

A black and white photograph of a biplane flying in the sky. The biplane is the central focus, with its two sets of wings clearly visible. The background shows a town with several buildings and trees, suggesting the plane is flying over a populated area. The overall tone is historical and educational.

Learning to Fly: Divergent U.S. Navy, U.S. Army, and RAF Approaches to Early Aviation

Distributed Innovation vs Centralized Control

David H. Lewis

Research Question

- How do organizations absorb disruptive technology?
 - Interwar aviation provides a natural experiment:
 - U.S. Army
 - U.S. Navy
 - Britain's Royal Air Force
- Key argument: Innovation outcomes depend on how learning is organized.





Interwar Aviation Problem

- After WWI aviation proved useful but unresolved:
 - Reconnaissance and artillery spotting
 - Maritime patrol
 - Strategic attack possibilities
- All services faced the same challenge:
 - How to integrate aviation into military institutions.

Three Organizational Approaches

U.S. Army: aviation as revolutionary transformation

Royal Air Force: aviation centralized in an independent service

U.S. Navy: aviation as an operational learning problem

Different governance structures produced different outcomes

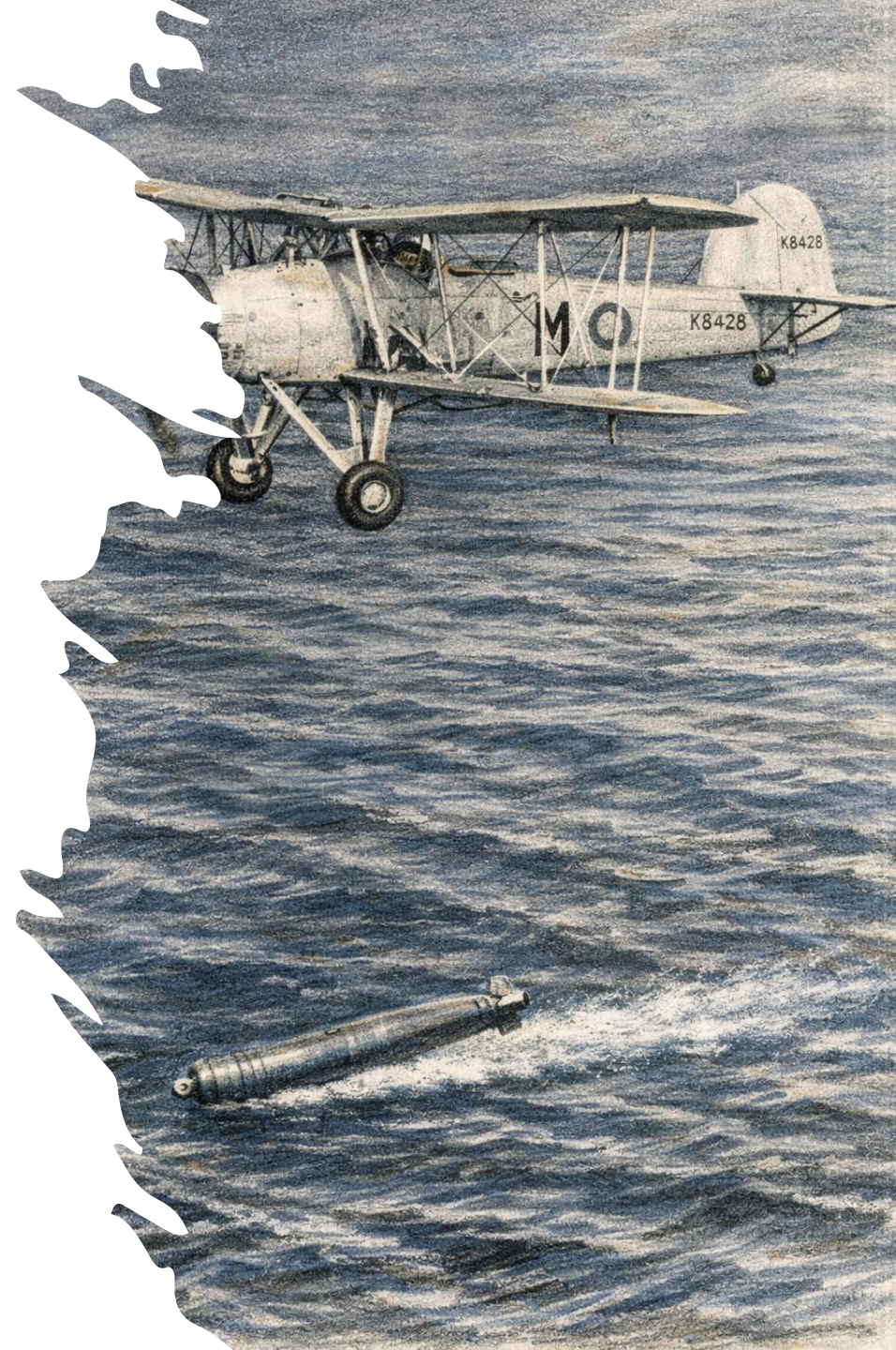
U.S. Army Approach

- Aviation framed as strategic revolution
- Advocates such as Billy Mitchell pushed:
 - Strategic bombing doctrine
 - Independent air force
 - Result: aviation became a political and institutional debate
- Learning concentrated within a small advocacy community.



Royal Air Force Approach

- 1918 creation of the RAF centralized all airpower.
- Separated aviation from Army and Navy operators.
- Institutional priorities emphasized strategic bombing.
- Operational feedback from naval aviation was filtered or ignored.



U.S. Navy Approach

- Aviation is treated as an operational extension of the fleet.
- Bureau of Aeronautics provided stable stewardship.
- Carrier experimentation beginning with *USS Langley*.
- Learning embedded in fleet exercises and routines.



Centralized vs Distributed Learning

Army and RAF:

- Centralized authority.
- Doctrinal mandates.
- Defensive institutional behavior.

U.S. Navy:

- Distributed experimentation
- Feedback from operators
- Learning embedded in people, processes, and tools.

Organizational Learning Theory

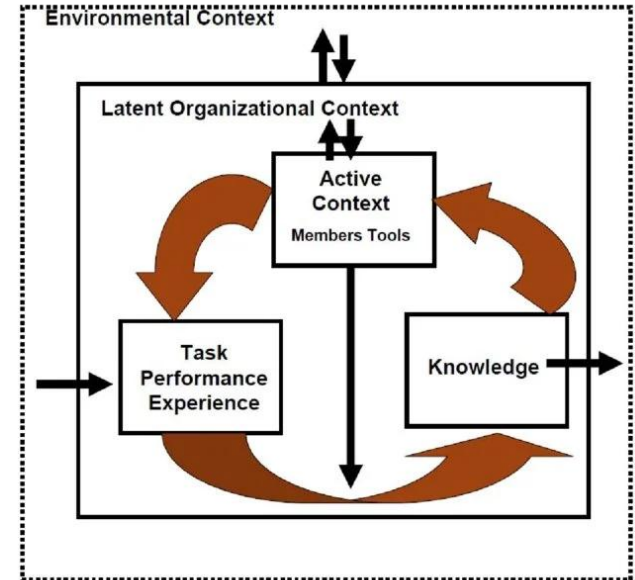
Linda Argote: Knowledge survives when embedded across

- People
- Processes
- Tools

Chris Argyris:

- Model I – defensive routines
- Model II – collaborative learning

Distributed systems produce durable innovation



Management Philosophy

Comparison of Argyris' Model I and Model II

- | Model I | Model II |
|---|--|
| <ul style="list-style-type: none">▪ Tell others what you believe will make them feel good▪ Tell other people no lies or tell others all you think and feel▪ Advocate your position in order to win▪ Stick to your principles, values, and beliefs. | <ul style="list-style-type: none">▪ Increase others ability to unsurface assumptions & biases▪ Help people say what they know but fear to say▪ Advocate your position and combine it with inquiry and self-reflection▪ Advocate principles but invite inquiry |

Overcoming Organizational Defenses, 1990


Outcomes by WWII

- U.S. Navy: integrated carrier aviation and fleet doctrine.
- Army: aviation learning remained partially isolated.
- RAF: strong institutional aviation, weaker operational coupling.

**Organizational learning structures
shaped capability**



Implications for Today

- Modern analogues:
 - Autonomous systems
 - Artificial intelligence
 - Cyber and space forces
 - Innovation should be governed as a distributed learning system
 - Not a centrally managed program.
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- An aerial photograph of the USNS Ranger (T-ESB-9) sailing on the open ocean. The ship is a grey-hulled auxiliary transport ship, viewed from an elevated rear-quarter perspective. It is carrying several large white intermodal containers on its deck. The ship's hull number '1940LV1809' and the name 'RANGER' are visible on the stern. The ship is moving through the water, leaving a white wake.

Conclusion



Technological adoption depends on learning architecture.



Centralized innovation systems risk rigidity.



Distributed experimentation enables adaptation.



Innovation succeeds when organizations learn collectively.