# Error Inquiry Program: Exploring the Meaning & Significance of Error

# Format, monthly two hour on-line sessions, October – April and a 1 day get-together in May to share maps, writing and reflections.

# Introduction & Purpose

We need to learn as much as we can about how to identify sources ignorance and error in thought, learning and action, and the disciplined effort required to control and move beyond them. The combined record of human striving achievement and failure, across cultures, fields of endeavor and periods of history is our source. [*map 8.1, TS-AS notes*]

While the nature and significance of ignorance has been mapped to some degree in the meta framework, error has not received as much attention. Error is a complex construct that I wasn’t prepared to take on – until recently. This on-line program will focus on the meaning and significance of error with five objectives:

1. Map the dynamics of error, filling in a gap in the MFW
2. Develop a deeper understanding of types & levels errors, why they occur and what it takes to keep from repeating them again & again
3. Foster insights into structural ignorance & what it takes for adaptive reconstruction
4. Illustrate the process of concept mapping
5. Support a practical interest in observing and learning from one’s own errors & the errors of others

**We’ll explore**

* the mapping process & how mapping conventional concepts can lead to systemic levels of understanding & strategic foresight
* levels & types of errors, error standards & required disciplines
* the significance of error in adaptive positioning & learning
* the links between ignorance & error
* failing intelligently & adaptive persistence
* errors & failures as reality probes
* strategic lesson crafting & protocol development
* layered defenses & vulnerabilities – the Swiss Cheese model
* the links between individual, institutional & societal learning
* error persistence & structural ignorance
* error reduction & structural intelligence
* latent failures & Murphy’s law
* preparation & state of the actor / agent & situation
* expertise, education, training, doctrine & meta doctrine
* expertise, resilience & error recovery
* lore, doctrine & ecology of oversight & control resources & influences
* path dependence, affordance & adaptive positioning
* nature’s laws, standards & life progress errors

**Resources**

Don’t be put off by the following list, it is meant to support on-going investigations of error. The list is purposely wide and deep in recognition of the complexity, richness and significance of the subject. There is no expectation that participants will read many or even any of these books, other than the two primary references. It is up to you how far & how deep you go. I’m still working through them myself.

**Primary resources** – we’ll work through the following book a few chapters each month:

* “The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries” by James Reason; Routledge, 2016 [first published 2008]
  + Read the first 3 chapters for the October session
* “100 Mistakes that Changed History: Backfires and Blunders That Collapsed Empires, Crushed Economies, and Altered the Course of Our World” by Bill Fawcett; Berkley [Penguin Books] 2010
  + This book is light reading, choose at least 5 case examples each month.

**Further Study 1**

* “A Human Error Approach to Aviation Accident Analysis: The Human Factors and Analysis Classification System” by Douglas Wiegmann & Scott Shappell; Routledge, 2016 [first published 2003]
* “Human Error” by James Reason; Cambridge University Press, 1990
* “A Life in Error: From Little Slips to Big Disasters” by James Reason; CRC Press, 2013
* “Organizational Accidents Revisited” by James Reason; Ashgate Publishing, 2016
* “The Field Guide to Understanding Human Error” by Sidney Dekker; CRC Press, 2014
* “Foundations of Safety Science: A Century of Understanding Accidents and Disasters” by Sidney Dekker; Routledge; 2019

**Failure & Adaptive Learning**

* “Deep Survival: Who Lives, Who Dies and Why” by Laurence Gonzales; WW Norton; Reprint edition 2017, first published 2004
* “The Logic of Failure: Recognizing and Avoiding Error in Complex Situations” by Dietrich Dorner; Metropolitan Books 1996 [first published in German in 1989]
* “To Engineer is Human; The Role of Failure in Successful Design” by Henry Petroski; Vintage, 1992
* “Success Through Failure the Paradox of Design” by Henry Petroski; Princeton University Press; Reprint edition, 2018
* “Surpassing Ourselves: An Inquiry Into The Nature And Implications of Expertise” by Carl Bereiter & Marlene Scardamalia; Open Court, 1993

**NASA Case Studies**

* “An Astronaut’s Guide to Life on Earth” by Chris Hadfield; Random House Canada, 2013
* “Failure Is Not an Option: Mission Control From Mercury to Apollo 13 and Beyond” by Gene Kranz Simon & Schuster; 3rd edition (June 23 2009)
* “Moon Mission: The Epic 400-Year Journey to Apollo 11” by Sigmund Brouwer; Kids Can Press, 2019

**Lore, Doctrine & Meta Doctrine**

* “Forging the Sword: Doctrinal Change in the U.S. Army” by Benjamin Jensen; Stanford Security Studies, 2016
* “Marine Corps Doctrinal Publication MCDP 1-0 (w/change 1)” Marine Corps Operations July 2017; U.S. Government, Marine Corps; CreateSpace Independent Publishing Platform, 2018
* “Forced to Change: Crisis and Reform in the Canadian Armed Forces” by Colonel Bernd Horn et al.; Dundurn, 2015
* “The Unwritten Laws of Engineering” by James Skakoon &W. J. King; American Society of Mechanical Engineers, Revised Edition, 2001 [first published in 1944]
* “An Engineer’s Alphabet: Gleanings From The Softer Side of a Profession” by Henry Petroski; Cambridge University Press, 2011