: physical and mental.	(KSB P source https://www.army.mil/article/241467/the_so_what_behind_ksbs) (TP350-70-14, 27 MAR 2015)	Code
Socratic Method - a process of structured inquiry and discussion between two or more people to explore the concepts and values that underlie their everyday activities and judgments.	APA Dictionary (https://dictionary.apa.org)	Technique
Staff Ride- a historical study of a campaign or battle that envisions a systematic preliminary study phase, an extensive field study phase on the actual historic site, and an integration phase to capture the lessons derived from each. The entire process, from beginning to end, offers a great opportunity for Soldiers to: – Expand their personal intellectual capacity – Relate military history to contemporary issues – Increase unit	the-staff-ride-overview-2-august-2013.pdf (army.mil)	Technique

Terms for Thinking-in-Time	Reference	Codes
cohesion by sharing in the collective staff ride experience		
Status Quo Bias - Many humans find the status quo comfortable, and avoid changing it.	https://nsiteam.com/social/wp-content/uploads/2017/01/RTHB_v7.0_Web.pdf	Bias
Strategic compression defines a phenomenon where the <i>tactical, operational, and strategic levels of war contract</i> , enmeshing the characteristics of those levels (i.e., the actions, goals, time scales, physical spans of influence, and available resources). It also involves changes to traditionally expected causal relationships, incorporating <i>new causal chains across the levels</i> (e.g., low-level tactical actions directly impact broad-scale strategic responses) and <i>eliminating expected causal connections</i> (e.g., successfully	(PDF) Strategic Compression and the Military’s Pursuit of Cognitive Readiness (researchgate.net)	General term
Strategic empathy - the careful study of how other important actors see the world as a basis for foreign policy. Empathy for a strategic issue or problem/ complexity	Empathize this: McMaster's flawed understanding of restraint and ‘strategic empathy’ - Responsible Statecraft	Behavior
Strategic Forecasting- In marketing and sales, strategic forecasting is the use of benchmarks, historical data, and other information and factors to make predictions about future demand and sales growth.	https://blog.hubspot.com/sales/accurate-sales-forecasting-model-tips#:~:text=What%20is%20strategic%20forecasting%3F,future%20demand%20and%20sales%20growth.&text=The%20best%20sales%20leaders%20use%20something%20called%20a%20forecasting%20model.	Future
Strategic Patience - to be patient and to not rush to conclusions and judgments. Great ideas and thoughts require time to develop into great successes in the future to reach your defined vision.	https://www.cssp.com/cd0808b/criticalstrategicthinkingskills/	General Term

Terms for Thinking-in-Time	Reference	Codes
<p>Sunk-Cost Fallacy/Bias - (aka “Loss Aversion”): A bias in which humans increasingly persist in deciding and acting illogically, based upon decisions they made previously. This occurs despite the fact that the present context dictates deciding otherwise. Sunk-cost bias occurs because it relieves one of the necessity to admit that preceding decisions might have been made in error. It also may avoid incurring a permanent loss, at least in the short term. It is a failure to cut bait, to use a fishing metaphor.</p>	<p>https://nsiteam.com/social/wp-content/uploads/2017/01/RTHB_v7.0_Web.pdf</p>	Bias
<p>Superforecaster- The process of making decisions based on precise probability forecasts rather than hunches. Covert strategic uncertainty into manageable risk to avoid costly mistakes. Identify expected outcomes before others recognize them so that you can capitalize on opportunities quickly and with confidence.</p>	<p>https://goodjudgment.com/</p>	Future
<p>Synchronization - the ability to orchestrate events so that they occur at appropriate points in time. - when properly executed, synchronization generates synergistic effects from all elements of force that collectively exceed the sum of the individual force elements.</p>	<p>Antonini, M. (2018). <i>Speed Kills? Fighting and Thinking in Time</i> [Thesis, Air University School of Advanced Air and Space Studies]. Defense Technical Information Center. https://apps.dtic.mil/sti/pdfs/AD1079464.pdf</p>	Characteristic of time
<p>Synthesize - To combine diverse fragments of information into a coherent whole through reasoning based on judgement, experience, and intuition. Putting together elements and parts of a situation to form a whole. It involves the process of working with pieces, parts, and elements, fragments of information, and arranging and combining them in such a way as to constitute a pattern or structure not clearly evident before.</p>	<p>Battle Command (Draft 2.1), (Fort Leavenworth, Kansas 1994)</p>	Doctrine

Terms for Thinking-in-Time	Reference	Codes
<p>Systems Thinking - a set of synergistic analytic skills used to improve the capability of identifying and understanding systems, predicting their behaviors, and devising modifications to them in order to produce desired effects. These skills work together as a system.</p>	<p>Arnold, R. D., & Wade, J. P. (2015). A definition of systems thinking: A systems approach. <i>Procedia computer science</i>, 44, 669-678.</p>	<p>General Term</p>
<p>Tactical Patience - The longer you wait and observe the more you will know about what is going on and be better prepared to make a decision to employ lethal or non-lethal means</p>	<p>https://usacac.army.mil/sites/default/files/publications/GTA%2090-01-039_Civilian_Casualty_Prevention.pdf</p>	<p>General Term</p>
<p>Tactical, Operational, and Strategic - There are no fixed limits or boundaries between these levels, but they help commanders visualize a logical arrangement of operations, allocate resources, and assign tasks to appropriate commands. Strategic levels of warfare develop ideas or set of ideas of the ways to employ the instruments of national power in a synchronized and integrated fashion to achieve national, multinational, and theater objectives. Operational level of warfare links the tactical employment of forces to national strategic objectives. Tactics is the employment, ordered arrangement, and directed actions of forces in relation to each other.</p>	<p>Department of Defense. (2018, October 22). <i>Joint Operations</i>, Change 1, JP 3-0.</p>	<p>Doctrine</p>
<p>Techniques -are non-prescriptive ways or methods used to perform missions, functions, or tasks (CJCSM 5120.01A). Techniques are more specific than tactics and less structured than procedures. Techniques are similar to tactics in that they are descriptive. They are similar to procedures in that they are often described in terms of steps. As with tactics, techniques require judgment in application. Leaders and Soldiers choose specific techniques based on the situation and the precise mission or task. They expect the conditions they encounter to affect the way</p>	<p>U.S. Army. (2019, July 31). <i>Doctrine Primer</i>. ADP 1-01.</p>	<p>Doctrine</p>

Terms for Thinking-in-Time	Reference	Codes
they perform a given technique. An example of a technique is a bounding overwatch.	<p>Antonini, M. (2018). <i>Speed Kills? Fighting and Thinking in Time</i> [Thesis, Air University School of Advanced Air and Space Studies]. Defense Technical Information Center. https://apps.dtic.mil/sti/pdfs/AD1079464.pdf</p>	Characteristic of time
<p>Tempo is the relative speed and rhythm of military operations over time with respect to the enemy (ADP 3-0). It implies the ability to understand, decide, act, assess, and adapt. During competition, commanders act quickly to control events and deny enemy forces relative advantages. By acting faster than the situation deteriorates, commanders can change the dynamics of a crisis and restore favorable conditions. During armed conflict, commanders normally seek to maintain a higher tempo than enemy forces do. A rapid tempo can overwhelm an enemy force's ability to counter friendly actions, and it can enable friendly forces to exploit a short window of opportunity.</p>	<p>FM 3-0 2022 https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN36290-FM_3-0-000-WEB-2.pdf</p>	Doctrine
Theory - in general usage, abstract or speculative thought as opposed to practice.	<p>APA Dictionary (https://dictionary.apa.org)</p>	General Term
Thinking-in-Time - Thinking-in-Time is a cognitive reasoning skill by which the dimension of time, past present and future, is used to support the decision-making process.	ARI Definition	Thinking-in-Time Research Project ICW FMG
Thinking-in-Time - Two professors—Richard Neustadt, a professor of Government at the Kennedy School and Ernest May, a professor in the Department of History at Harvard—inaugurated a program	Neustadt, & May	Thinking-in-Time Research Project

Terms for Thinking-in-Time	Reference	Codes
<p>designed to train decision-makers to use history to inform contemporary policymaking. Their program avoided simplistic analogies and easy answers. It cultivated a mindset where students would craft policy in “time streams,” connecting the past and present in meaningful ways to shape the future. They called their approach “Thinking in Time,” which became the title of an influential book that summarized much of this work.</p>		
<p>Thinking Slow- System 2 thinking is conscious, effortful, logical, and deliberate.</p>	<p>Kahneman, D. (2011). <i>Thinking, fast and slow</i>. Farrar, Straus, and Giroux.</p>	<p>General Term</p>
<p>Thinking Style- Hedgehog – is an operating theory that clings to one big idea. Fox- is an operating theory derived from a range of experiences, viewpoints and philosophies</p>	<p>Tetlock, P. E. (2005). <i>Expert political judgment: How good is it? How can we know?</i> Princeton University Press.</p>	<p>General Term</p>
<p>Threads of the past -a theme or characteristic, typically forming one of several, running throughout a situation.</p>	<p>Oxford Dictionary/Mihm</p>	<p>Technique</p>
<p>Time Horizons – 1. the time frame for research – cross-sectional or short term study, involving collection of data at a specific point of time; longitudinal – collection of data repeatedly over a long period of time in order to compare data. 2. A time horizon, also known as a planning horizon, is a fixed point of time in the future at which point certain processes will be evaluated or assumed to end. The most common horizons used in planning are one "quarter" (a quarter year, or three months), a year, two years, three years, four years (especially in a representative democracy where this is a quite common term of office and election cycle) and five years (in corporate planning). More far-sighted companies and government</p>	<p>Melnikovas, A. (2018). Towards an Explicit Research Methodology: Adapting Research Onion Model for Futures Studies. <i>Journal of Futures Studies</i>, 23(2). https://doi.org/10.6531/JFS.201812</p>	<p>Technique</p>

Terms for Thinking-in-Time	Reference	Codes
agencies may also use between ten and one hundred years.		
Timestreams- is a metaphorical conception of time as a stream, a flowing body of water. This conception has been widely used in mythology and in fiction. This analogy is useful in several ways: *Streams only flow one way. Time only moves forward. *Streams flow constantly. Time never stops. *People can stand in a stream, but will be pulled along by it. People exist within time, but move with it. *Some physicists and science fiction writers have speculated that time is branching--it branches into alternate universes. Streams can also diverge.	https://www.definitions.net/definition/TIMESTREAM	General Term
Time – is “the continuum in which events occur in an irreversible succession from the past to the present to the future.”	Antonini, M. (2018). Speed Kills? Fighting and Thinking in Time [Thesis, Air University School of Advanced Air and Space Studies]. Defense Technical Information Center. https://apps.dtic.mil/sti/pdfs/AD1079464.pdf	General Term
Time –(as used in <i>PMESSI-PT</i>) - This variable describes the timing and duration of activities, events, or conditions within an operational environment and how the timing and duration are perceived by various actors in the operational environment. (For example, at what times are people likely to congest roads or conduct activities that provide a cover for hostile operations?)	U.S. Army. (2022, May 16). <i>Planning and Orders Production</i> . FM 5-0.	Doctrine
Timing - Implies a gain or loss from the standpoint of action or inaction.	Antonini, M. (2018). Speed Kills? Fighting and Thinking in Time [Thesis, Air University School of Advanced Air and Space Studies]. Defense Technical Information Center.	Characteristic of time

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Transformative vs Disruptive Change - With disruption, the rate of change is slower and the changes themselves more measured. But with transformation, the rate of change is accelerated and the impact of the changes are more dramatic and amplified.	https://apps.dtic.mil/sti/pdfs/AD1079464.pdf	Technique
Trend Analysis - Recognizing meaningful relationships within and between situations, hypothesizing the likely underlying patterns and trends, and critically examining assumed patterns and trends to make informed predictions about future outcomes.	ARI Definition	Facet of Thinking-in-Time
Trends - a general direction of change : a way of behaving, proceeding, etc., that is developing and becoming more common	Merriam Webster Dictionary (merriam-webster.com)	Technique
Typology of Analogies -Captivating, less obvious but once articulated quickly harden into conventional wisdom.	Neustadt, R. E., & May, E. R. (1986). Thinking in time: The uses of history for decision-makers. <i>Free Press.</i>	Analogy / Technique
Typology of Analogies -Irresistible, something obvious but misleading.	Neustadt, R. E., & May, E. R. (1986). Thinking in time: The uses of history for decision-makers. <i>Free Press.</i>	Analogy / Technique
Typology of Analogies Known Knowns- Information requirements that we need to know, and we know them.	Neustadt, R. E., & May, E. R. (1986). Thinking in time: The uses of history for decision-makers. <i>Free Press.</i>	Analogy / Technique
Typology of Analogies Known Unknowns- Information requirements that we know we need to know it but we don't know the answer.	Neustadt, R. E., & May, E. R. (1986). Thinking in time: The uses of history for decision-makers. <i>Free Press.</i>	Analogy / Technique

Terms for Thinking-in-Time	Reference	Codes
Typology of Analogies Unknown Knowns - Things that we don't know are wrongly known.	Neustadt, R. E., & May, E. R. (1986). <i>Thinking in time: The uses of history for decision-makers. Free Press.</i>	Analogy / Technique
Typology of Analogies Unknown Unknowns- Information requirements is information we need, but we don't know that we need it and don't have it.	Neustadt, R. E., & May, E. R. (1986). <i>Thinking in time: The uses of history for decision-makers. Free Press.</i>	Analogy / Technique
Typology of Analogies- “the girl/boy next door”- the analogy you don't notice but fall for nonetheless.	Neustadt, R. E., & May, E. R. (1986). <i>Thinking in time: The uses of history for decision-makers. Free Press.</i>	Analogy / Technique
Typology of Analogies-Seductive, analogies that deflect scrutiny.	Neustadt, R. E., & May, E. R. (1986). <i>Thinking in time: The uses of history for decision-makers. Free Press.</i>	Analogy / Technique
Visioning- Doctrinal Surrogate term- Commander's visualization—the mental process of developing situational understanding, determining a desired end state, and envisioning an operational approach by which the force will achieve that end state.	U.S. Army. (2019, July 31). <i>Mission Command. ADP 6-0.</i>	Future
VUCA- Volatile, Uncertain, Complex, and Ambiguous. Used to describe the OE.	VUCA is an acronym (artificial word), first used in 1987 and based on the leadership theories of Warren Bennis and Burt Nanus. It was the response of the USAWC to the collapse of the USSR in the early 1990s. https://www.vuca-world.org/#:~:text=VUCA%20is%20an%20acronym%20(artificial,USSR%20in%20the%20early%201990s .	Condition/ Event
Vulnerabilities - susceptibility to developing a condition, disorder, or disease when exposed to specific agents or conditions.	APA Dictionary (https://dictionary.apa.org)	General Term

Terms for Thinking-in-Time	Reference	Codes
<p>Wargaming- At its core, a wargame is a tool for exploring and informing human decision-making. Since the USAWC primarily conducts strategically focused wargames; the ideas, issues, and insights uncovered during the conduct of a wargame can have far-reaching effects on U.S. national and military policy, planning, and decision-making.</p>	<p>https://csl.armywarcollege.edu/DS/E/StrategicWargamingDivision/publications/USAWC%20Wargame%20Handbook%201%20July%2015.pdf</p>	Technique
<p>Weak Signals- is the first indicator of change or an arising issue that may become significant in the future. They can be used to challenge assumptions made about the future, expand future scenarios and create a more practical view of the future using examples. Identifying non-apparent future trends and challenging already identified trends. Better prepared for surprises and expanding the selection of alternate futures.</p>	<p>https://www.sitra.fi/en/articles/what-is-a-weak-signal/</p>	Technique