

PRESS RELEASE



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Dr. David Woods Discusses “Hindsight Bias” as a Possible Outcome Related to the Space Shuttle Columbia Accident Report

COLUMBUS, OHIO - A psychological effect known as "hindsight bias" could cause people to misinterpret the conclusions of the Columbia Accident Investigation Board (CAIB), according to an Ohio State University researcher who helped the board during its probe.

The critical finding of the CAIB's investigation reveals that NASA failed to balance safety risks with intense production pressure. The report makes important recommendations that could help NASA and other organizations according to Dr. David D. Woods, professor in the Institute for Ergonomics and co-director of the Cognitive Systems Engineering Laboratory at The Ohio State University.

Woods provided technical input on decision making, organizational factors, and hindsight bias to the CAIB during its investigation. His research on the factors that contribute to human error is referenced in Chapter 7 of the report.

Woods gives an example of the dangers of the hindsight bias. Often the first question people ask about the decision making leading up to the Columbia accident is, "Why did NASA continue flying the Shuttle with a known problem?" The known problem refers to the dangers of debris striking and damaging the Shuttle wing during takeoff which the board has identified as the physical cause of the accident.

"As soon as the question is posed in this way, the readers risk being trapped into oversimplifying the situation and uncertainties people faced before the outcome is known," Woods said. After the fact the past seems incredible, hence the organization looks irrational or negligent to obvious risks. However, before any accident has occurred, people may see potential warnings flags but not follow through aggressively since that potential future looks implausible, especially when the organization is under pressure to meet schedule. Because it is difficult it is for readers to disregard "20/20 hindsight", they can misinterpret the report and play the classic blame game seeing a "bad" organization as the culprit. As a result, the same difficulties that led to the Columbia accident could go unrecognized in other organizations too.

The CAIB worked hard to overcome hindsight bias and find the organizational factors that led to the accident. Readers of the report need to escape hindsight and see how the accident's lessons apply to all organizations that have to balance safety risks with pressure for efficiency.

"Once outcome shows all the real risks, it is extraordinarily difficult to see the conditions that led people to miss what now seems obvious to all." Thus, readers can miss how difficult it can be to slow down today's real production goals to consider possible future risks. Woods points out the heart of the difficulty. "It is most critical to invest resources to check out potential safety risks when the organization is least able to afford the diversion of resources due to pressure for efficiency or throughput."

Woods noted that helping organizations maintain high safety despite production pressure is the topic of a newly emerging area of research known as Resilience Engineering. "We can't change the past, despite the tragedy. But the future is open to us: will the next accident report, again, describe how safety defenses eroded over time in the face of production pressure? If we recognize the CAIB's analysis applies to all organizations, not just NASA, we can learn how to balance acute pressures for efficiency with chronic need for high safety so that this pattern doesn't recur," he said.

Written by Pam Frost Gorder (614-292-9475; gorder.1@osu.edu)

David D. Woods, PhD

With nearly 25 years of experience diagnosing the factors behind human error, Dr. Woods has conducted extensive research on how people interact with computers to make decisions in high-risk environments. His work has won awards for improving the safety of automated cockpits. In addition, he is a member of the National Research Council committee that is helping NASA and the Federal Aviation Administration plan the country's next-generation air transportation systems. Dr. Woods received his PhD in Cognitive Psychology from Purdue University.