

Watts, Barry

From: Watts, Barry

Sent: Monday, June 23, 1997 1:05 PM

To: 'Cooper, Jeff'

Subject: Boyd Slides Containing Expanded OODA Loop



OODAv40.ppt

Jeff,

Here is a Powerpoint 4.0 files containing John Boyd's June 1995 slides on the essence of winning & losing. As best I can recall, this condensation is one of the last things John did before he died. Slide 4 has an expanded version of the OODA loop.

I talked with John a number of times about the complexities of his working concept of the OODA loop as contrasted with his own early accounts as well as the simple "loop" most people have associated with the concept (namely, a simple observation-orientation-decision-action loop). While he was working on these slides, we discussed both the wisdom of providing the more complex diagram on Slide 4 as well as some of the complexities not even captured explicitly in this more complex model. One point to note, however, is how much Boyd packed into the orientation phase. Genetic heritage, cultural traditions, and new information could all affect one's orientation. I can't recall how far back it was that it dawned on me that the orientation step was much more complex than the others. I do recall discussing this point with John on the phone on several occasions.

I sent these slides to Tom Christie at IDA a while back. He is the keeper of the current compilation of Boyd's works. I am not aware, though, that "The Essence of Wining & Losing" has been included in the reproductions Tom has been handing out.

I'd been interested in your thoughts on this more complex version of the OODA loop as developed by its creator.

I'm still mulling over our discussion of phase discrepancies between opponents. My initial thought is that you are onto something. Phase discrepancies certainly seem plausible in the case of an episode like the Battle of Midway. I'm skeptical, though, that it fits very well with, say, air-to-air combat experience save for those odd cases where people have been caught trying to take off or land. I think you might also have trouble making the model fit France in May 1940, which always seemed to me to hinge on such things as incorrect

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Allied assumptions couple with the Germans' higher operational tempo and superior small-unit leadership. So I guess my uneasiness is over how universal your explanation may be. I agree it fits some cases. But I'm not sure it fits most.

Barry

The Essence of Winning & Losing

28 June 1995

John R. Boyd

Key Statements

- *Without our genetic heritage, cultural traditions, and previous experiences*, we do not possess an *implicit* repertoire of psychophysical skills shaped by environments and changes that have been previously experienced.
- *Without analyses and synthesis*, across a variety of domains or across a variety of competing/independent channels of information, we cannot evolve new repertoires to deal with unfamiliar phenomena or unforeseen change.
- *Without a many-sided implicit cross-referencing process of projection, empathy, correlation, and rejection*, (across these many different domains or channels of information), we cannot even do *analyses* and *synthesis*.
- *Without OODA loops*, we can neither sense, hence observe, thereby collect a variety of information for the above processes, nor decide as well as implement actions in accord with those processes.

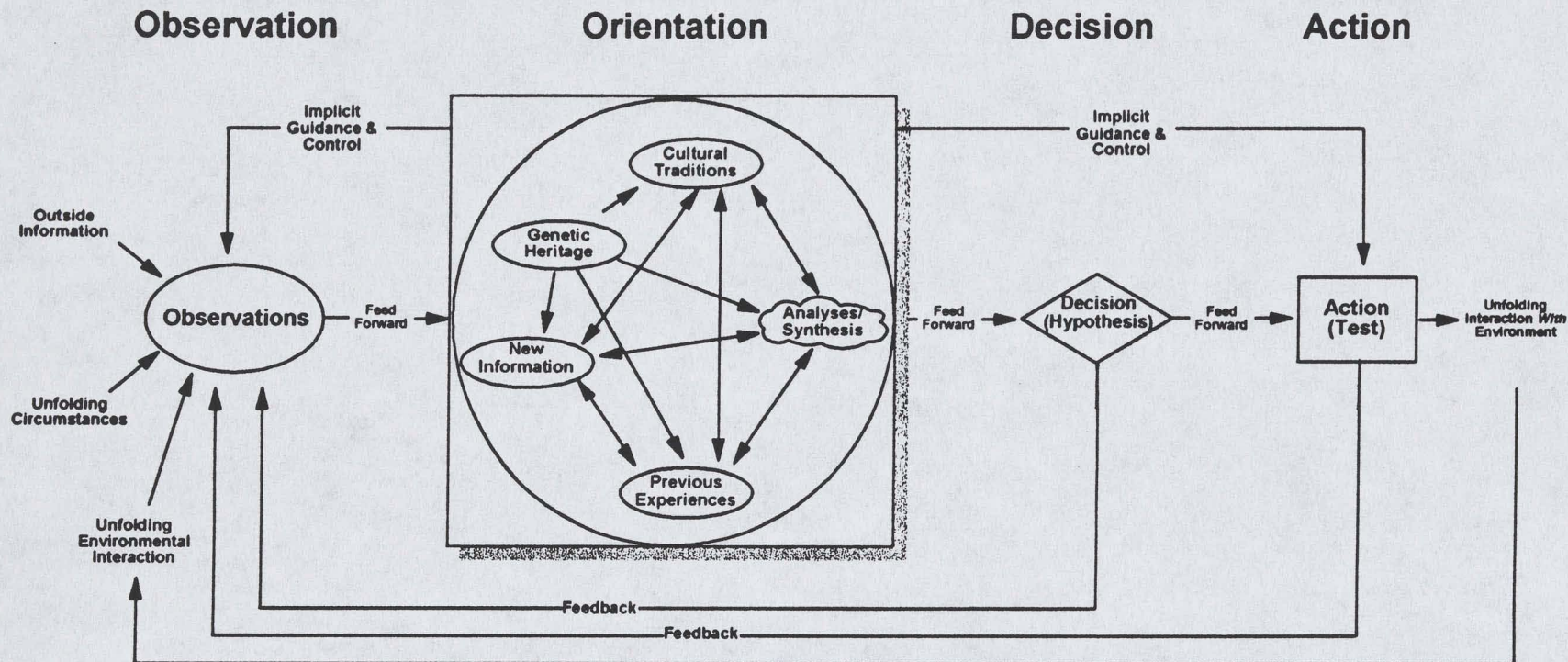
or put another way

- *Without OODA loops* embracing all the above and *without* the ability to get inside other *OODA loops* (or other environments), we will find it impossible to comprehend, shape, adapt to, and in turn be shaped by an unfolding, evolving reality that is uncertain, everchanging, unpredictable.

**We can further clarify
these statements and
their interactions by the
following sketch**

The OODA "Loop"

Sketch



Insights

- Note how orientation shapes observation, shapes decision, shapes action, and, in turn, is shaped by the feedback and other phenomena coming into our sensing or observation window.
- Also note how the entire "loop" (not just orientation) is an ongoing many-sided implicit cross-referencing process of projection, empathy, correlation, and rejection.

Illumination

By pulling all this together, we can see that the *Key Statements*, *OODA Loop Sketch*, and related *Insights* represent an evolving, open-ended, far-from-equilibrium process of *self-organization*, *emergence* and *natural selection*.