

Lean, agile, and ... profitable??

Ideas from the foundation of Lean

**Chet Richards
August 2022**

What it's all about

The Toyota Way:

Taking our destiny into our own hands: Companies should not be and need not be like ships adrift at sea, cast about uncontrollably by external factors.

Theory of conflict:

Our goal is to survive, survive on our own terms, or improve our capacity for independent action.

In a world of limited resources and many competing interests.



Put another way

To flourish and grow in a many-sided, uncertain and ever-changing world that surrounds us suggests that we have to make intuitive within ourselves those many practices we need to meet the exigencies of that world.

Boyd's Abstract to the
Discourse for Winning and Losing, ~1987



Fine, but:

- How do we do it?
- And which actions? And do they change?
- And what does “intuitive” mean?
- And how can we tell if we’re doing it right?



Another fundamental concept

Armed with ***deep understanding***, you can – will – generate ideas that will work in your organization.

Before we get started: How can you tell if you have “deep understanding” (or if you’re even heading in the right direction)?

Also, what does this imply about those concepts for which we **don’t** have a deep understanding?



Our journey begins:
Somewhere in China, around 400 BCE

"War was to be preceded by measures designed to make it easy to win ... Only when the enemy could not be overcome by these measures was there recourse to armed force,"



Somewhere in China, around 400 BCE

which was to be applied so that
victory was gained:

- a) in the shortest possible time;
 - b) at the least possible cost in lives
and effort;
 - c) with the infliction on the enemy
of the fewest possible casualties
- (Griffith's Commentary on Sun Tzu)



So, for example

- Sun Tzu believed that the moral strength and intellectual faculty of man were decisive in war and that if these were applied properly, war could be waged with certain success.

Griffith's intro to his translation, 1963, p. 39

- People, ideas and hardware. In that order!

Col John R. Boyd, USAF (dec).



Very good, but how do we interpret these ancient texts?

For example, what does this mean:

The military is without fixed shih and without lasting form.

Sun Tzu, Chapter 6 (Demna translation)



Using Sun Tzu

A useful framework for bringing Sun Tzu into the modern era was developed by John Boyd (1927 – 1997)

- Instructor fighter pilot at the USAF Fighter Weapons School
- Creator of "energy - maneuverability" / "father" of F-15, F-16, F-18

Reading through Boyd's work nowadays one does not encounter novelty or experience difficulty following his arguments and accepting his ideas. His language and logic, his ideas, terms and concepts are part and parcel now of the military conceptual frame of reference. Western military organizations have to a large extent internalized Boyd's concepts, and perhaps even learned Boyd's way of thinking. (p. 316)

Col Frans Osinga, Ph.D., RoNAF

Boyd was the first in the modern era to propose a comprehensive theory of strategy that is independent of size or technology and to identify an organizational climate for achieving it. He was the first to observe that the common underlying mechanism involved tactics that distort the enemy's perception of time. He identified a general category of activities to achieve this distortion, the ability to change the situation faster than the opponent could comprehend, which he called "operating inside the Observation–Orientation–Decision–Action (OODA) loop." (pp. 11-12)

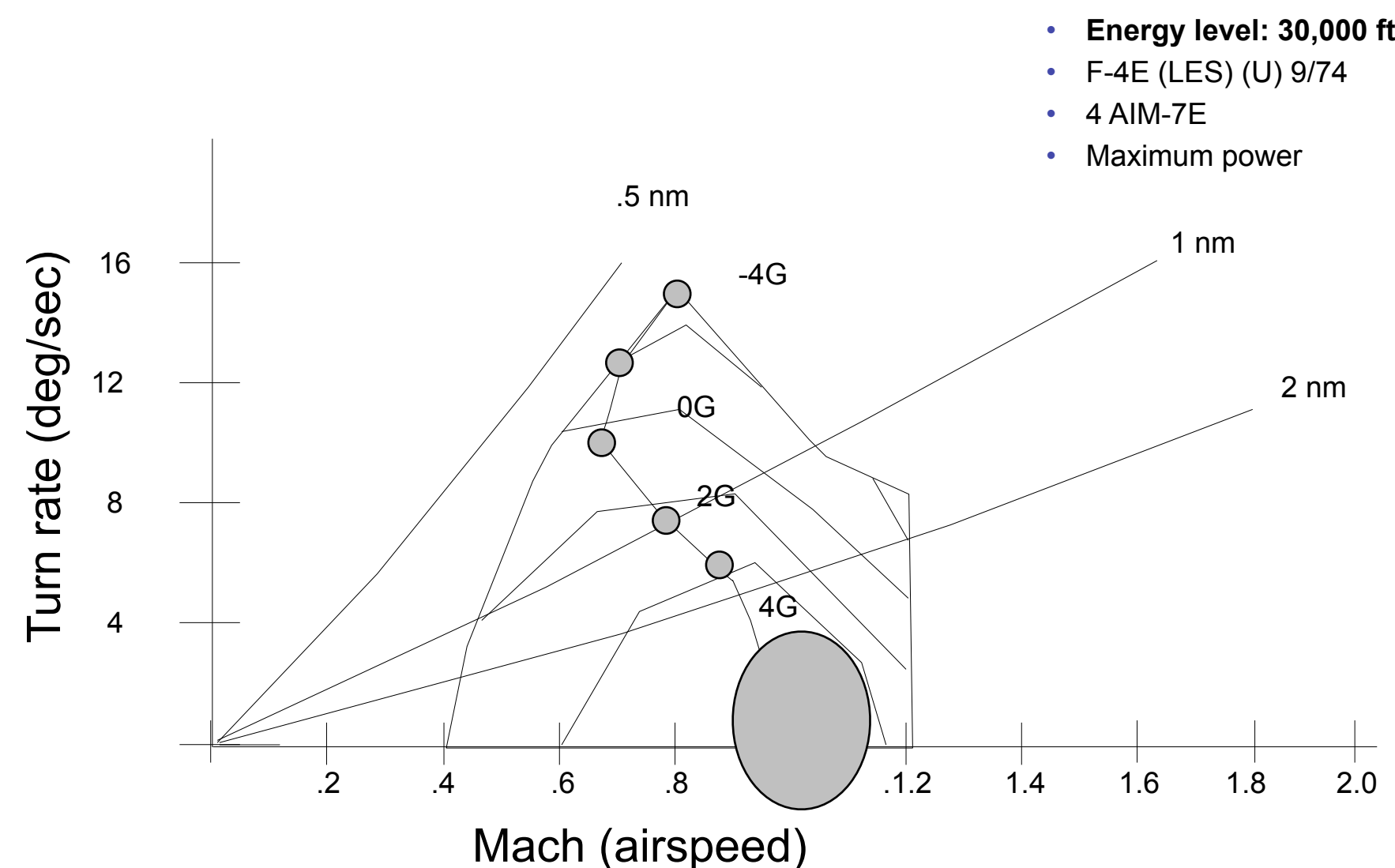
Boyd was not the first to appreciate initiative, even by privates and sailors, but he was the first to tie a specific climate based on initiative to the ability to generate rapid transients in combat and other conflicts. (p. 12)

CDR Odd Arne Nissestad, Ph.D., RNoN (ret.)

Just FYI, this is what Energy-Maneuverability looks like

Mathematics & lots of graphs
but NO PEOPLE

$$P_s = \frac{T - D}{W} \cdot S$$



Big Engines



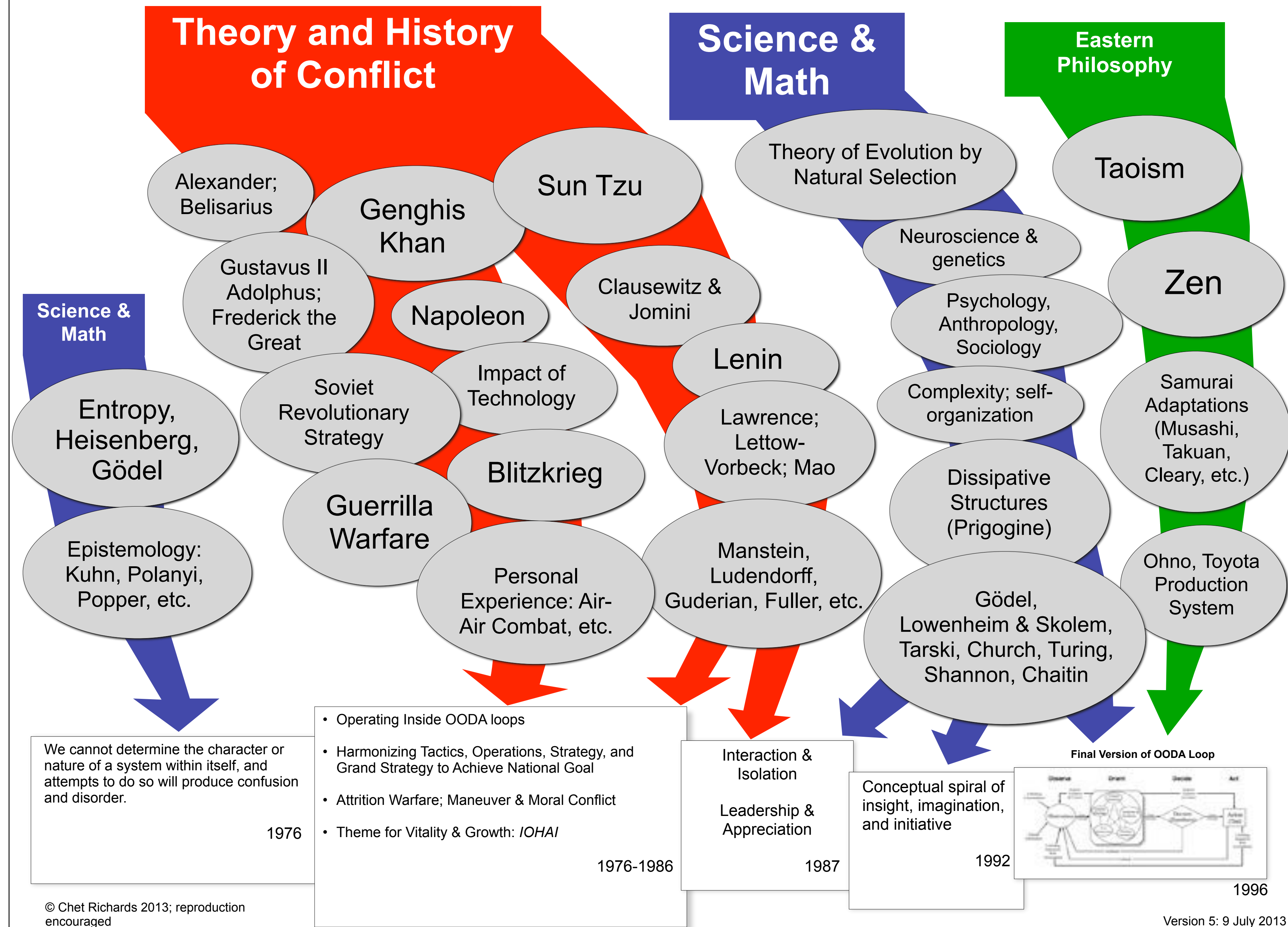
Big Wings



Starting in 1976, Boyd discovered people

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- Instructor fighter pilot at the USAF Fighter Weapons School
- Creator of "energy - maneuverability" / "father" of F-15, F-16, F-18
- *A Discourse on Winning and Losing* (1976-1997)
- Foundation of USMC doctrine
- Embraced by US special operations forces
- Finding wider application to business, sports, politics, etc.





Who was John Boyd?

Product	Date	Slides	Words	Words/Slide
<i>New Conception for Air-Air Combat</i>	<i>8/1976</i>	<i>24</i>	<i>825</i>	<i>34</i>
<i>Destruction & Creation</i>	<i>9/1976</i>	<i>—</i>	<i>3 900</i>	<i>—</i>
<i>Patterns of Conflict</i>	<i>12/1986</i>	<i>185</i>	<i>21 000</i>	<i>113,5</i>
<i>Organic Design for Command & Control</i>	<i>5/1987</i>	<i>37</i>	<i>3 400</i>	<i>92</i>
<i>Strategic Game of ? and ?</i>	<i>6/1987</i>	<i>59</i>	<i>4 700</i>	<i>80</i>
<i>Conceptual Spiral</i>	<i>8/1992</i>	<i>38</i>	<i>2 900</i>	<i>76</i>
<i>The Essence of Winning and Losing</i>	<i>1/1996</i>	<i>4</i>	<i>350</i>	<i>87,5</i>
Total		<i>347</i>	<i>37 075</i>	<i>96</i>



Boyd's Big Ideas

We can sort Boyd's concepts into categories regarding:

1. What you do with **opponents**: Operate inside their OODA loops
2. What you do with **your own organization**: Create a climate / culture that makes it possible for you to operate inside opponent's OODA loops (EBFAS)
3. What you do with **allies and the uncommitted**: Grand strategy
4. How you **learn and operate**: The OODA "loop" itself



First Big Idea



**Operating
inside their OODA loops**

Observe, orient, decide, act: words to live or die by.
Right now, Persephone is disoriented — on the run,
cut off. It's time to go on the offensive, work out where
she is and what's going on, then get the hell out of this
trap.

Charles Stross, *The Apocalypse Codex*,
2012, p. 160



Where he got the idea

He noticed something fundamentally the same about the following 3 cases:

Fighter aircraft F-86 vs. MiG-15 (1951-53); YF-16 vs YF-17 (1974)

Special operation The Entebbe raid by Israel (1976)

Mental state Blitzkrieg vs. Maginot Line mentality (1940)



Message

Note – the blue background indicates Boyd's original charts. All are from *Patterns of Conflict* unless another briefing is cited. Note original page numbers in bottom right corner.

He who can handle the quickest
rate of change survives.

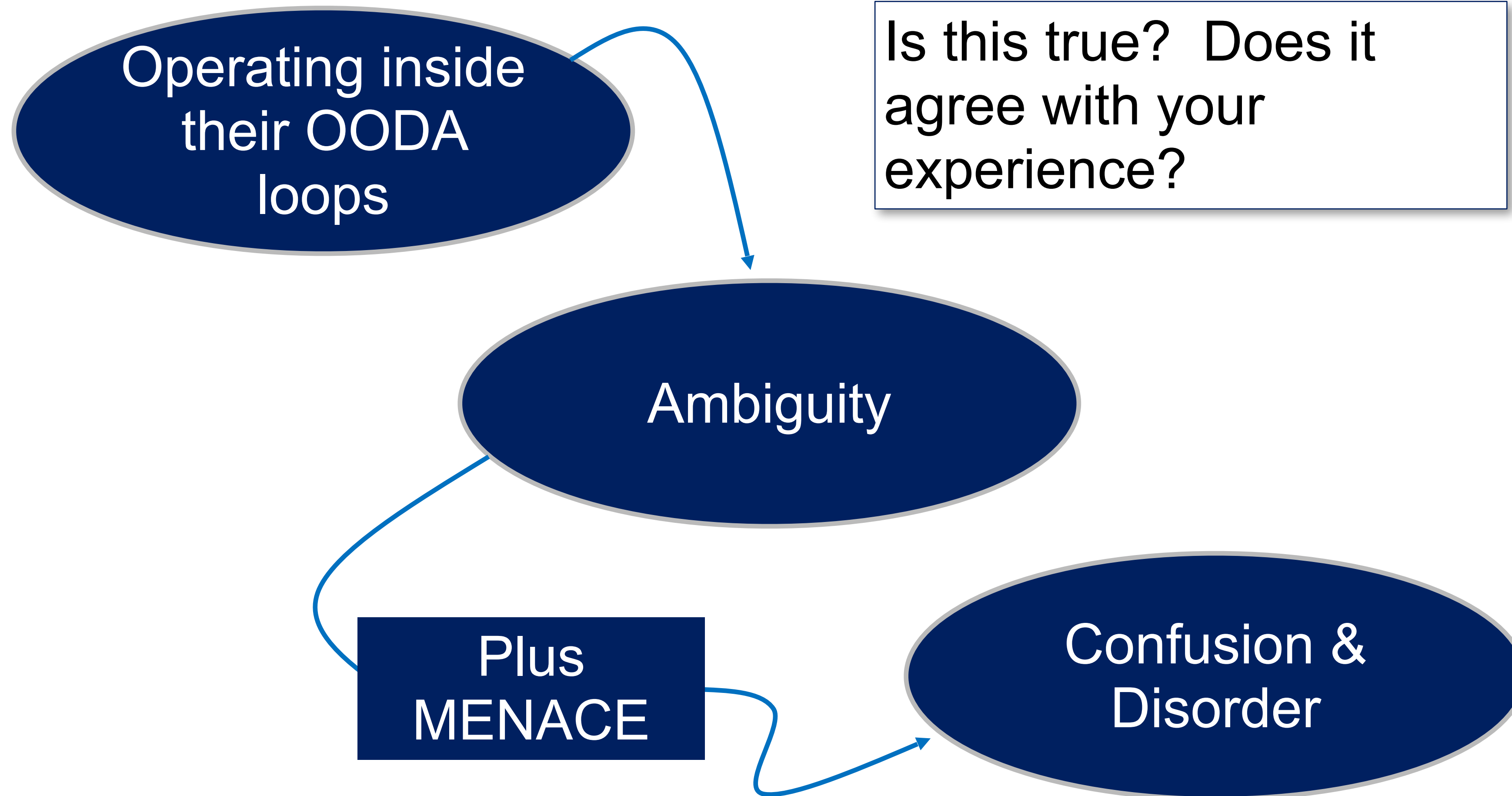
- Oddly enough, he never explicitly defines what “operating inside the OODA loop” means
- But don’t worry, he gives lots of examples

“Fast transients” as they appeared in *Patterns of Conflict*

- Idea of fast transients suggests that, in order to win, we should operate at a **faster tempo or rhythm** than our adversaries—or, better yet, get inside adversary’s **observation-orientation-decision-action time cycle or loop**.
- Why? Such activity will make us appear **ambiguous** (unpredictable) thereby generate **confusion** and **disorder** among our adversaries—since our adversaries will be **unable** to generate mental images or pictures that agree with the **menacing** as well as **faster** transient rhythm or patterns they are competing against.



In other words, Boyd is claiming that



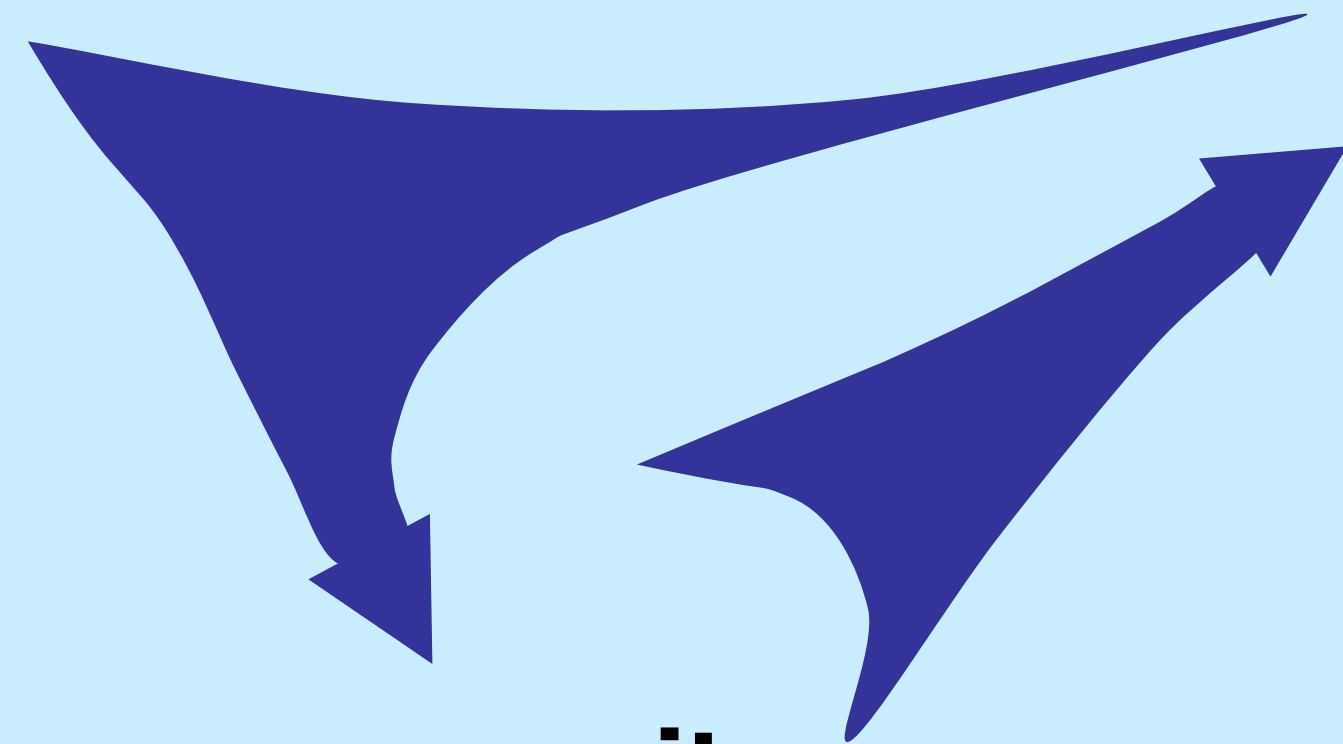
Operating inside OODA loops — what you're trying to accomplish

Transients

- Observe, orient, decide and act more inconspicuously, more quickly, and with more irregularity ...

or put another way

- Operate inside adversary's observation-orientation-decision action loops or get inside his mind-time-space.



**permits
one to**

Intentions

- Probe and test adversary to unmask strengths, weaknesses, maneuvers, and intentions.
 - Employ a variety of measures that interweave menace-uncertainty-mistrust with tangles of ambiguity-deception-novelty as basis to **sever adversary's moral ties and disorient ...**
 - Select initiative (or response) that is least expected.
 - Establish focus of main effort together with other effort and pursue directions that permit many happenings, offer many branches, and threaten alternative objectives.
 - Move along paths of least resistance (to reinforce and exploit success).
 - Exploit, rather than disrupt or destroy, those differences, frictions, and obsessions of adversary organism that interfere with his ability to cope ...
 - **Subvert, disorient, disrupt, overload, or seize** adversary's vulnerable, yet critical, connections, centers, and activities ... in order to dismember organism and isolate remnants for wrap-up or absorption.
- Generate uncertainty, confusion, disorder, panic, chaos ... to shatter cohesion, produce paralysis and bring about collapse.
 - Become an extraordinary commander.



Deeper understanding of Chart 132

- Intelligence is an active process (“Probe and test”)
- Goal is that other side will surrender, run away, break apart, etc.
 - “The enemy was isolated and demoralized; his will to resist broken.” Griffith introduction to Sun Tzu, p. 39
- Focus is on confusing and demoralizing the other side, then
- Keeping it going (“least expected,” “many happenings,” etc.)
- Before other side can figure it out

Idea: Defeat the enemy first, **then (and only then) go into battle.**

Historical pattern

Sun Tzu, *The Art of War*, c. 400 B.C.

Theme

- Harmony and trust
- Justice and well being
- Inscrutability and enigma
- Deception and subversion
- Rapidity and fluidity
- Dispersion and concentration
- Surprise and shock

Desired outcome

- Subdue enemy without fighting
- Avoid protracted war

Strategy

- Probe enemy's organization and dispositions to unmask his strengths, weaknesses, patterns of movement and intentions.
- "Shape" enemy's perception of world to manipulate his plans and actions.
- Attack enemy's plans as best policy. Next best disrupt his alliances. Next best attack his army. Attack cities only when there is no alternative.
- Employ *cheng* and *ch'i* maneuvers to quickly and unexpectedly hurl strength against weaknesses.

Historical pattern

Keeping in mind the ideas of Sun Tzu and our comments about early commanders, let's take a look at an early tactical theme and some battle (grand tactical) situations to gain a feel for the different ways that the *cheng/ch'i* game has been (and can be) played.

Historical pattern

Early commanders

- Alexander
- Hannibal
- Belisarius
- Genghis Khan
- Tamerlane

Action

Cheng and *ch'i**

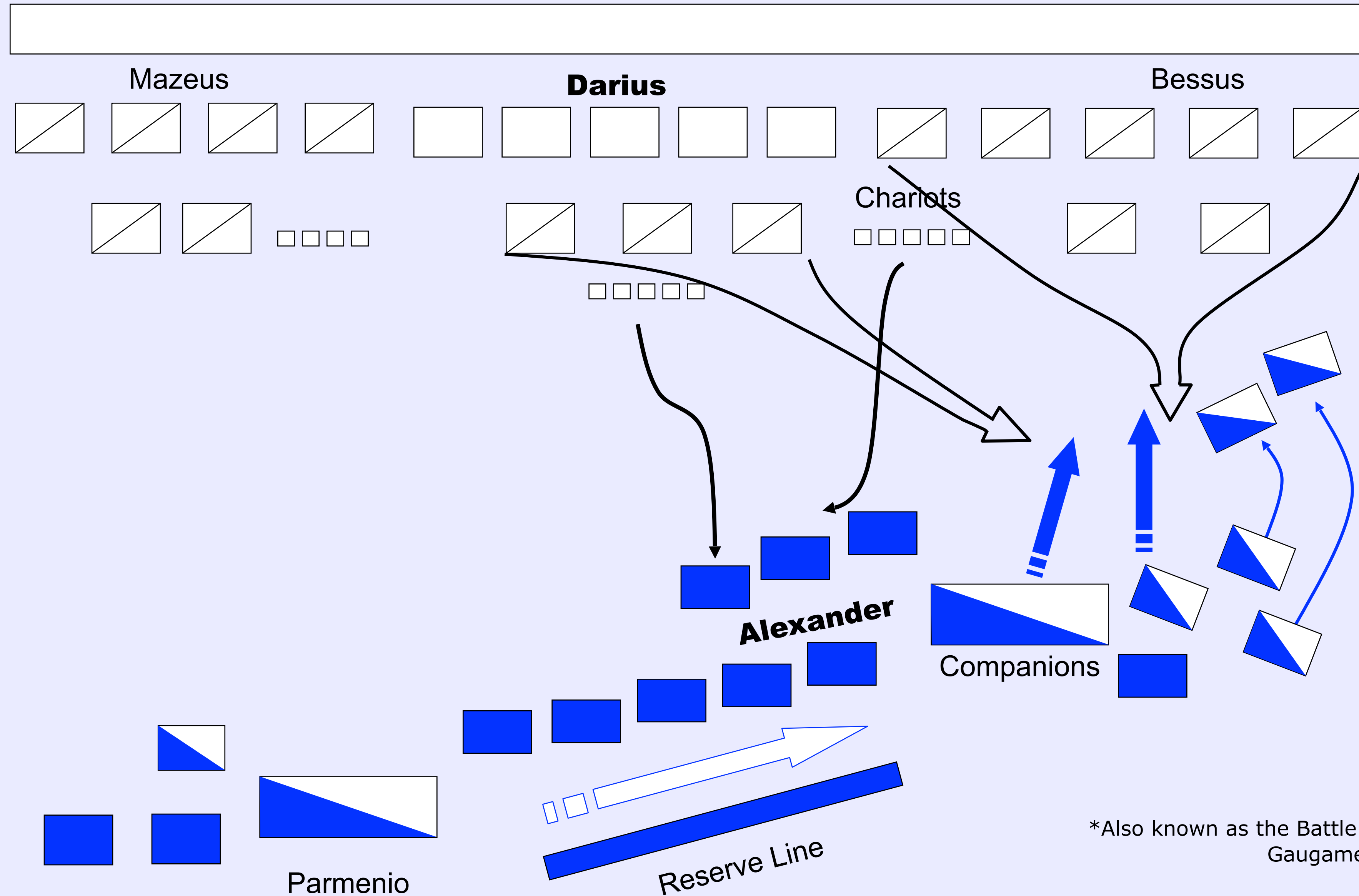
Impression

- Early commanders seem consistent with ideas of Sun Tzu
- Western commanders more directly concerned with winning the battle
- Eastern commanders closer to Sun Tzu in attempting to shatter adversary prior to battle

* *Cheng/ch'i* maneuver schemes were employed by early commanders to expose adversary vulnerabilities and weaknesses (a la *cheng*) for exploitation and decisive stroke (via *ch'i*).

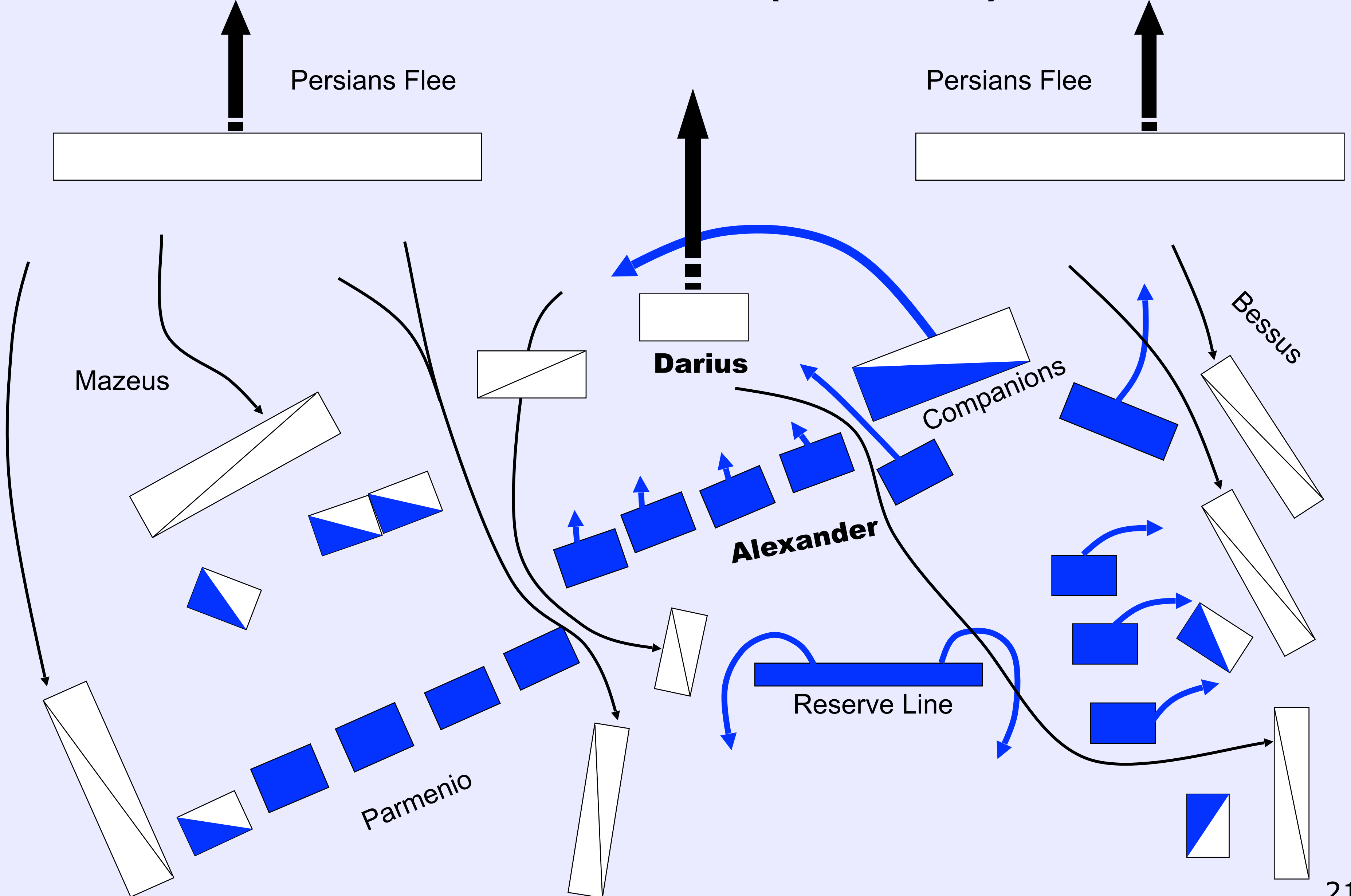
Battle of Arbela*

October 1, 331 B.C.



*Also known as the Battle of Gaugamela

Battle of Arbela (Phase II)



Historical pattern

Genghis Khan and the Mongols

Key asymmetries

- Superior mobility
- Superior communications
- Superior intelligence
- Superior leadership

Aim

Conquest, as basis to create, preserve, and expand Mongol nation

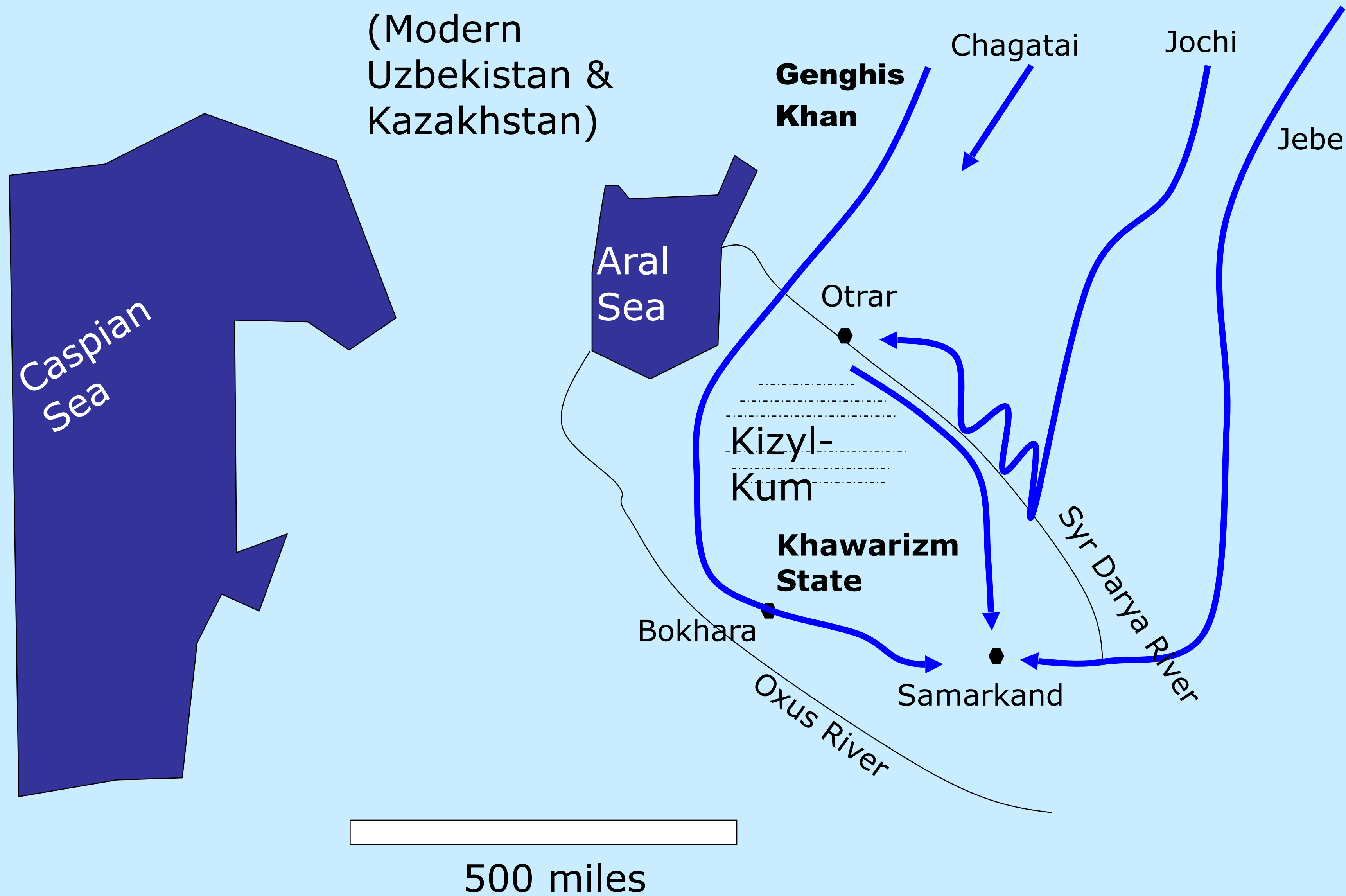
Theme

- Widely separated strategic maneuvers, with appropriate stratagems, baited retreats, hard-hitting tactical thrusts, and swirling envelopments to uncover and exploit adversary vulnerabilities and weaknesses.

in conjunction with

- Clever and calculated use of propaganda and terror to play upon adversary's doubts, fears, and superstitions in order to undermine his resolve and destroy his will to resist.

Mongol strategic maneuver (1219-1220)



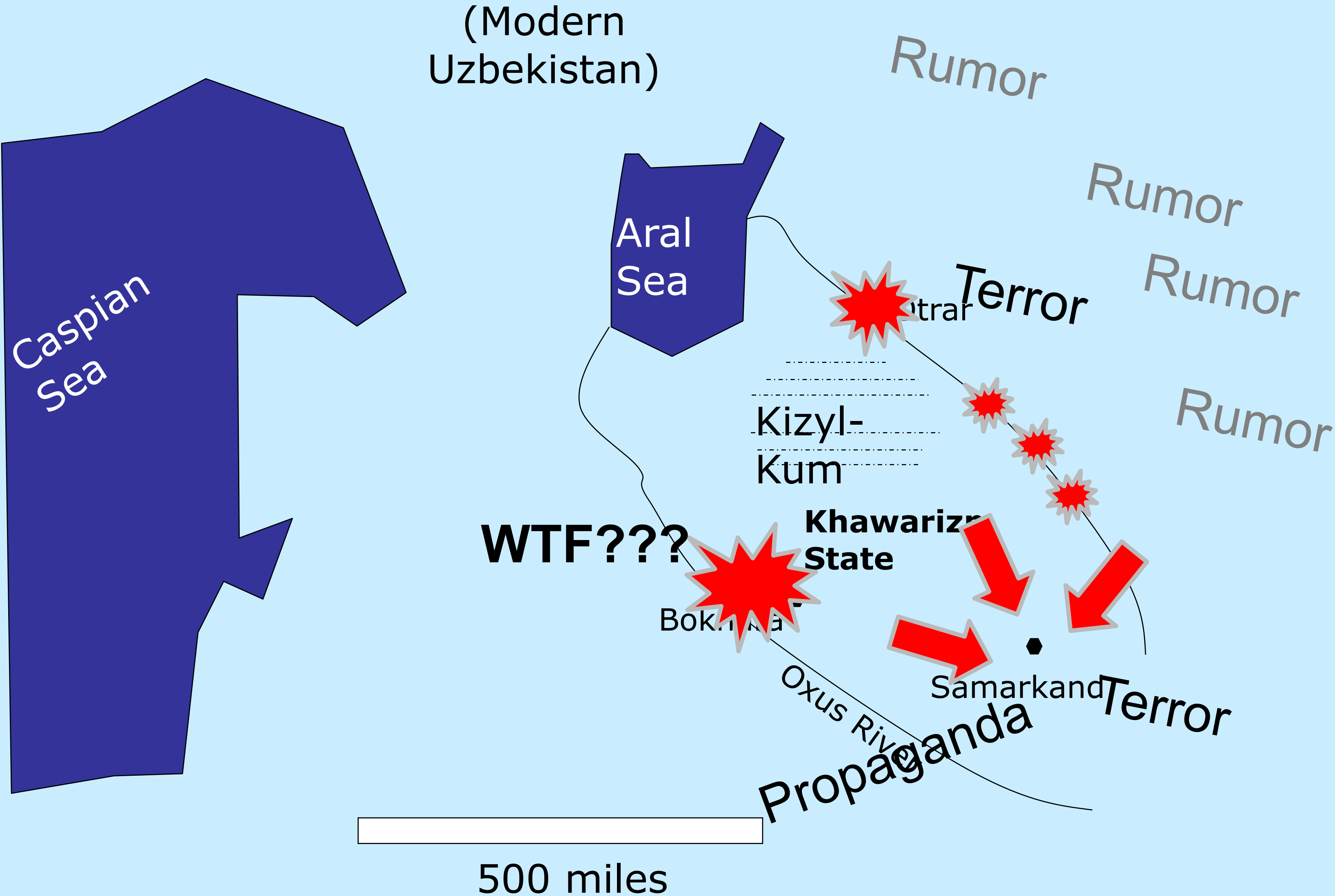
? Raises nagging question ?

Even though outnumbered, why were Mongols able to maneuver in widely scattered arrays without being defeated separately or in detail?

Never divide your forces in the presence of a superior enemy.

LTC George A. Custer, 1876.

What the Khawarizm leader actually saw



Historical patterns

Genghis Khan and the Mongols

Message

- By exploiting superior leadership, intelligence, communications, and mobility as well as by playing upon adversary's fears and doubts via propaganda and terror, **Mongols operated inside adversary observation-orientation-decision-action loops.**

Result

- Outnumbered Mongols created impressions of terrifying strength—by seeming to come out of nowhere yet be everywhere.

hence,

- Subversive propaganda, clever stratagems, fast breaking maneuvers, and calculated terror not only created vulnerabilities and weaknesses but also played upon moral factors that drain away resolve, produce panic, and bring about collapse.

Historical pattern

Napoleon's art of war

Revolutionary army gifts to Napoleon

- Moral and physical energy of citizen-soldiers and new leaders generated by the revolution and magnified by successes against invading allied armies
- Subdivision of army into smaller self-contained but mutually supporting units (divisions)
- Ability to travel light and live off countryside without extensive baggage, many supply wagons, and slow-moving resupply efforts
- Rapid march associated with 120 instead of the standard 70 steps per minute
- Discontinued adherence to 1791 Drill Regulations pertaining to the well regulated and stereotype use of column and line formations for movement and fighting

Beneficial asymmetry

- Mobility/fluidity of force dramatically better than that possessed by potential adversaries.

? Raises question ?

How did Napoleon exploit this superior mobility/fluidity of force?

Historical pattern

18th century theoreticians

- Saxe
- Bourcet
- Guibert
- Du Teil

Theme

- Plan with several branches
- Mobility/fluidity of force
- Cohesion
- Dispersion and concentration
- Operate on a line to threaten alternative objectives
- Concentrate **direct** artillery fire on key points to be forced

Action

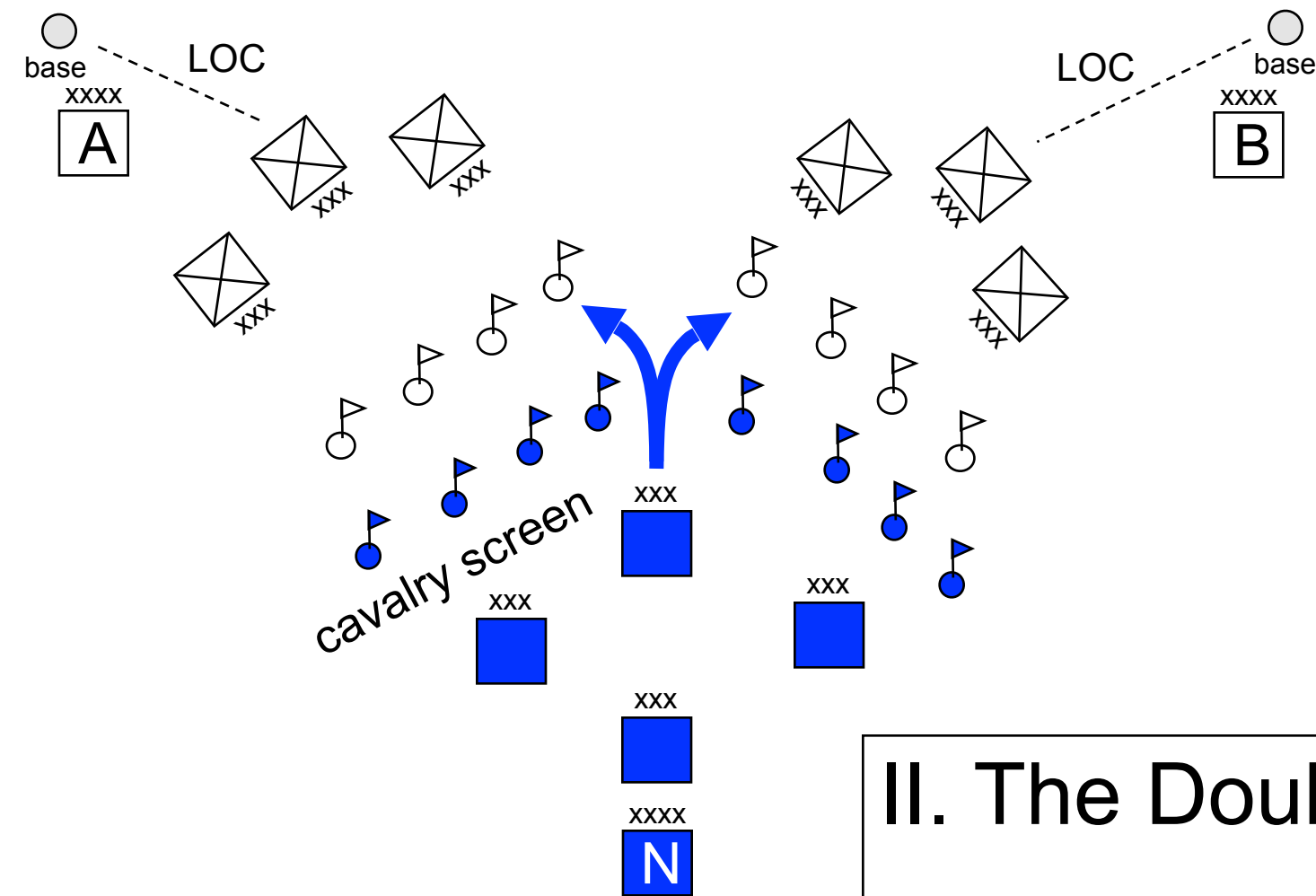
Napoleon was deeply influenced by the ideas of the above men. In early campaigns (as a general) he exploited these ideas of **variety** and **rapidity** with **harmony** for ambiguity, deception, and rapid/easy movement in order to surprise and successively defeat fractions of superior forces. In later campaigns (as emperor) he exchanged **variety** and **harmony** for **rigid uniformity** via massed direct artillery fire, dense infantry columns, and heavy cavalry going against regions of strong resistance—that resulted in an ever higher and crippling cost in casualties.

American colonists and Spanish and Russian guerrillas exploited **variety** and **rapidity** associated with environmental background (terrain, weather, darkness, etc.) and mobility/fluidity of small bands with **harmony** of common cause against tyranny/injustice as basis to harass, confuse, and contribute toward the defeat of the British and of the French under Napoleon.

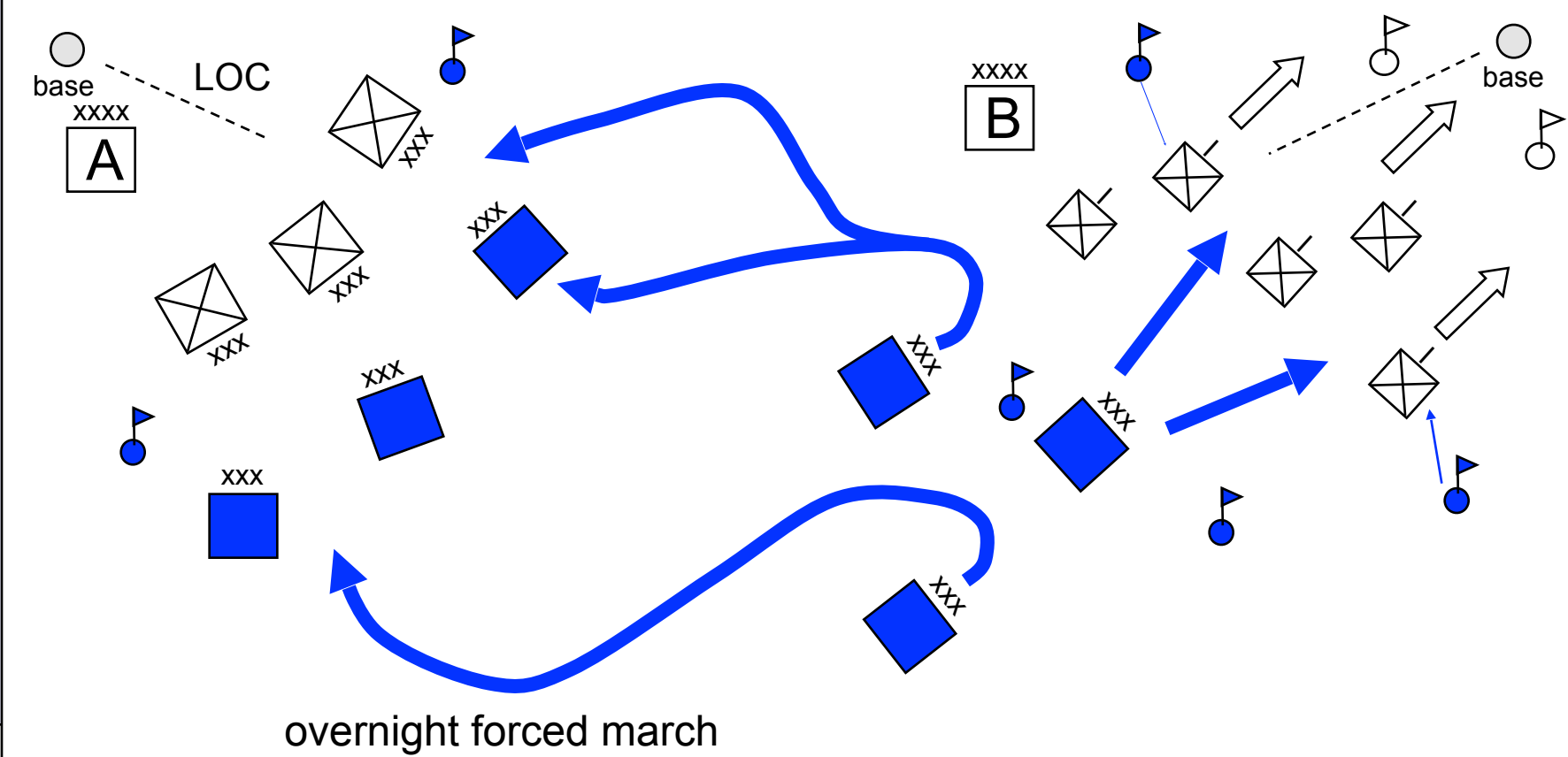
The strategy of central position

(idealized schematic)

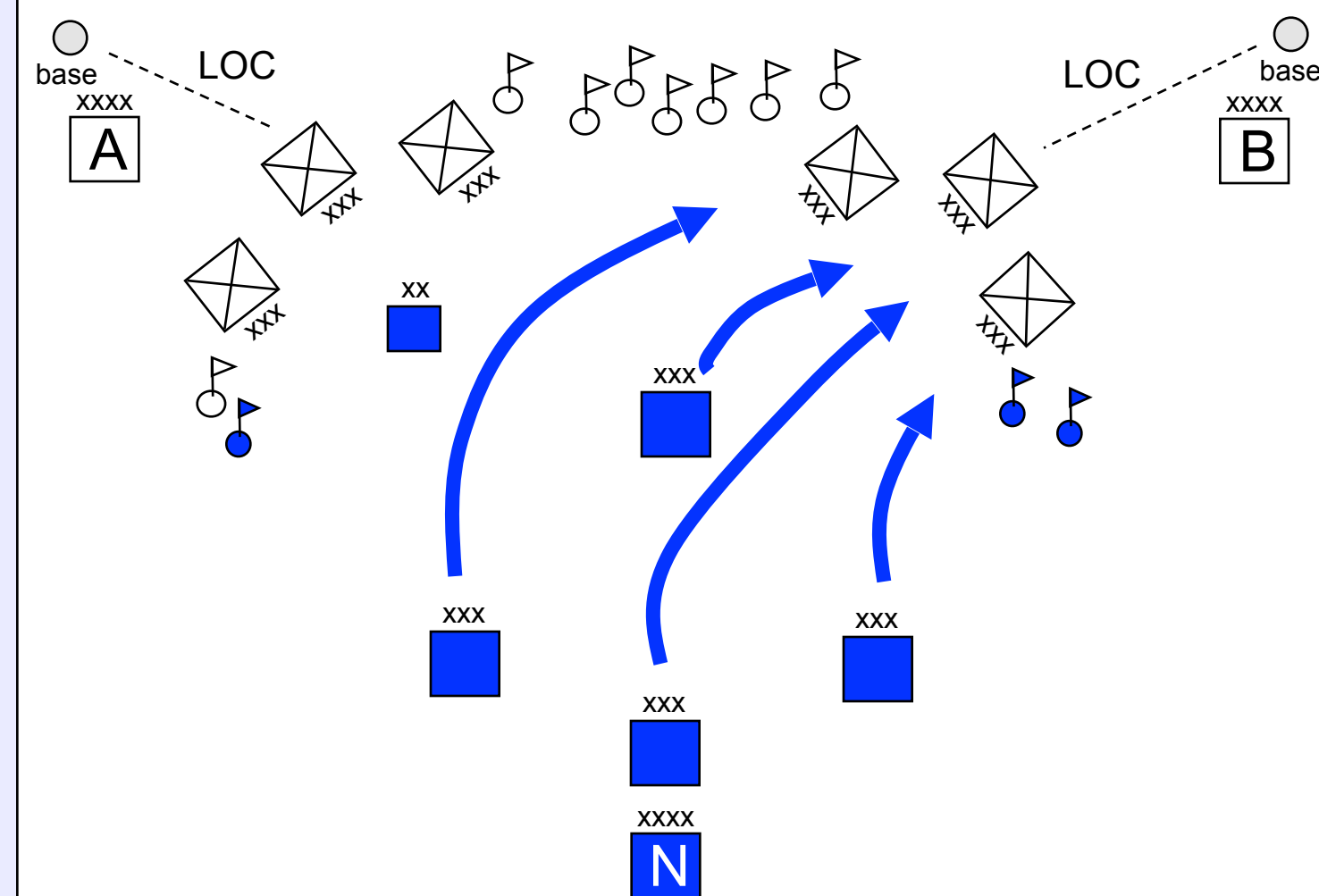
I. Advance to Contact



III. The Coup de Grace



II. The Double Battle



Source: David G. Chandler,
Waterloo: The Hundred Days, 1980.

Historical pattern

Napoleon's art of war

Early tactic

“The action was opened by a cloud of sharpshooters, some mounted, some on foot, who were sent forward **to carry out a general rather than a minutely-regulated mission**; they proceeded to harass the enemy, escaping from his superior numbers by their mobility, from the effect of his cannon by their dispersal. They were constantly relieved to ensure that the fire did not slacken, and they also received considerable reinforcement to increase their over-all effect ... **Once the chink in foe's armour had been revealed** ... the horse artillery would gallop up and open fire with canister at close range. The attacking force would meantime be moving up in the indicated direction, the infantry advancing in column, the cavalry in regiments or squadrons, ready to make its presence felt anywhere or everywhere as required. Then, when the hail of enemy bullets or cannon balls began to slacken ... The soldiers would begin to run forward, those in the front ranks crossing their bayonets, as the drums beat the charge; the sky would ring a thousand battle-cries constantly repeated: *“En avant. En avant. Vive la Republique.”*

Later tactics

“At the outset, a **heavy bombardment** would be loosed against the enemy formations, causing fearful losses if they failed to seek shelter, and generally lowering their power of resistance. Under cover of this fire, swarms of *voltigeurs* would advance to within musketry range and add a disconcerting ‘**nuisance**’ element by sniping at officers and the like. This preliminary phase would be followed by a series of **heavy cavalry** and **infantry** attacks. **The secret of these was careful timing and coordination.** The first cavalry charges were designed to defeat the hostile cavalry and compel the enemy infantry to form squares”, thereby reduce fire in any one direction and enable the columns to get to close grips before the enemy could resume his linear formation. The infantry (deployed or not) and accompanying horse artillery would then blaze a gap in the enemy formation and finally the cavalry would sweep forward, again, to exploit the breakthrough.

Essential point

Early tactics, without apparent design, operate in a fluid, adaptable manner to uncover, expand and exploit adversary vulnerabilities and weaknesses, while later tactics emphasize massed firepower and stereotyped formations working formally together to smash adversary strength.

Historical pattern

Napoleon's art of war

Critique

- Napoleon exploited ambiguity, deception, and mobility at the strategic level,

whereas,
- He increasingly emphasized formal battering ram methods and de-emphasized loose, irregular methods (e.g. skirmishers) at the tactics level—via a return to, and increasingly heavy-handed application of, the 1791 Drill Regulations.

Why?

- Napoleon emphasized the conduct of war from the top down. He created and exploited strategic success to procure grand tactical and tactical success.
- To support his concept, he set up a highly centralized command and control system which, when coupled with essentially unvarying tactical recipes, resulted in strength smashing into strength by increasingly unimaginative, formalized, and predictable actions at lower and lower levels.

Result

Strategic maneuvers ambiguous and deceiving prior to tactical concentration; after concentration, “maneuvers” stereotyped and obvious.

Hence

Tactical “maneuvers” could not easily procure the victory because of their obvious, predictable nature.



From US Revolution to World War I

<i>Battle</i>	<i>Date</i>	<i>Casualties</i>	<i>Remarks</i>
<i>Cowpens</i>	<i>January 17, 1781</i>	<i>400 kld/wnd</i>	<i>1,100 Brit 1,000 Am.</i>
<i>Antietam</i>	<i>September 17, 1862</i>	<i>22,700 k/w</i>	<i>>110,000</i>
<i>Gettysburg</i>	<i>July 1-3, 1863</i>	<i>46,000 k/w</i>	<i>164 000</i>
<i>Somme</i>	<i>1 July - 18 Nov 1916</i>	<i>>1,200,000</i>	<i>Total penetration 6 miles</i>

World War I

A way out

Idea	Authors
<ul style="list-style-type: none">• Infiltration tactics	<ul style="list-style-type: none">• Capt. Andre Laffargue• Gen. von Hutier?• Gen. Ludendorff
<ul style="list-style-type: none">• Guerrilla tactics	<ul style="list-style-type: none">• T.E. Lawrence• Paul von Lettow-Vorbeck

World War I

Infiltration tactics

Key points

- Fire at all levels by artillery, mortars, and machine guns is exploited to hold adversary attention and pin him down, hence—
- Fire together with gas and smoke (as well as fog and mist) represent an immediate and ominous threat to capture adversary attention, force heads down, and dramatically obscure view, thereby cloak infiltrators' movements.
- Dispersed and irregular character of moving swarms (as opposed to well defined line-abreast formations) permit infiltrators to blend against irregular and changing terrain features as they push forward.
- Taken together, the captured attention, the obscured view, and the indistinct character of moving dispersed/irregular swarms deny adversary the opportunity to picture what is taking place.

Result

- Infiltration teams appear to suddenly loom up out of nowhere to blow thru, around, and behind disoriented defenders.

Which lead to:

Essence of Blitzkrieg

Employ a *Nebenpunkte/Schwerpunkt* maneuver philosophy to **generate ambiguity, realize deception, exploit superior mobility**, and **focus violence** as basis to **quickly**:

- **Create many opportunities to penetrate** weaknesses in the form of any moral or mental inadequacies as well as any gaps or exposed flanks that open into adversary's vulnerable rear and interior, hence
- **Create and exploit opportunities** to repeatedly **penetrate** adversary organism at all levels (tactical, grand tactical, and strategic) and in many ways in order to splinter, envelop, and roll up/wipe out isolated remnants, thereby generate confusion and disorder, hence
- **Create and exploit opportunities** to disrupt his system for communication, command, and support, as well as undermine or seize those connections or centers that he depends upon, thus shake his will or capacity to decisively commit his back-up echelons, operational reserves, and/or strategic reserves, thereby magnify adversary's confusion and disorder and convince him to give up.

Intent

Create grand tactical success then exploit and expand it into strategic success for a decisive victory.

Implication

Blitzers, by being able to **infiltrate** or **penetrate** or **get inside** adversary's system, generate many moral-mental-physical non-cooperative (or isolated) centers of gravity, as well as undermine or seize those centers of gravity adversary depends upon, in order to magnify friction, produce paralysis, and bring about adversary collapse.

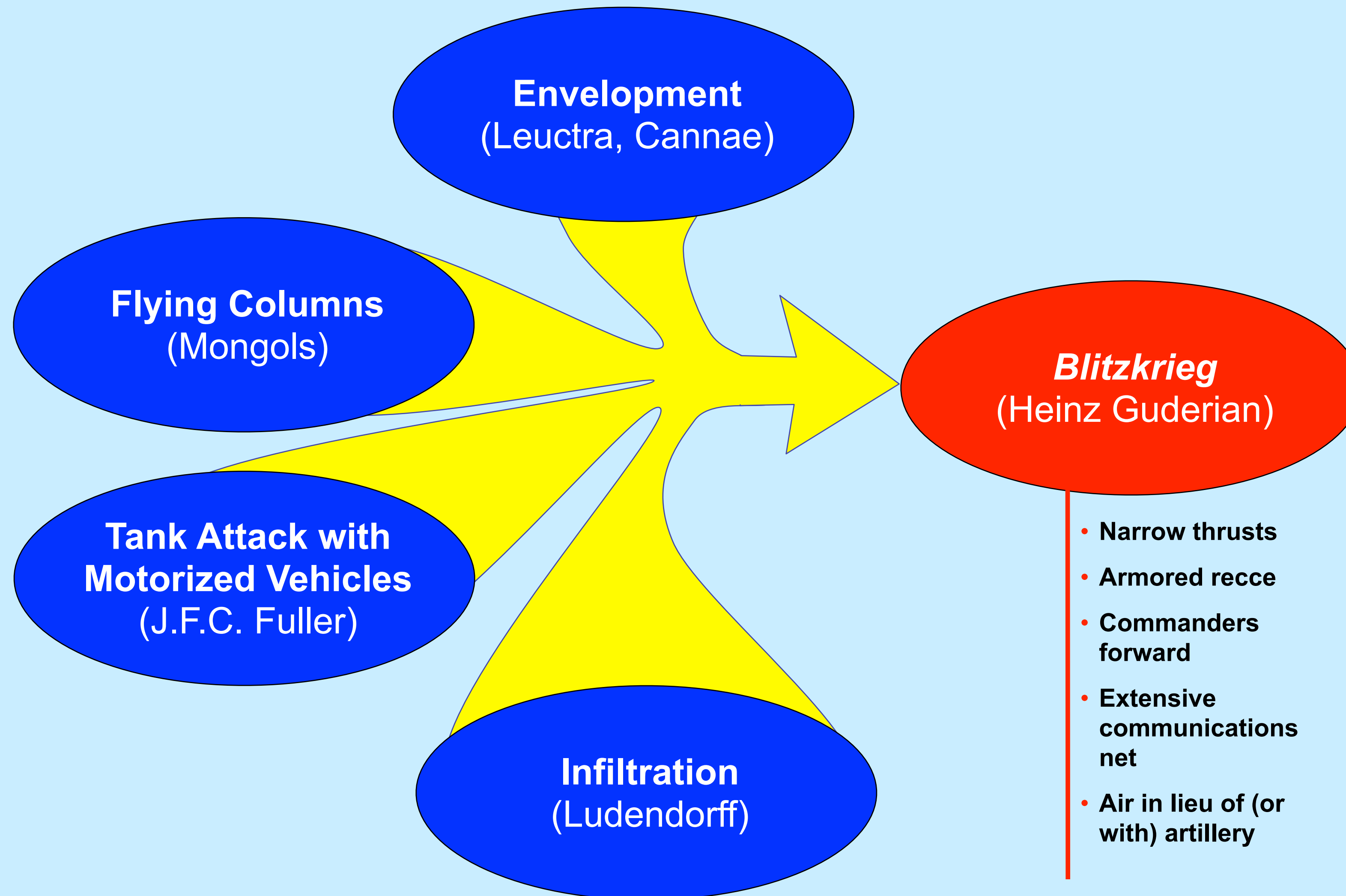
World War II

Blitzkrieg

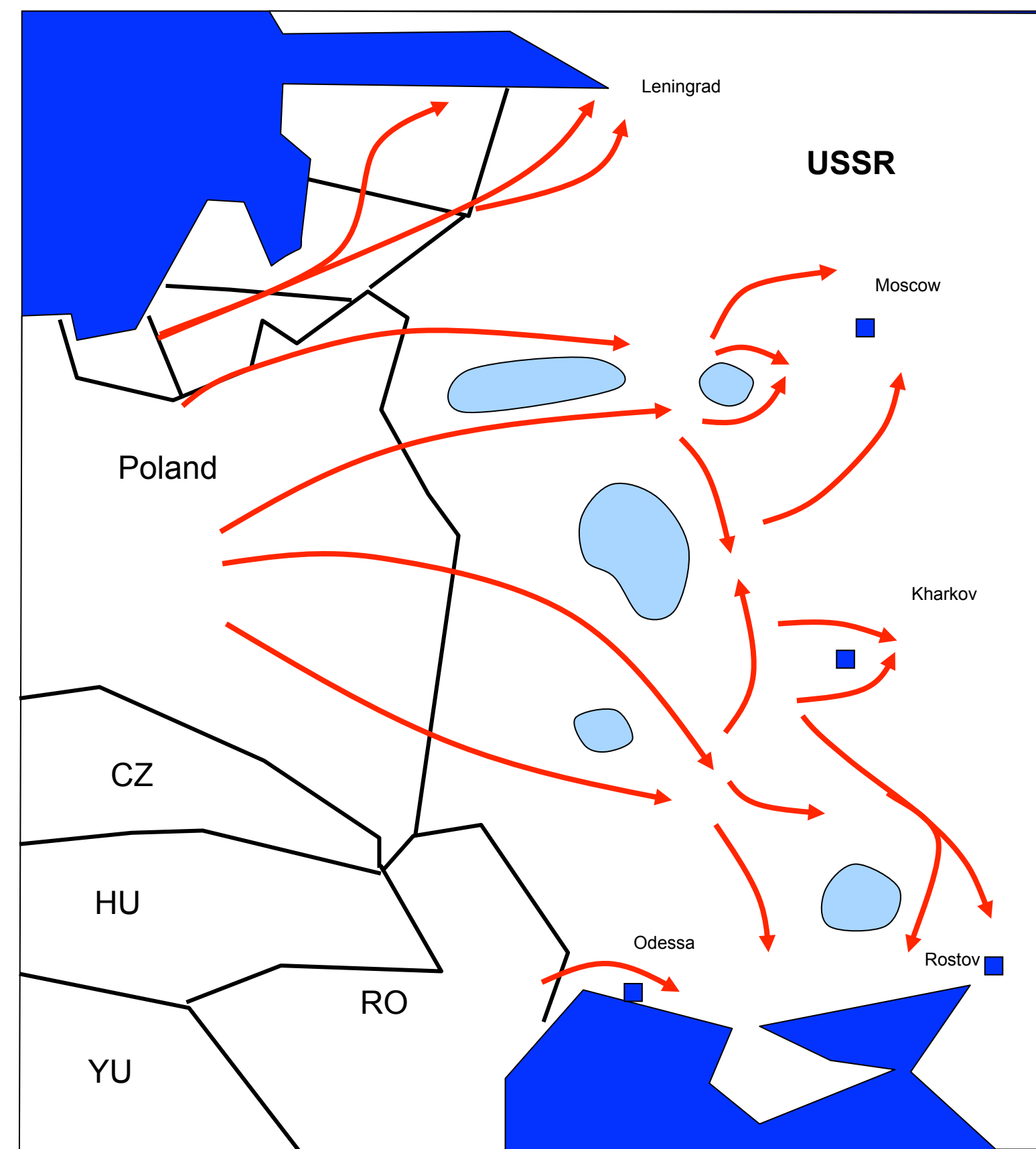
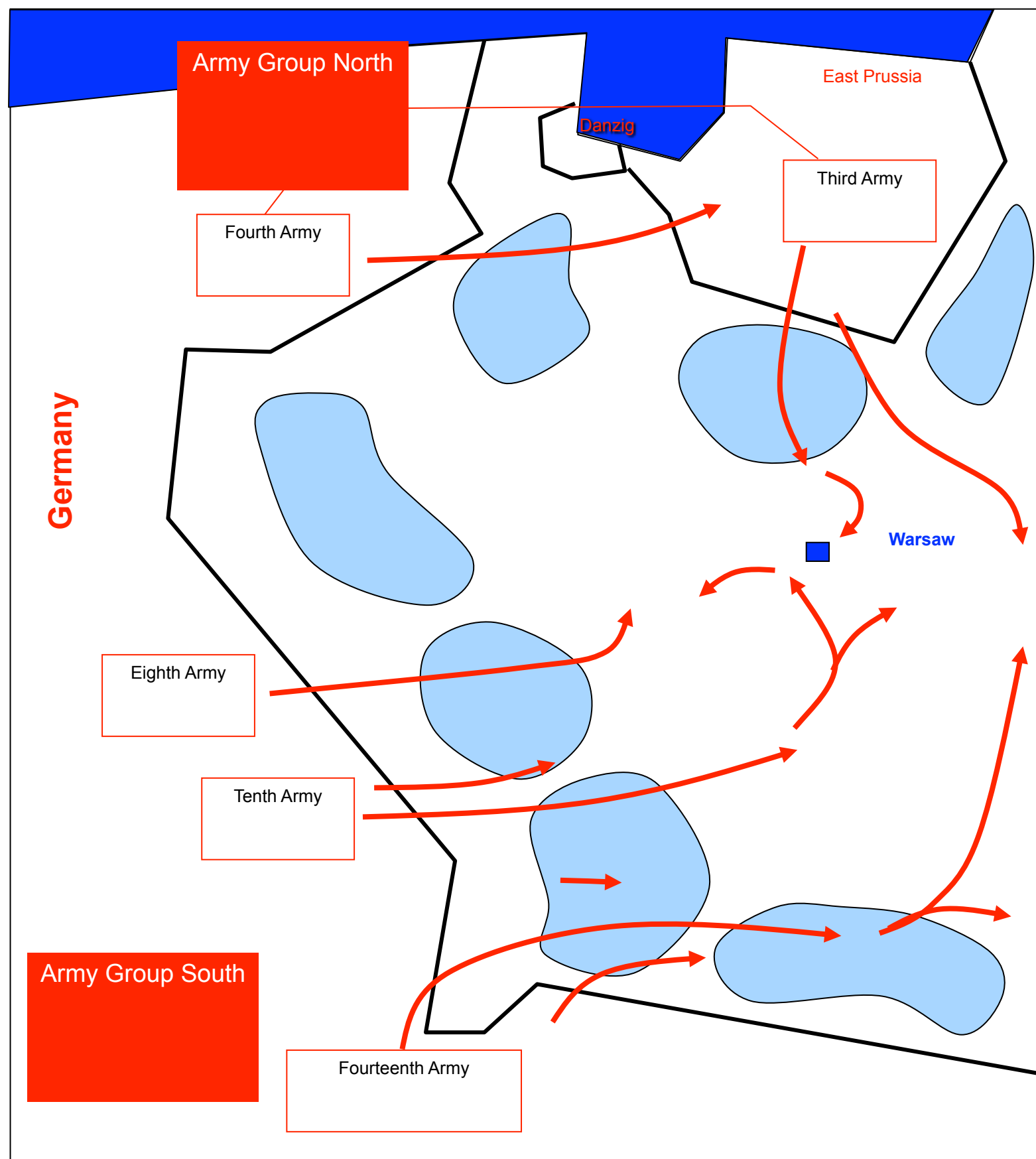
Key to success

- Emphasis on a common outlook and freedom of action that are exploited by mission and *Schwerpunkt* concepts to fix responsibilities as well as to rapidly shape, focus, and shift operations and support at all levels.
- Flexible command—based on a common outlook and freedom of action that are exploited by mission and *Schwerpunkt*—that encourages lower-level combat leaders (forward) to exploit opportunities generated by rapid action within a broad loosely woven scheme laid down from central command.
- Intelligence, reconnaissance (air and ground) and stratagem emphasized before and during combat operations to unmask and shape patterns of adversary strengths, weaknesses, moves, and intentions.
- Broad use of *Schwerpunkt* concept coupled with fast tempo/fluidity-of-action of armored teams and air support permit blitzers to repeatedly reshape strength and rapidly shift it against, or through, weaknesses thereby generate doubt and uncertainty that magnify into panic and chaos.
- Superior mobile communications to maintain cohesion of overall effort and to enable higher command levels to allocate reserves and support and to reshape as well as shift focus of main effort.
- Essential and only essential logistics tail (using airlift when appropriate and necessary) to support high-speed movement and rapid shift among routes of advance.

Creation of the Blitzkrieg



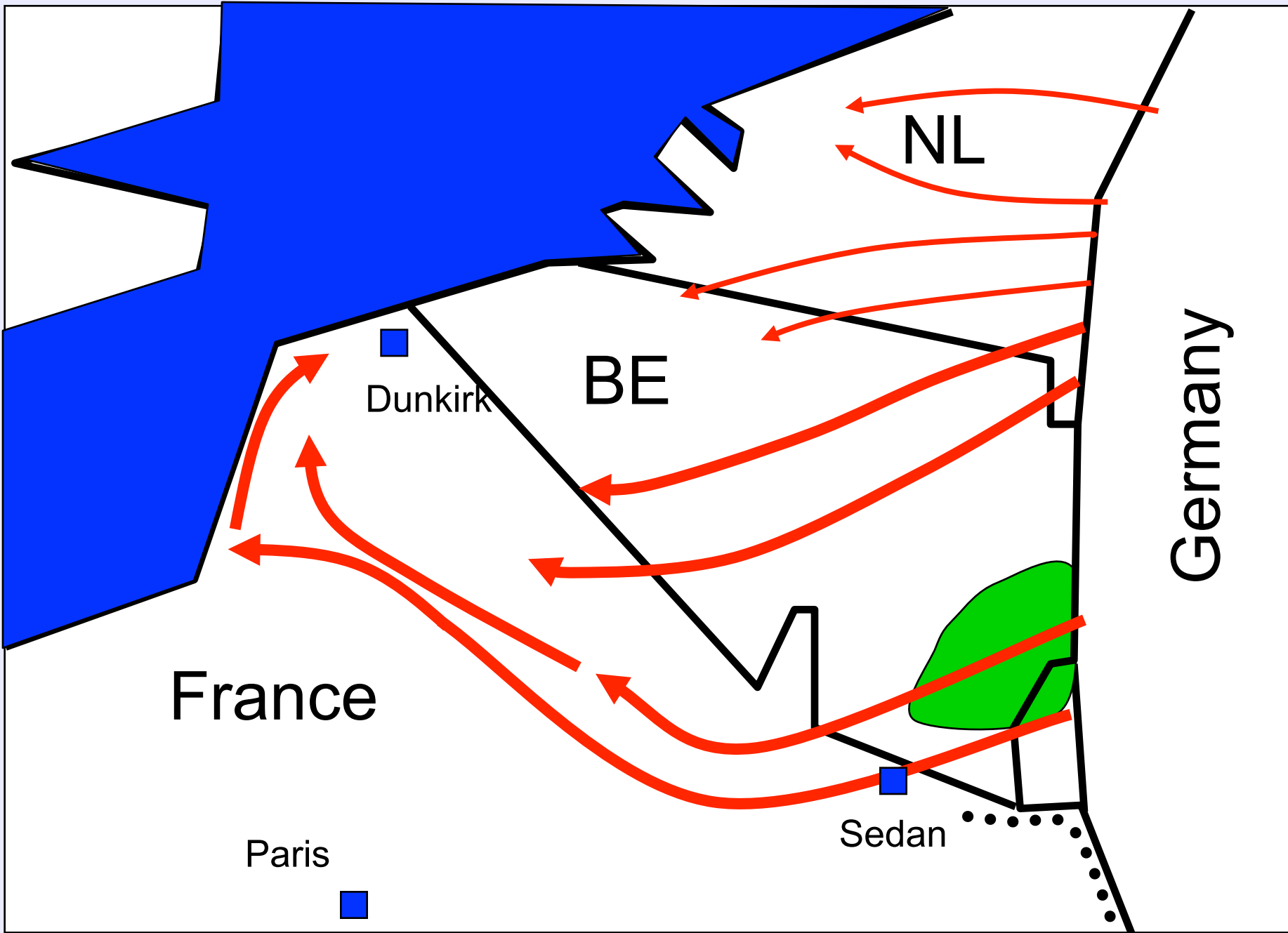




Main Russian
pockets

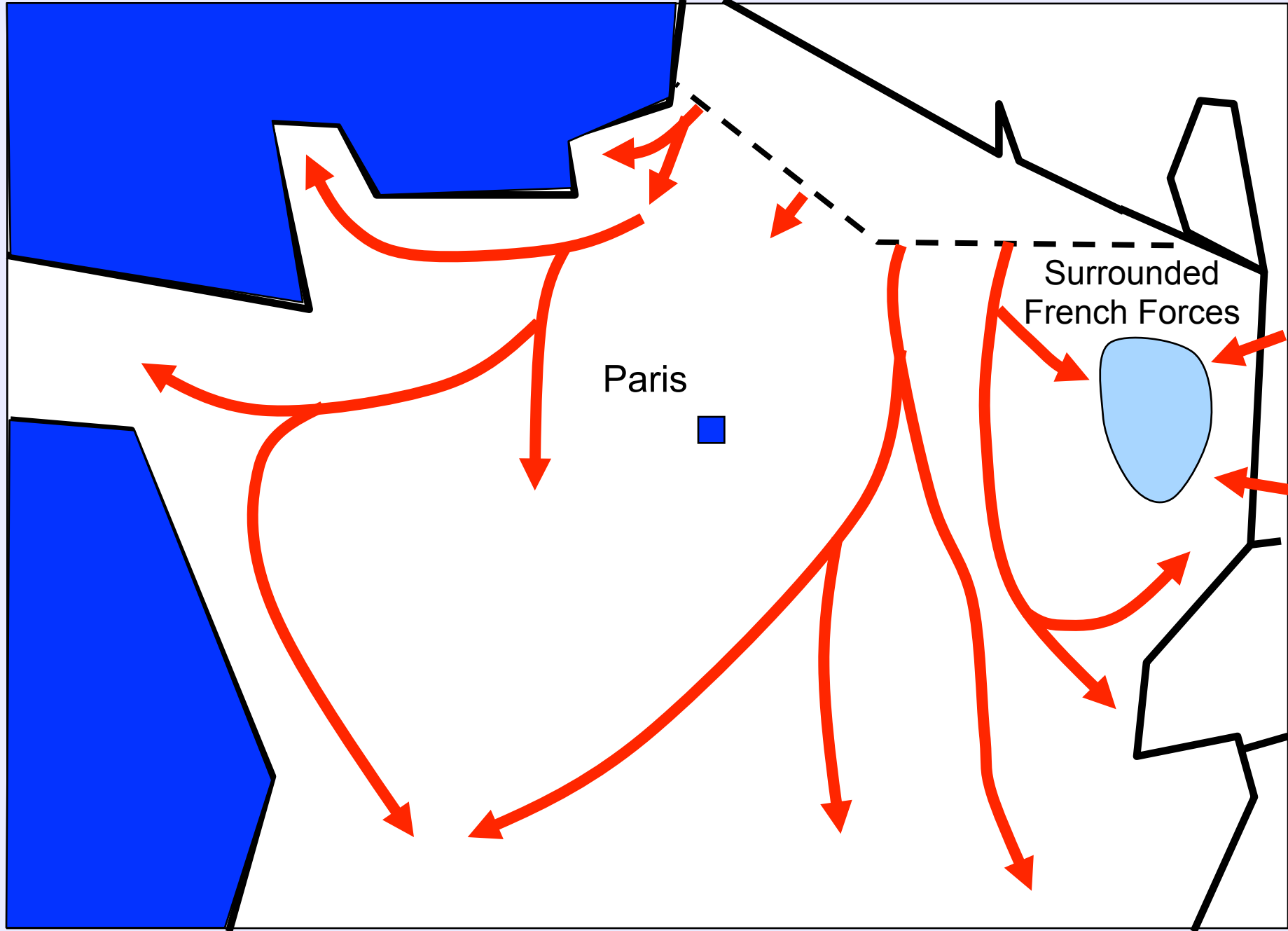
France

Phase I:
May 10 – June 2, 1940



Leuctra/Leuthen

Phase II:
June 5 – June 25, 1940



Eccentric Cannae with
Leuctra/Leuthen wings

Blitzkrieg results

Successful	
Poland	1939
France	1940
Balkans	1941
Russia	1941
North Africa	1941-42
Russia	Summer 1942
Russia	Feb-Mar 1943
Advance thru France	1944
Manchuria	1945
Middle East	1967
Czechoslovakia	1968
Middle East	1973

Unsuccessful	
Russia	Winter 1941-42
Russia	Fall-Winter 1942-43
North Africa	1942
Russia	Summer 1943
Ardenne	Winter 1944-45

World War I

Guerrilla Warfare

(a la T.E. Lawrence)

Action

- Gain support of population. Must “arrange the minds” of friend, foe and neutral alike. Must “**get inside their minds**”.
- Must “be an idea or thing invulnerable, without front or back, drifting about like a gas” (**inconspicuousness and fluidity-of action**). Must be an “attack-in-depth”.
- Tactics “should be tip-and-run, not pushes but strokes” with “use of the smallest force in the quickest time at the farthest place”.
- Should be a war of detachment (avoiding contact and presenting a threat everywhere) using **mobility/fluidity-of-action** and **environmental background** (vast unknown desert) as basis for “never affording a target” and “never on the defensive except by accident and in error”.

Idea

- Disintegrate existing regime’s ability to govern.

Guerrilla results

Successful	
American colonies	1775-1781
Spain	1808-1814
Russia	1812
German East Africa	1914-1918
Arabia	1916-1918
China	1927-1949
Russia	1941-1945
Yugoslavia	1941-1945
Indochina	1945-1954
Algeria	1954-1962
Cuba	1956-1959
South Vietnam	1958-1975

Unsuccessful	
Philippines	1899-1902
South Africa	1900-1902
Greece	1944-1949
Philippines*	1946-1954
Malaya*	1948-1960

* Regime exercised particular care not to inflict casualties and to protect population.

Blitz/guerrilla theme

Essence

- **Avoid battles**—instead penetrate adversary to **subvert**, **disrupt**, or **seize** those connections, centers, and activities that provide **cohesion** (e.g., psychological/moral bonds, communications, lines of communication, command and supply centers ...)
- Exploit ambiguity, deception, superior mobility, and sudden violence to generate initial **surprise** and **shock** followed by **surprise** and **shock** again, again, again ...
- Roll up/wipe out the isolated units or remnants created by the subversion, surprise, shock, disruption, and seizure.

Intent

- Exploit subversion, surprise, shock, disruption, and seizure to generate **confusion, disorder, panic**, etc., thereby **shatter cohesion, paralyze effort, and bring about adversary collapse**.

? **Key question** ?

Why have blitz and guerrilla tactics been so extraordinarily successful?

Message

- Blitz and guerrillas, by being able to operate in a **directed**, yet **more indistinct**, **more irregular**, and **quicker manner** than their adversaries, can:
 - Repeatedly concentrate or disperse more inconspicuously and/or more quickly from or to lower levels of distinction (organizational, operational, and environmental) without losing internal harmony, as well as,
 - Repeatedly and unexpectedly **infiltrate** or **penetrate** adversaries' vulnerabilities and weaknesses in order to splinter, isolate or envelop, and overwhelm disconnected remnants of adversary organism.

Or put another way,

- Blitz and guerrillas, ~~by operating in a directed, yet more indistinct, more irregular, and quicker manner,~~ **operate inside** their adversaries' observation-orientation-decision-action loops ~~or get inside~~ their mind-time-space as basis to **penetrate** the moral-mental-physical being of their adversaries in order to pull them apart and bring about their collapse.

Underlying idea

- Such amorphous, lethal, and unpredictable activity by blitz and guerrillas make them appear awesome and unstoppable, which altogether produce uncertainty, doubt, mistrust, confusion, disorder, fear, panic ... and ultimately collapse—a notion implied by Sun Tzu around 400 B.C. and more recently by J.F.C. Fuller after observing the impact of Ludendorff's infiltration tactics in 1918.

Counter-guerrilla campaign

Action

- Undermine guerrilla cause and destroy their cohesion by demonstrating integrity and competence of government to represent and serve needs of people—rather than exploit and impoverish them for the benefit of a greedy elite.*
- Take political initiative to root out and visibly punish corruption. Select new leaders with recognized competence as well as popular appeal. Ensure that they deliver justice, eliminate grievances, and connect government with grass roots.*
- Infiltrate guerrilla movement as well as employ population for intelligence about guerrilla plans, operations, and organization.
- [6 bullets omitted in the interests of readability.]

Idea

- Break guerrillas' moral-mental-physical hold over the population, destroy their cohesion, and bring about their collapse via political initiative that demonstrates **moral legitimacy** and **vitality** of government and by relentless military operations that emphasize **stealth/fast-tempo/fluidity-of-action** and **cohesion** of overall effort.

* If you cannot realize such a political program, you might consider changing sides!

Categories of conflict

Categories of conflict

- Now looking back and reflecting upon the panorama of military history, we can imagine three kinds of human conflict:
 - **Attrition warfare**—as practiced by the Emperor Napoleon, by all sides during the 19th century and during World War I, by the Allies during World War II, and by present-day nuclear planners.
 - **Maneuver conflict**—as practiced by the Mongols, General Bonaparte, Confederate General Stonewall Jackson, Union General Ulysses S. Grant, Hitler's generals (in particular Manstein, Guderian, Balck, Rommel) and the Americans under Generals Patton and MacArthur.
 - **Moral conflict**—as practiced by the Mongols, most guerrilla leaders, a very few counter-guerrillas (such as Magsaysay) and certain others from Sun Tzu to the present.
- With these comments in mind let's look into the essentials of each.

Attrition observations

- Firepower, as a destructive force, is king.
- Protection (trenches, armor, dispersion, etc.) is used to weaken or dilute effects of enemy firepower.
- Mobility is used to bring firepower to bear or to evade enemy fire.
- Measures of success are (now) “body count” and targets destroyed.
- “Seize and hold terrain objectives” replaces Napoleon’s dictum: Destroy enemy army.

Essence of attrition warfare

Create and exploit

- **Destructive force:**

Weapons (mechanical, chemical, biological, nuclear, etc.) that kill, maim, and/or otherwise generate widespread destruction.

- **Protection:**

Ability to minimize the concentrated and explosive expression of destructive force by taking **cover** behind natural or manmade obstacles, by **dispersion** of people and resources, and by being **obscure** using camouflage, smoke, etc., together with cover and dispersion.

- **Mobility:**

Speed or rapidity to focus destructive force or move away from adversary's destructive focus.

Payoff

- Frightful and debilitating attrition via widespread destruction as basis to:
 - Break enemy's will to resist
 - Seize and hold terrain objectives

Aim

Compel enemy to surrender
and sue for peace

Observations regarding maneuver

- Ambiguity, deception, novelty, mobility, and violence (or threat thereof) are used to generate surprise and shock.
- Fire and movement are used in combination, like *cheng/ch'i* or *Nebenpunkte/Schwerpunkt*, to tie up, divert, or drain away adversary attention and strength in order to expose as well as menace and exploit vulnerabilities or weaknesses elsewhere.
- Indications of success tend to be qualitative and are related to the widespread onset of confusion and disorder, frequent envelopments, high prisoner counts, or **any other phenomenon that suggests inability to adapt to change.**

Essence of maneuver conflict

Create, exploit, and magnify

- **Ambiguity**
Alternative or competing impressions of events as they may or may not be.
- **Deception**
An impression of events as they are not.
- **Novelty**
Impressions associated with events/ideas that are unfamiliar or have not been experienced before.
- **Fast transient maneuvers**
Irregular and rapid/abrupt shift from one maneuver event/state to another.
- **Effort (*cheng/ch'i* or *Nebenpunkte/Schwerpunkt*)**
An expenditure of energy or an irruption of violence—focused into, or thru, features that permit an organic whole to exist.


Payoff

- **Disorientation**
Mismatch between events one (seemingly) observes or anticipates and events (or efforts) he must react or adapt to.
- **Surprise**
Disorientation generated by **perceiving** extreme change (of events or efforts) over a short period of time.
- **Shock**
Paralyzing state of disorientation generated by extreme or violent change (of events or efforts) over a short period of time.
- **Disruption**
State of being split apart, broken up, or torn asunder.

Aim

Generate many non-cooperative centers of gravity, as well as disorient or disrupt those that adversary depends upon, in order to magnify friction, shatter cohesion, produce paralysis, and bring about his collapse.

Summary: Operating inside their OODA loops

- Change situation faster than other side can figure you out
- And then change it again, and again 
- Cat and mouse game
- Results in confusion, deception, surprise, paralysis, chaos
- But, as we shall see next, actually doing it makes a lot of demands on both the organization and the people i it

Discussion topic: Can a business operate inside the OODA loops of its competitors? Its customers????



Second Big Idea

We few, we happy few, we band of brothers;
For he to-day that sheds his blood with me
Shall be my brother; be he ne'er so vile,
This day shall gentle his condition:
And gentlemen in England now a-bed
Shall think themselves accursed they were not here,
And hold their manhoods cheap whiles any speaks
That fought with us upon Saint Crispin's day.



**BUILDING AN
ORGANIZATION THAT CAN DO IT**

Impression of the Blitzkrieg penetration

Thrust and roll out/roll up tactics

JRB Comment:
Bundles of multiple
thrusts inside
multiple thrusts

CR comment: These routes
cannot have been planned
out in advance because they
take advantage of the
situation as it is being
developed.

CR 2nd comment: Virtually
all the “taking advantage”
must be done by the people
on the spot

What makes it hard?

"And change it again, and again, ..."

- Misunderstanding
- Disagreements
- Other leadership problems ("fog of war")
- "Friction" - Clausewitz
- "Entropy" - Boyd

German operational philosophy

Impression

- The German operational philosophy based upon a common outlook and freedom-of-action, and realized through their concepts of mission and *Schwerpunkt*, emphasized **implicit over explicit** communication.

which suggests

- The secret of the German command and control system lies in what's **unstated or not communicated to one another**—to exploit lower-level initiative yet realize higher-level intent, thereby diminish friction and reduce time, hence gain both quickness and security.

Result

- The Germans were able to repeatedly operate inside their adversary's observation-orientation-decision-action loops.

or as stated by General Blumentritt,

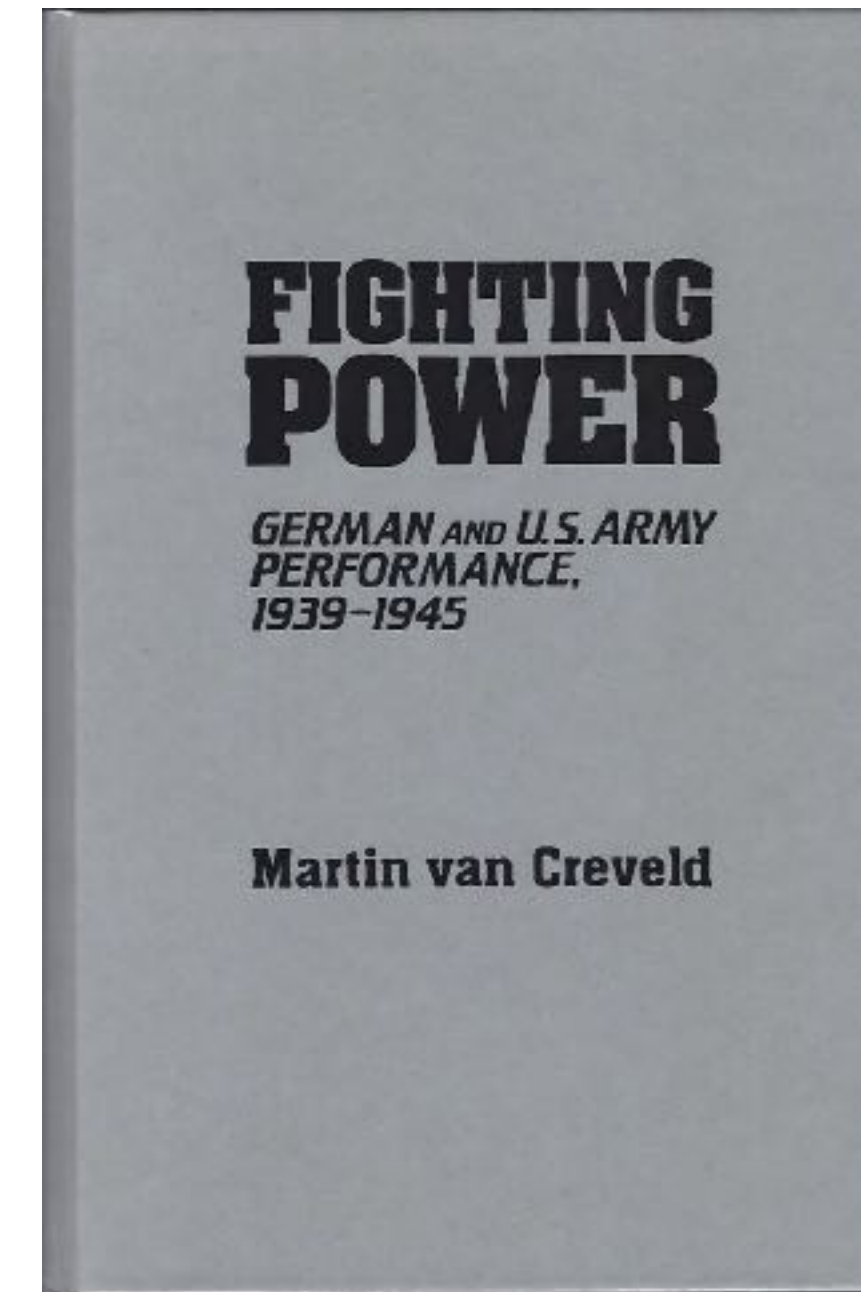
- “The entire operational and tactical leadership method hinged upon ... **rapid**, concise assessment of situations ... **quick** decision and **quick** execution, on the principle: ‘each minute ahead of the enemy is an advantage.’”



Boyd's organizational climate enables the actions we just studied

- *Fingerspitzengefuehl*
- *Einheit*
- *Schwerpunkt*
- *Auftragstaktik*
- *Behendigkeit*

It is absolutely essential that you develop a **deep understanding** of these concepts. They apply to all groups who must work together under conditions of stress and uncertainty.





Unfortunately, Boyd is not a lot of help

- Says virtually nothing about *Fingerspitzengefühl*
- Doesn't use the term *Einheit*
 - Prefers such helpful phrases as “overall mind-time-space scheme,” “implicit bonds and connections,” and “similar implicit orientation.”
- Has only a few charts on *Schwerpunkt* and *Auftragstaktik* (another term he doesn't use)

Fingerspitzengefuehl



Literally “Finger-tip Feeling”

Field Marshall Erwin Rommel
(15 November 1891 – 14 October 1944)

But it's not that simple ...

? What's the point of all this ?

- We can't just look at our own personal experiences or use the same mental recipes over and over again; we've got to look at other disciplines and activities and relate or connect them to what we know from our experiences and the strategic world we live in.

If we can do this,

- We will be able to surface new repertoires and (hopefully) develop *Fingerspitzengefühl* for folding our adversaries back inside themselves, morally-mentally-physically—so that they can neither appreciate nor cope with what's happening—without suffering the same fate ourselves.

Ancient strategists would probably agree

- Do not harbor sinister designs
- Diligently pursue the path
- Cultivate a wide range of interests in the arts
- Be knowledgeable in a wide variety of occupations
- Be discreet regarding one's commercial dealings
- Nurture the ability to perceive the truth in all matters
- Perceive that which cannot be seen with the eye
- Do not be negligent, even in trifle matters
- Do not engage in useless activity

Miyamoto Musashi, *The Book of Five Rings*,
Epilogue to Book One,
"The Earth Book." (1645)

Disciplines or activities to be examined

- Mathematical Logic
- Physics
- Thermodynamics
- Biology
- Psychology
- Anthropology
- Conflict

Selections from newspapers

“Nerve Cells Redo Wiring ...”, by Boyce Rensberger, *The Washington Post*

Dale Purvis and Robert D. Hadley ... have discovered that a neuron’s fibers can change significantly in a few days or weeks, presumably in response to changing demands on the nervous system ... Research has shown neurons continually rewire their own circuitry, sprouting new fibers that reach out to make contact with new groups of other neurons and withdrawing old fibers from previous contacts ... This rewiring process may account for how the brain improves one’s abilities such as becoming proficient in a sport or learning to play a musical instrument. Some scientists have suggested that the brain may use this method to store facts ... The research was on adult mice, but since all mammalian nervous systems appear to behave in similar ways, the researchers assume that the findings also apply to human beings.

“The Soul of the Machine”, by Richard M. Restak, *The Washington Post Book World* Review of “Neuronal Man”, by Jean-Pierre Changeux

Changeux suggests that the complexity of the human brain is dependent upon the vast number of synapses (connections) between brain cells ... these synaptic connections are established or fall by the wayside according to how frequent they’re used. Those synapses which are in frequent use tend to endure (‘are stabilized’) while others are eliminated ... In other words ... interactions with the environment ... [exert] ... tremendous influence on the way the human brain works and how it has evolved.

The training of the infantryman can never be too many-sided. Gen Hermann Balck.

My position here is that creativity is absolutely needed for problem-solving and that fighting and violence are indeed extreme exercises in problem-solving.
Varg Freeborn, *Beyond OODA: Developing the Orientation for Deception, Conflict, and Violence*.



Developing fingerspitzengefuehl

Knowing the way of the long sword means, when one knows the method well, to wield freely even with two fingers the sword one customarily carries....

Your entire body will move at your will ... the movements of your body and legs will be in coordination with your spirit ...

Miyamoto Musashi, *The Book of Five Rings* (1645),
Book Two

But hard work isn't enough

You're also programming Orientation

- But practice doesn't make perfect. Practice makes consistent. Rather than risk learning the move incorrectly, practice in front of a mirror so can see what your audience sees. Joshua Jay, *Magic, The Complete Course*
- As Boyd put it: "Projection, empathy, correlation, rejection" over and over again, in a variety of situations, with brutally honest feedback in-between.

Discussion Topic: How do we practice if we want to develop fingerspitzengefuehl?



Einheit

From the German, “One-ness” “Unity”

Teamwork is everything — Taiichi Ohno, one of the originators of the Toyota Production System

Einheit: Your best C&C system

Including:

- Shared — and accurate — mental model of the current, evolving situation. This includes both what's going on outside the organization as well as an appreciation of how well we are working together to accomplish our mission (“How's it going?”)
- Mutual appreciation of our capabilities and limitations: Who has fingerspitzengefuehl and who doesn't

Starting point (Patterns, Chart 71)

How do blitzers simultaneously sustain rapid pace and abruptly adapt to changing circumstances without losing cohesion or coherency of their overall effort?

[CR Note: If you aren't careful, these will trade off. That is, a rapid pace, combined with a lot of abrupt changes, will often cause loss of cohesion. On the other hand, attempting to enforce cohesion can kill agility.

You may recall: “Even though outnumbered, why were Mongols able to maneuver in widely scattered arrays without being defeated separately or in detail?”]

In other words, how do we keep this from degenerating into chaos???

CR comment: These routes cannot have been planned out in advance because they take advantage of the situation as it is being developed.

CR 2nd comment: Virtually all the “taking advantage” must be done by the people on the spot

Einheit

A military interpretation

Without a common outlook, superiors cannot give subordinates freedom of action and maintain coherency of ongoing action.

Implication:

A common outlook possessed by “a body of officers” represents a unifying theme that can be used to simultaneously encourage subordinate initiative yet realize superior intent.

Boyd, *Patterns of Conflict*, p. 74

How do we get Einheit?

Arrange setting and circumstances so that leaders and subordinates alike are given opportunity to continuously interact with external world, and with each other, in order to more quickly make many-sided implicit cross-referencing projections, empathies, correlations, and rejections as well as create the similar images or impressions, hence a similar implicit orientation, needed to form an organic whole.

Boyd, *Organic Design for Command and Control*, p. 23

It is another ancient idea

“The Way” means inducing the people to have the same aim as the leadership so that they will share death and share life, without fear or danger. Sun Tzu, Chapter 1 (Cleary Trans).

A large, bold, black Chinese character '道' (Dào) is positioned on the right side of the slide. The character is written in a traditional, slightly calligraphic style with a soft shadow effect behind it. It is the Chinese character for 'The Way' or 'Dao'.

With Einheit You can read minds

We believe that implicit communication—to communicate through mutual understanding, using a minimum of key, well-understood phrases or even anticipating each others' thoughts—is a faster, more effective way to communicate than through the use of detailed, explicit instructions. We develop this ability through familiarity and trust, which are based on a shared philosophy and shared experience.

Marine Corps Doctrine Publication 1, *Warfighting*, page 79.

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Marine Corps Doctrine Publication 1, *Warfighting*, page 79.

Schwerpunkt

Literally “Hard, difficult, heavy” point”

? Raises question ?

With this limitation in mind how does schwerpunkt play into or add to this concept?

Schwerpunkt

- Usually: center of gravity, focus of main effort, focus and direction
- Stephen Bungay: Tell me what you want, what you really, really want
- Idea: When in doubt, use your creativity and initiative to take the action that best accomplishes the organization's schwerpunkt.

An example

We will not accept the lack of orders as justification for inaction; it is each Marine's *duty* to take initiative as the situation demands. We must not tolerate the avoidance of responsibility or necessary risk.

USMC Doctrine Pub 1, *Warfighting*, p. 58.



Schwerpunkt

Schwerpunkt acts as a center or axis or harmonizing agent that is used to help shape commitment and convey or carry out intent at all levels from theater to platoon, hence an image around which:

Maneuver of all arms and supporting elements are focused to exploit opportunities and maintain tempo of operations,
and

Initiative of many subordinates is harmonized with superior intent.

Boyd, *Patterns of Conflict*, p. 78

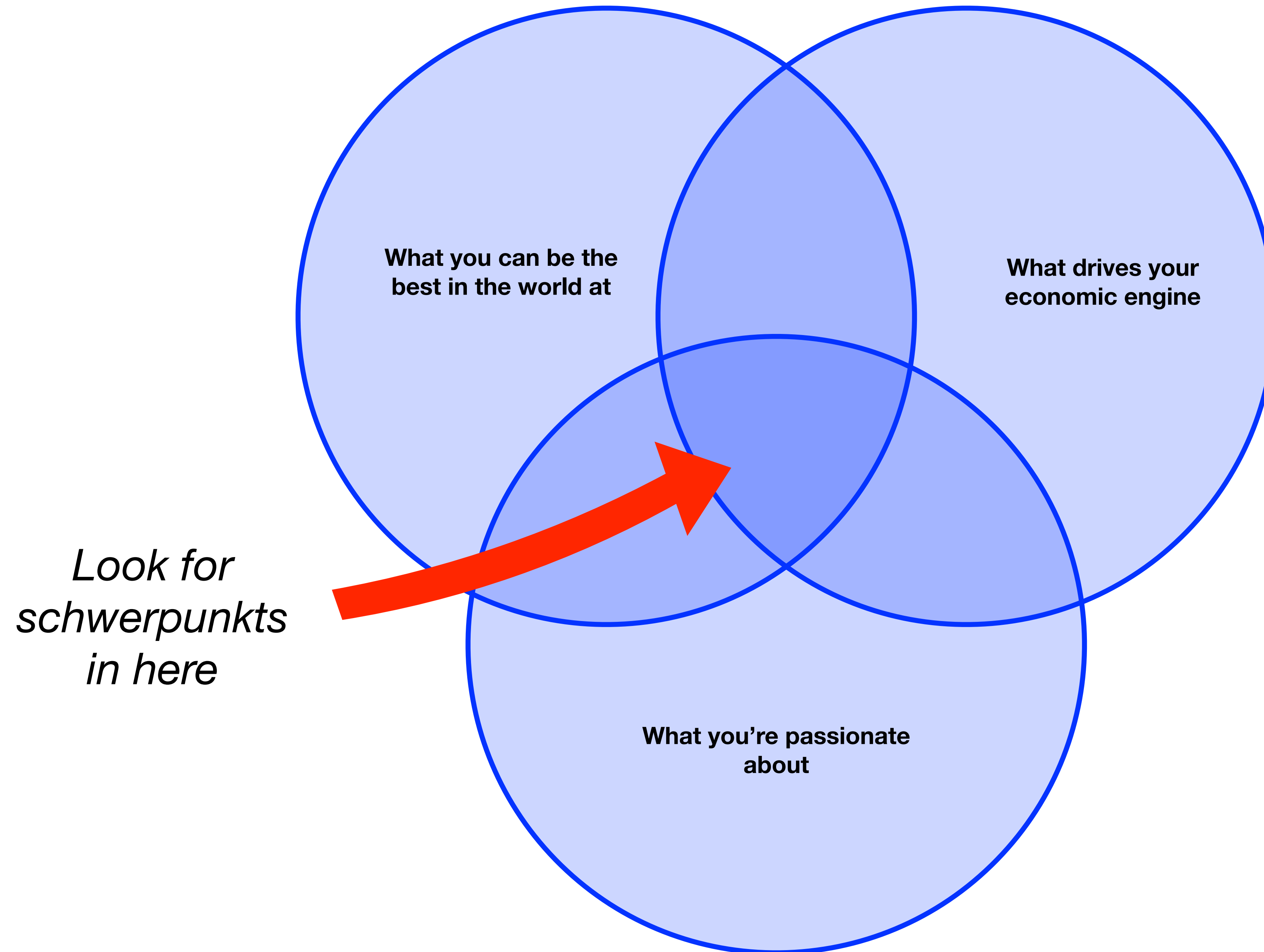


Schwerpunkt can apply to most anything

A schwerpunkt at a very personal level might be that decision you make when you get up in the morning and it happens to be your anniversary, so you decide that all of your activities are going to honor your spouse in one way or another. You don't quit your job, you don't neglect your children, but you have focus. Col Mike Wyly, USMC, "Thinking Like Marines."

Discussion topic: Schwerpunkt in your line of business:

- **How do you determine them?**
- **Can you have more than one?**



Auftragstaktik



From *Auftrag* — a contract

I didn't want to "control" my Marines. I wanted to unleash them on the enemy. Col Mike Wyly, "Thinking like Marines."

Mission

Message

- The German concept of mission can be thought of as a contract, hence an agreement, between superior and subordinate. The subordinate agrees to make his actions serve his superior's intent in terms of **what** is to be accomplished, while the superior agrees to give his subordinate wide freedom to exercise his imagination and initiative in terms of **how** intent is to be realized.
- As part of this concept, the subordinate is given the right to challenge or question the feasibility of mission if he feels his superior's ideas on what can be achieved are not in accord with the existing situation or if he feels his superior has not given him adequate resources to carry it out. Likewise, the superior has every right to expect his subordinate to carry out the mission contract when agreement is reached on what can be achieved consistent with the existing situation and resources provided.

Limitation

- While this concept of mission gives form and expression to what is expected between an individual superior and subordinate, it does not suggest ways to coordinate or harmonize activities among many superiors and subordinates as a collective group.

If he was a stupid fellow, you had to go into much detail explaining the situation to him; if he was an intelligent officer, a word was sufficient for him.

We lived off a century-long tradition, which is that in a critical situation the subordinate with an understanding of the overall situation can act or react responsibly. We always placed great emphasis on the independent action of the subordinates, even in peacetime training.

German General Hermann Balck, 1979 interview

Classic auftragstaktik

Commander: Lt. Smith (Plt Ldr 2nd Platoon), secure the Village of Bindlach by 1700 hrs and prevent the advance of enemy forces in your sector. 3rd Platoon is the Schwerpunkt and will be attacking on your right.

Lt. Smith: I can do it, but it may take until 1900 because I don't have the use of two of my heavy machine guns.

Commander: Very well. Just keep me informed of your progress.

Auftragstaktik

Another example

The division commander ordered the cavalry commander to seize a bridge over a river because the division was going to cross that river. When the cavalry commander got to the bridge there was an enemy tank regiment [there]. Question: what does the cavalry commander do? Auftragstaktik solution: report to the [division] commander by radio - look for other bridges, fords, boats - in other words, ***do what the next higher commander would do if he were there and knew the same situation.***

Gen W. E. DuPuy, USA Ret & Gen von Mellenthin

CDR David Marquet: I vowed henceforth never to give an order, any order.

Turn the Ship Around!, chapter 11.

Key point: An order, any order, even a mission order (*Auftrag*), has the potential to limit creativity and initiative.

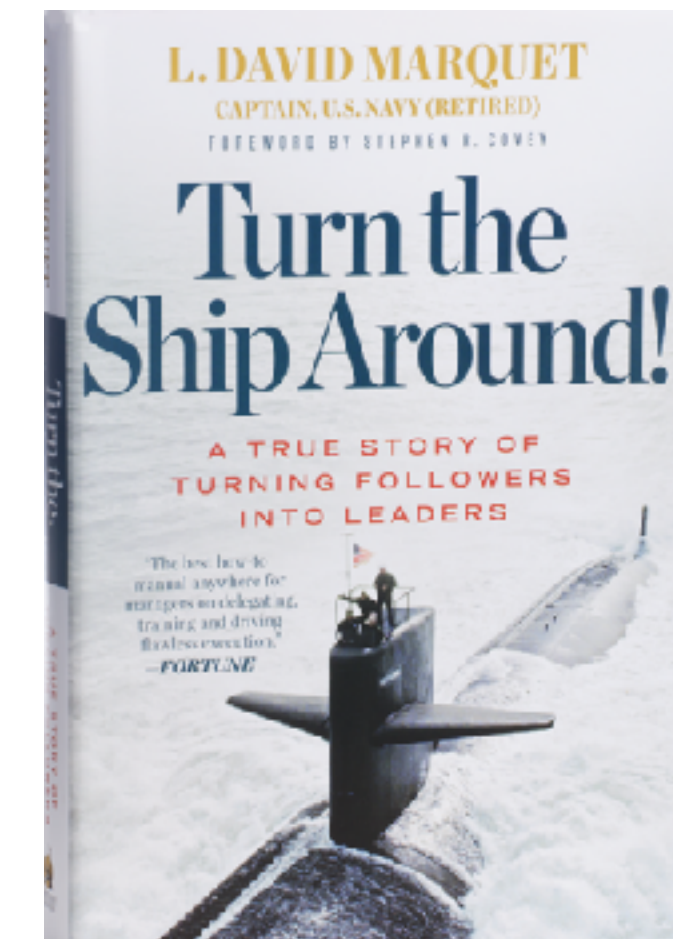
Key Point #2: There may be other ways to accomplish the purpose of an *Auftrag*, without actually giving an order. Depends on your organization and what you are trying to accomplish.

“The fact is, if somebody knows his craft, if he knows what to do, then you don't have to give him any commands, any orders.” Gen Balck, 1979

Auftragstaktik — Another view

Officer of the Deck: Captain, the hatch is secured, the depth is adequate, and all men are at diving stations. The ship is rigged for dive, and I've certified my watch team. I intend to dive the boat.

Captain: Very well.



How Toyota does Auftragstaktik

Line supervisor: We are having a persistent problem operating the 5-axis milling machine within specs.

Manager: Interesting. What is the

LS: After 25 cycles, the machine drifts on the Z-axis.

M: Well, what could cause that?

LS: It could be a worn pneumatic seal, or bearing beginning to go bad, but I checked all those.

M: What about the hydraulic fluid?

LS: It is within its use-by date.

M: Yes, but have you tested it once the machine starts wandering out of spec?

You can tell whether a man is clever by his answers. You can tell whether a man is wise by his questions.

Naguib Mahfouz



Criteria of leadership evaluation

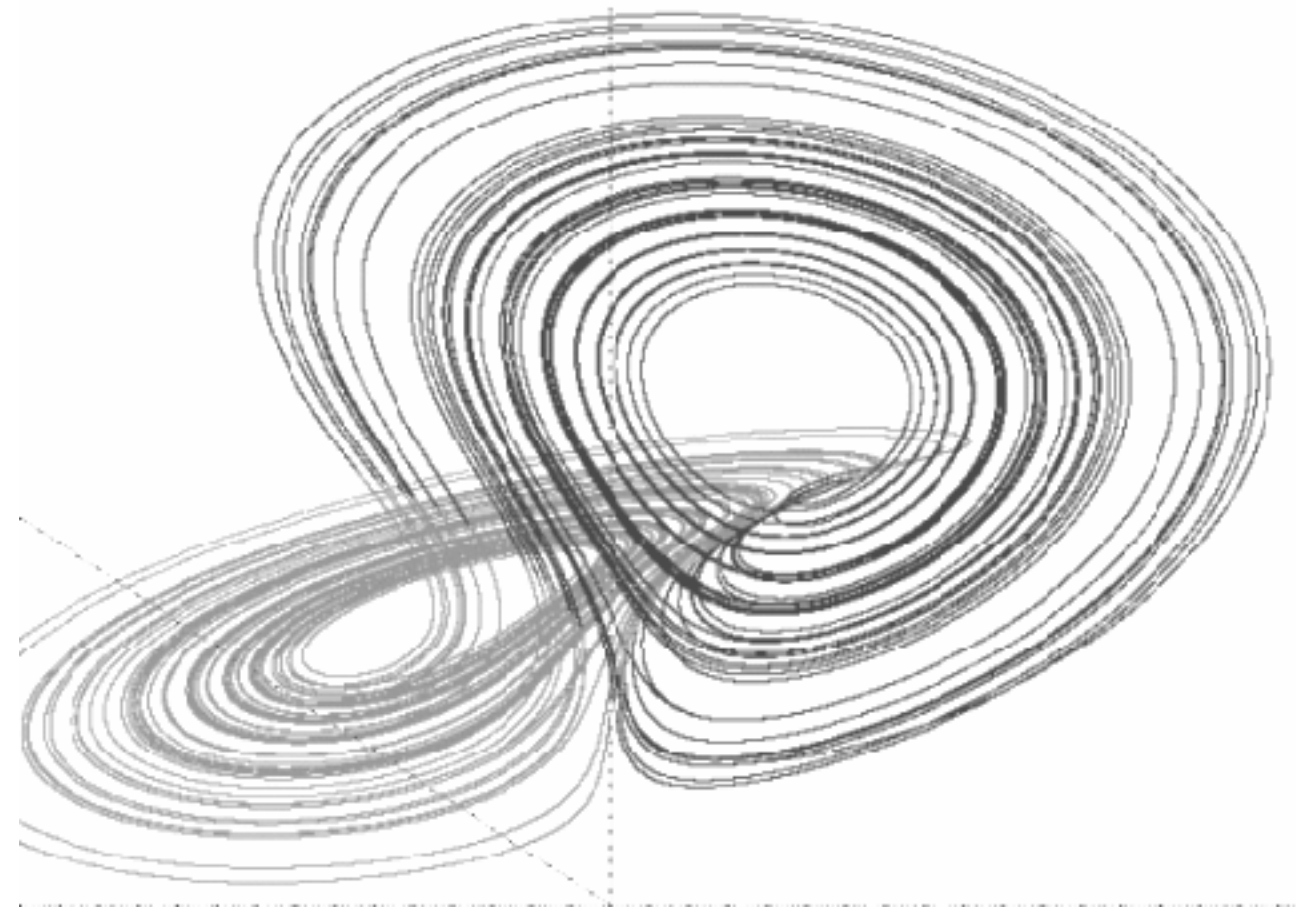
- Did the student make a decision?
- If so, did they communicate it to subordinates?
- Did the decision implement the commander's intent (long-term contract) and the auftrag (short-term intent)?
- If not, was the student's solution based on changes in conditions that made it a viable decision, even if it violated the original auftrag but still supported the commander's intent?

Behendigkeit

Literally “Agility”

Behendigkeit

Behendigkeit, the way Boyd used it, is the ability to break out of long-standing patterns, **even if they have been successful.**

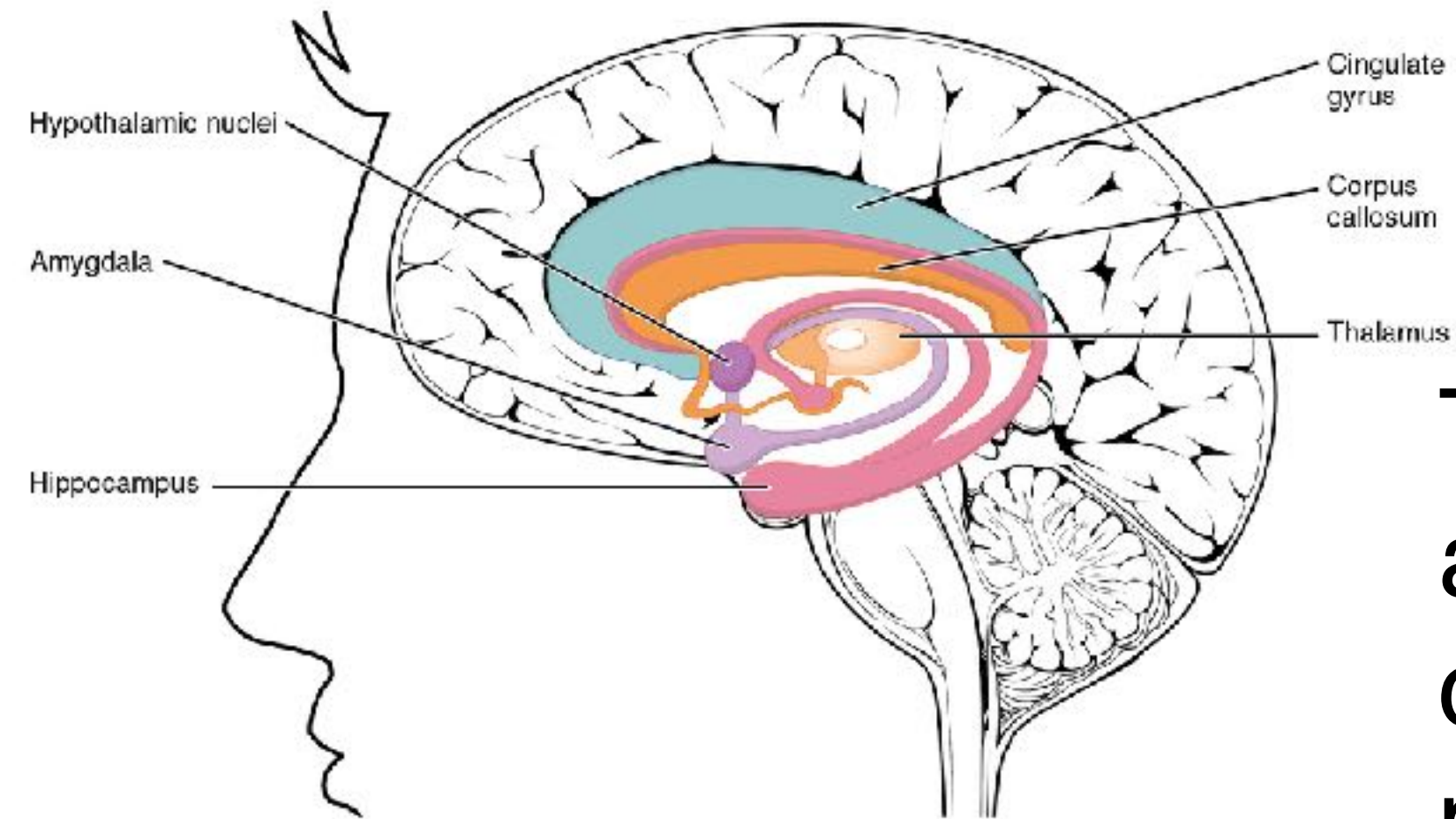


Behendigkeit

Tough to do, since:

- Need to foresee that current methods soon won't work (even though they may be working now).
- The more you understand your current philosophy — especially if you helped create it — the more logical, even inevitable, it seems.

Where the heart leads, the mind will follow



The sensory cortex, motor cortex, and association areas of the cerebral cortex enable you to perform complex tasks, but it is largely the limbic system that makes you want to do them.

"1511 The Limbic Lobe" by OpenStax College - Anatomy & Physiology, [Connexions Web site](#), Jun 19, 2013.. Licensed under CC BY 3.0 via Commons -

You may give up facts before you give up ideas

In 2006, the political scientists Brendan Nyhan and Jason Reifler identified a phenomenon called the “backfire effect.” They showed that **efforts to debunk inaccurate political information can leave people more convinced that false information is true** than they would have been otherwise. Nyhan isn’t sure why this happens, but it appears to be more prevalent when the bad information helps bolster a favored worldview or ideology.

Maggie Koreth-Baker,
“Why Rational People Buy Into Conspiracy Theories,”
New York Times, May 21, 2013.

Achieving Behendigkeit

The secret is to achieve non-attachment (another ancient concept, *vairagya*) by going outside your system.

Going outside: “Willingness to support and promote unconventional or difficult subordinates who accept danger, demonstrate initiative, take risks, and come up with new ways toward mission accomplishment;”

Boyd, quoting Gen Hermann Balck,
Patterns of Conflict, p. 120

Einheit, but also a few crazies

Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. ... Because the people who are crazy enough to think they can change the world, are the ones who do.

Steve Jobs

Behendigkeit

A way to tell you're doing it right:

Through deep understanding, you break ancient trade-offs:

- Accuracy / complexity — Ptolemaic model vs. Copernican model
- Affordability / quality — Toyota Production System
- Control / initiative — Maneuver warfare

“But having exceptional functional performance and human warmth are somewhat contradictory to each other. Suzuki, however, believed that he could have both.”

Evolutionary Epistemology*

**A Personal View of John Boyd's
“Destruction and Creation”
... and its centrality to the ...
OODA Loop**

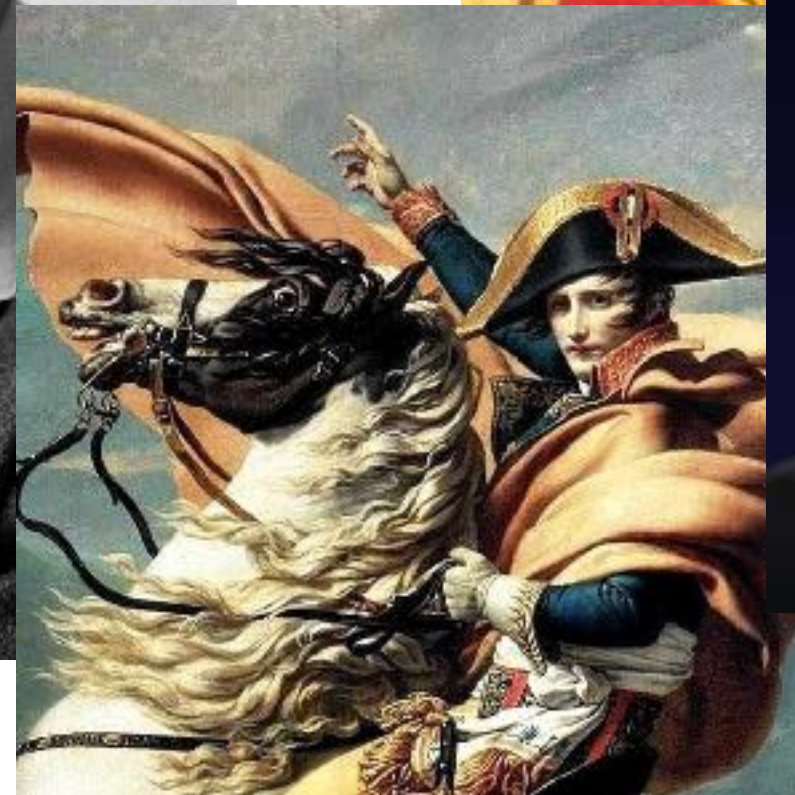
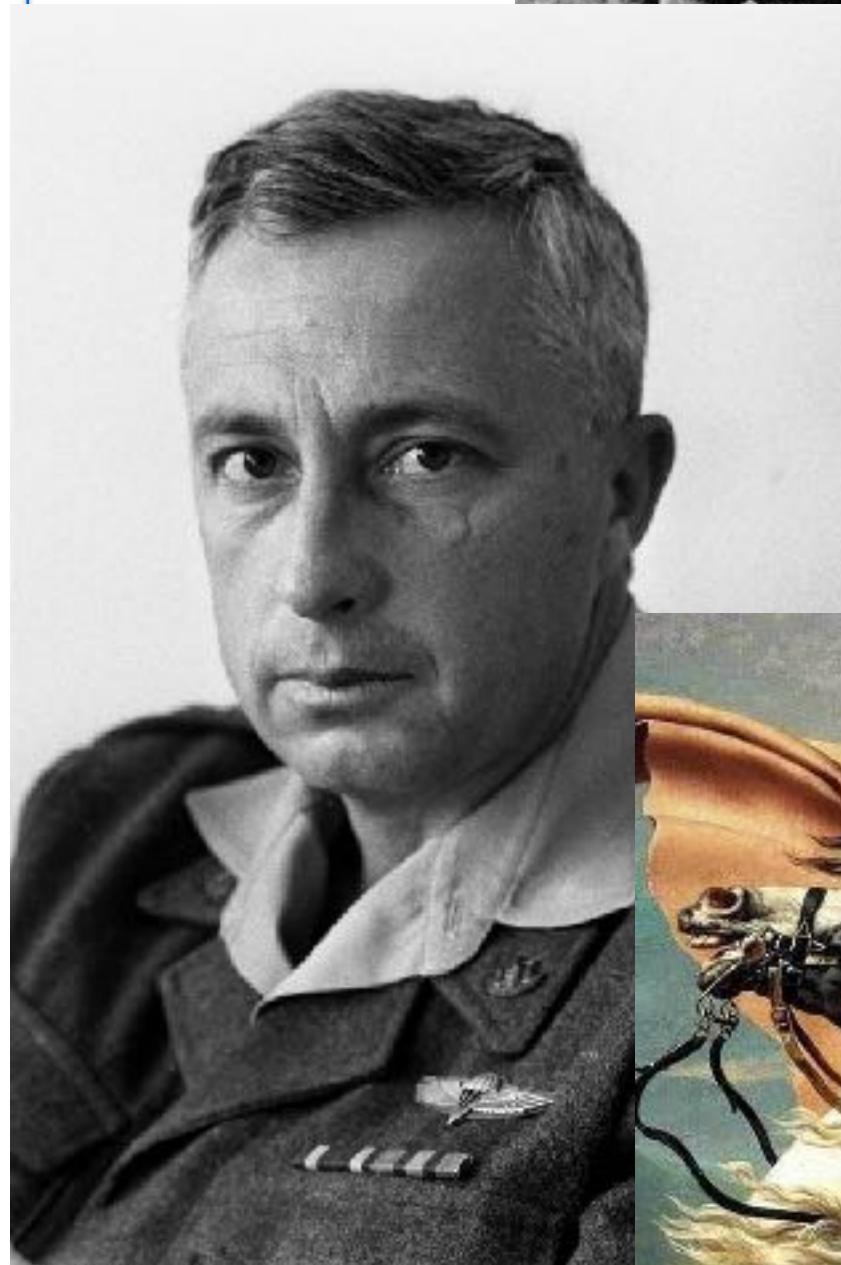
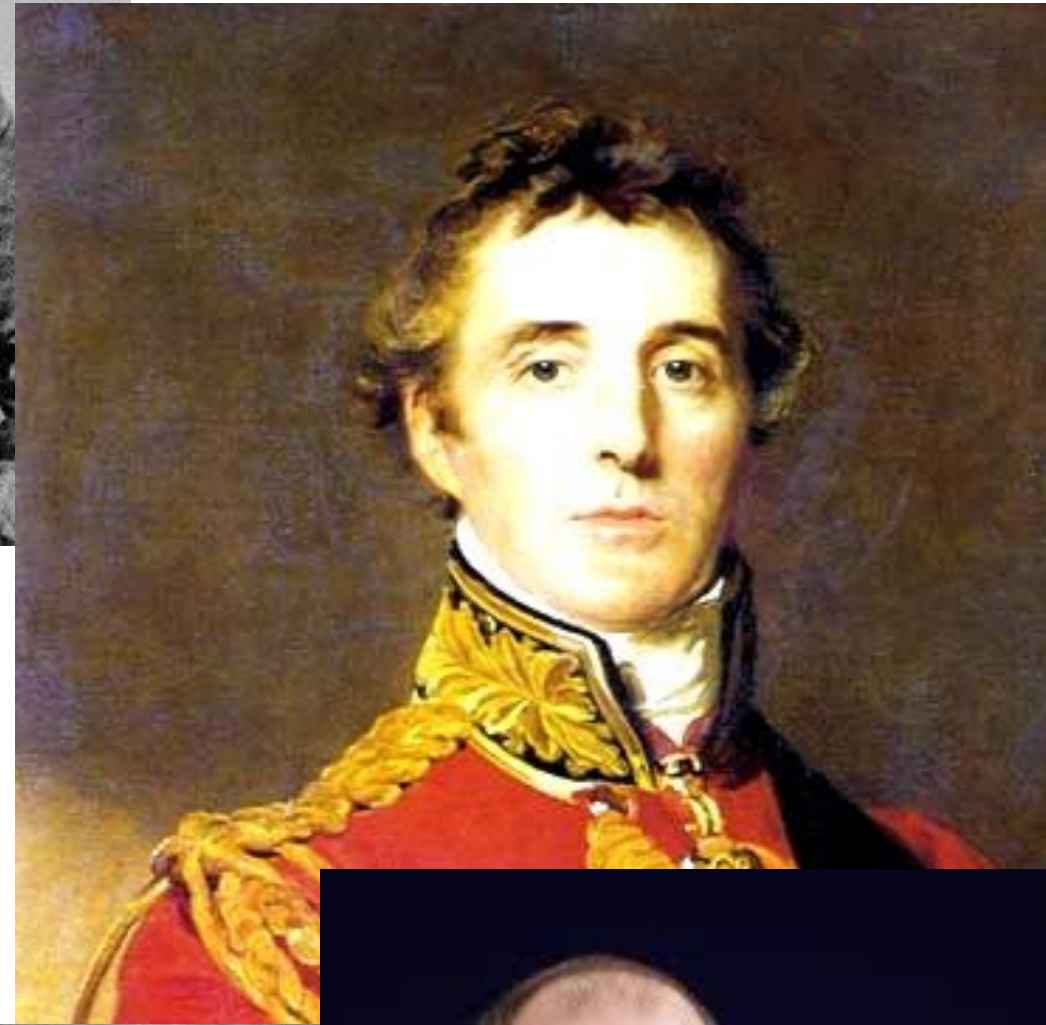
Franklin C. Spinney
V2.4 (Dec. 2014)

* Although I came up with this title on my own, it turns out that I am not the first to use this term, as I explain at this link:
<http://slightlyeastofnew.com/tag/chuck-spinney/>.

All about
complexity \Leftrightarrow accuracy

(Available at [Slightly East of New](http://slightlyeastofnew.com))

Any leadership style you want



So long as it has ...

An organizational
climate
encompassing:

- Fingerspitzengefuehl
- Einheit
- Schwerpunkt
- Auftragstaktik
- Behendigkeit

So long as it has ...

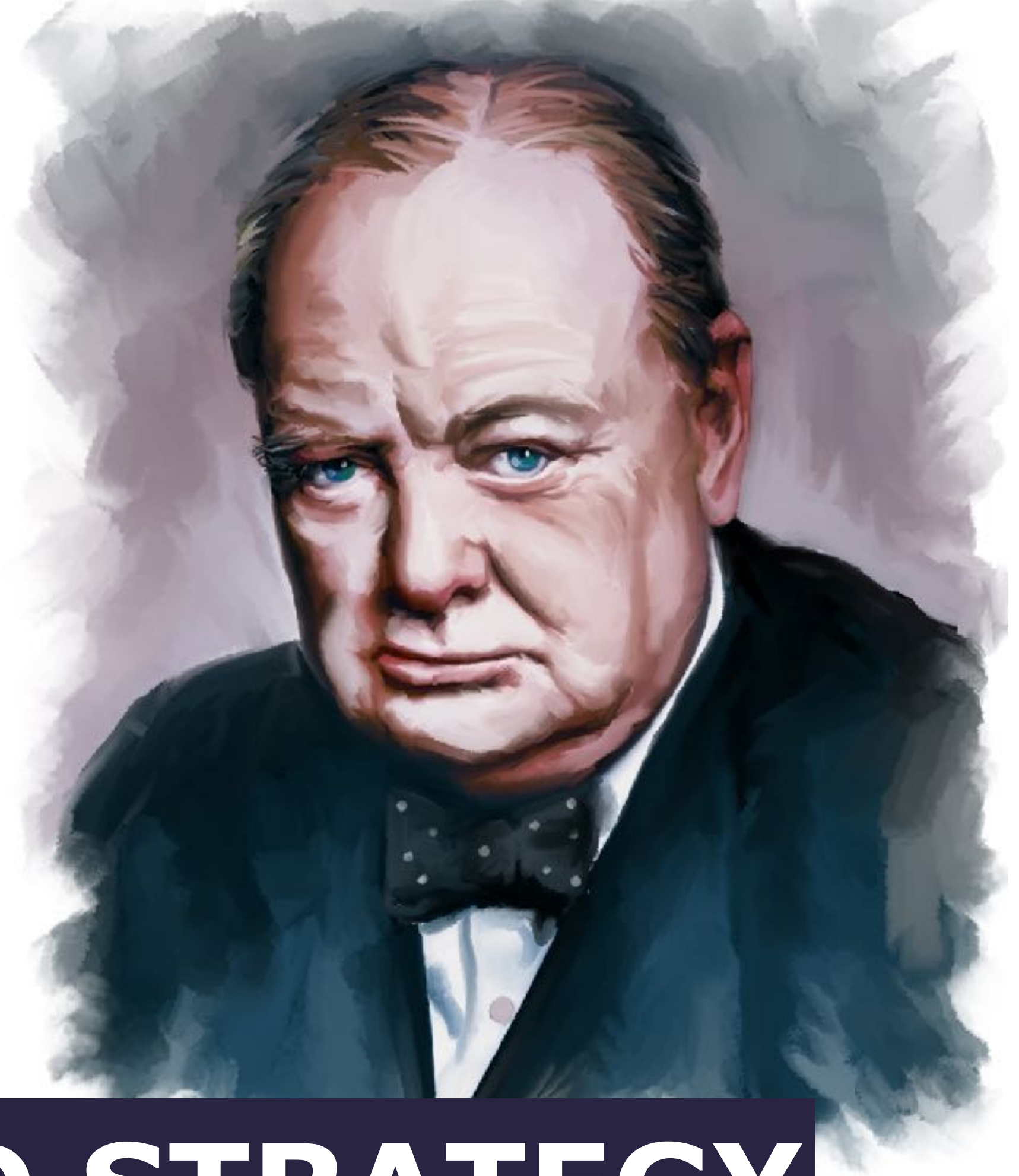
Real leadership is evolving a climate that has these attributes.

encompassing:

- Fingerspitzengefuehl
- Einheit
- Schwerpunkt
- Auftragstaktik
- Behendigkeit



Third Big Idea



GRAND STRATEGY & MORAL CONFLICT



Sun Tzu believed that the moral strength and intellectual faculty of man were decisive in war and that if these were applied properly, war could be waged with certain success.

Griffith's intro to his translation, 1963, p. 39

Grand strategy:
battles AND win the war

Absolutely critical for guerrilla warfare, insurgency, and peacekeeping operations.

Boyd's suggestions for what a grand strategy should, and can, do:

- Support national goal.
- Pump-up our resolve, drain-away adversary resolve, and attract the uncommitted.
- End conflict on favorable terms.
- Ensure that conflict and peace terms do not provide seeds for (unfavorable) future conflict.

Observations related to moral conflict

Gen. Hermann Balck

Theme

- No fixed recipes for organization, communications, tactics, leadership, etc.
- Wide freedom for subordinates to exercise imagination and initiative—yet harmonize within intent of superior commanders.
- Heavy reliance upon **moral** (human values) instead of material superiority as basis for cohesion and ultimate success.
- Commanders must create a bond and breadth of experience based upon **trust—not mistrust**—for cohesion.

How is this atmosphere achieved?

- **By example**, leaders (at all levels) must demonstrate requisite **physical energy**, **mental agility**, and **moral authority** to inspire subordinates to enthusiastically cooperate and take initiative within superior's intent.

What is the price?

- Courage to share danger and discomfort at the front;
- Willingness to support and promote (unconventional or difficult) subordinates who accept danger, demonstrate initiative, take risks, and come up with new ways toward mission accomplishment;
- Dedication and resolve to face up to and master uncomfortable circumstances that fly in the face of the traditional solution.

Benefit

- Internal simplicity that permits rapid adaptability.

In other words, leadership

Appreciation and leadership

Acting



Ninjitsu



Nature

- Appreciation and leadership permit one to discern, direct and shape what is to be done as well as permit one to modify the direction and shaping by assessing what is being done or about to be done (by friendlies as well as adversaries).

What does this mean?

- Appreciation, as part of leadership, must provide assessment of what is being done in a clear unambiguous way. In this sense, appreciation must not interact nor interfere with system but must discern (not shape) the character/nature of what is being done or about to be done;

whereas

- Leadership must give direction in terms of what is to be done also in a clear unambiguous way. In this sense, leadership must interact with system to shape the character or nature of that system in order to realize what is to be done.

Implication

- Assessment and discernment should be invisible and should not interfere with operations while direction and shaping should be evident to system-otherwise appreciation and leadership do not exist as an effective means to improve our fitness to shape and cope with unfolding circumstances.

A richer view

In the June 1967 War, “ ... General Yashayahu Gavish spent most of his time either ‘accompanying’ units down to brigade level—by which, according to his own definition, he meant staying at that unit’s command post and observing developments at first hand—or else helicoptering from one unit to another; again, in his own words, ‘there is no alternative to looking into a subordinate’s eyes, listening to his tone of voice’. Other sources of information at his disposal included the usual reporting system; a radio network linking him with three divisional commanders, which also served to link those commanders with each other; a signals staff whose task it was to listen in to the divisional communications networks, working around the clock and reporting to Gavish in writing; messages passed from the rear, i.e., from General Headquarters in Tel Aviv, linked to Gavish by ‘private’ radiotelephone circuit; and the results of air reconnaissance forwarded by the Air Force and processed by Rear Headquarters. Gavish did not depend on these sources exclusively, however; not only did he spend some time personally listening in to the radio networks of subordinate units (on one occasion, Gavish says, he was thereby able to correct an ‘entirely false’ impression of the battle being formed at Brigadier Gonen’s headquarters) but he also had a ‘directed telescope’ in the form of elements of his staff, mounted on half tracks, following in the wake of the two northernmost divisions and constantly reporting on developments.”

Martin van Creveld, *Command in War*,
1982, pp. 199-200.

How do we do it?

- **Morally** we **interact** with others by avoiding mismatches between what we say we are, what we are, and the world we have to deal with, as well as by abiding by those other cultural codes or standards that we are expected to uphold.
- **Morally** adversaries **isolate** themselves ... by violating codes of conduct or behavior patterns that they profess to uphold or others expect them to uphold.



Rather, the tens of thousands of Ukrainians who peacefully occupied Maidan – and the more than 75 killed last week by security forces – were united around common values such as honesty, integrity, and equal regard for all. These values helped maintain discipline and restraint among the protesters even as snipers fired on them from rooftops. **The moral force of the values eventually led police to ignore orders from Mr. Yanukovych, who discovered too late that power does not come from the barrel of a gun.** (Emp. added)

“The real triumph of Ukraine's protests” Editorial, *Christian Science Monitor*, 23 February 2014

Question: Any downsides to moral conflict?

In other words

This is not a great idea.





It's really pretty simple

**WHAT ABOUT THE
INFAMOUS "OODA LOOP?"**



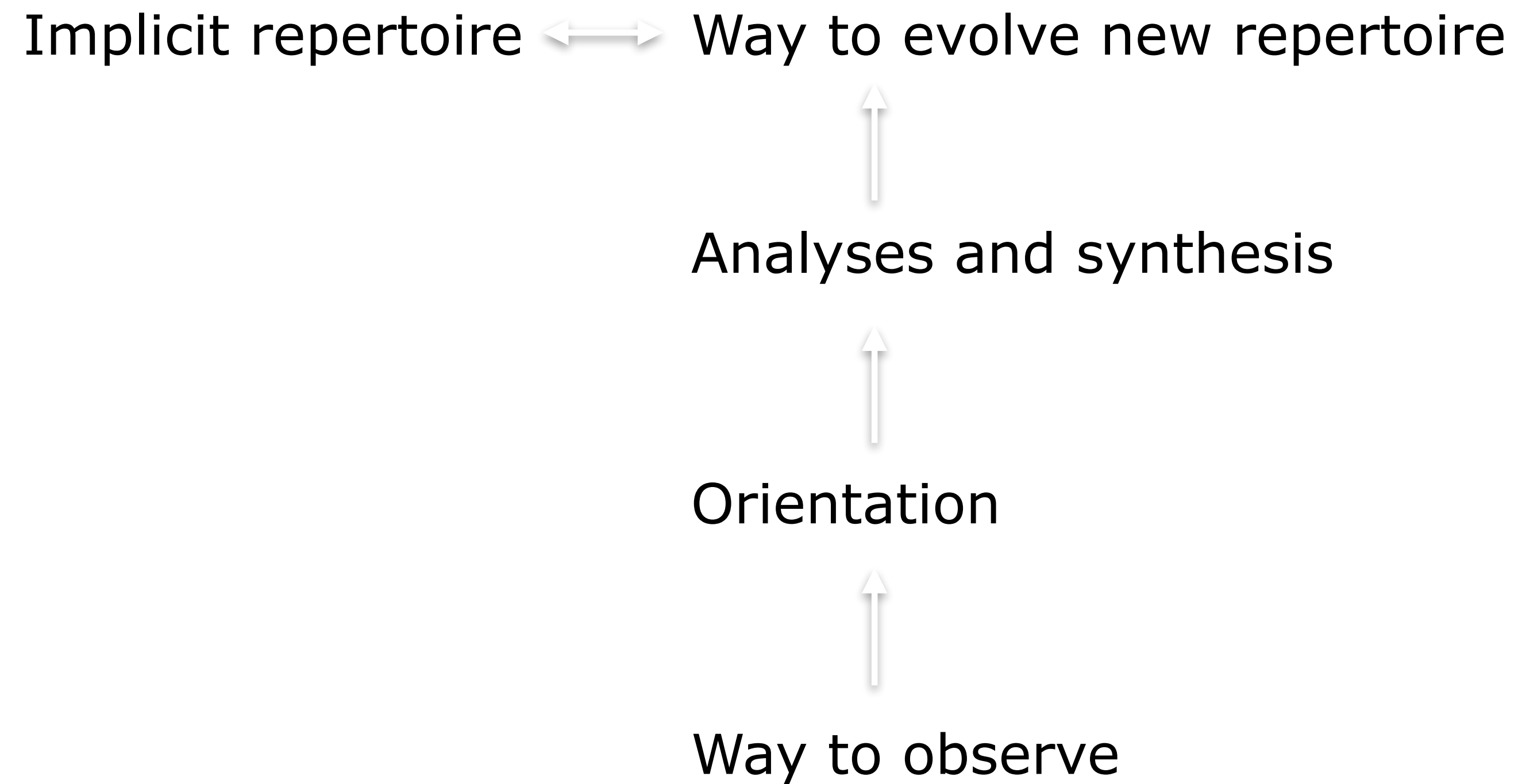
From The Abstract, again

To flourish and grow in a many-sided, uncertain and ever-changing world that surrounds us suggests that we have to make intuitive within ourselves those many practices we need to meet the exigencies of that world.

Boyd's Abstract to the
Discourse for Winning and Losing, ~1987



What the OODA “loop” is supposed to do





Key Statements

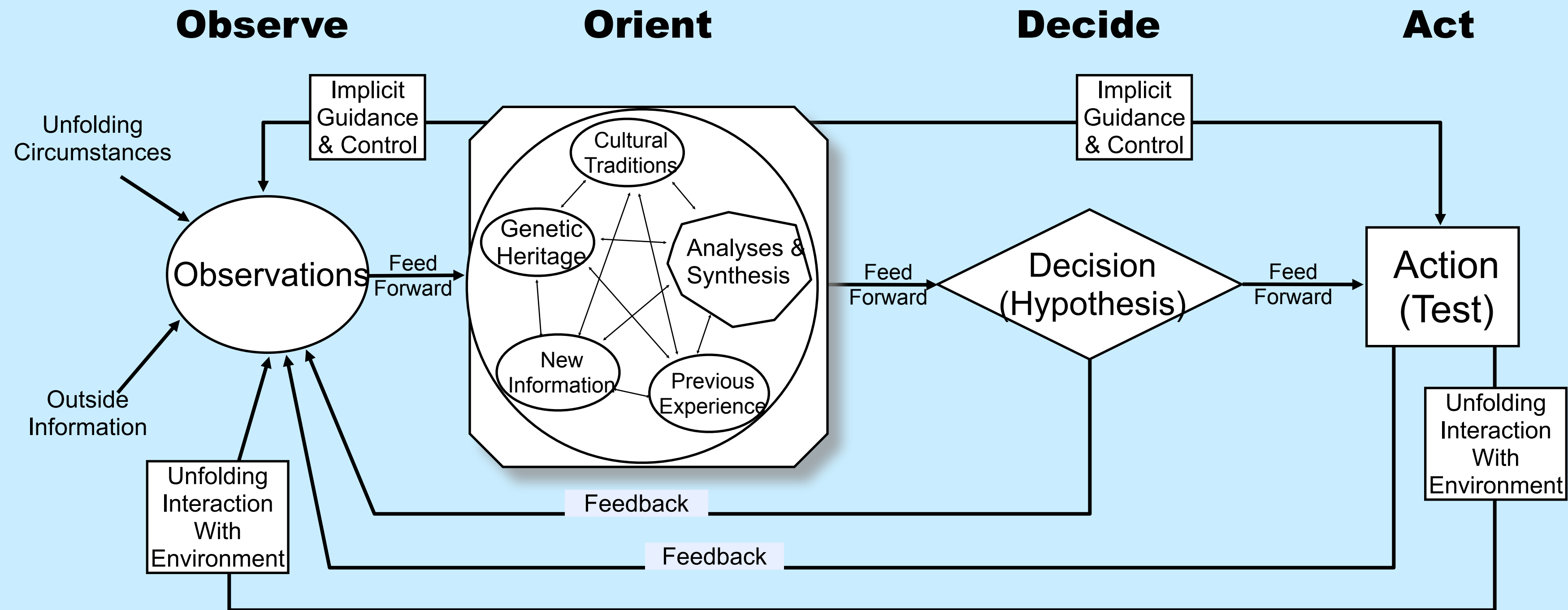
- **Without our genetic heritage, cultural traditions, and previous experiences**, we do not possess an **implicit** repertoire of psychophysical skills shaped by environments and changes that have been previously experienced.
- **Without analyses and synthesis** across a variety of domains or across 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 **analysis** 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 these processes.

Or put another way:

Without OODA loops embracing all of 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, and 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 observing 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.



Looking at it carefully

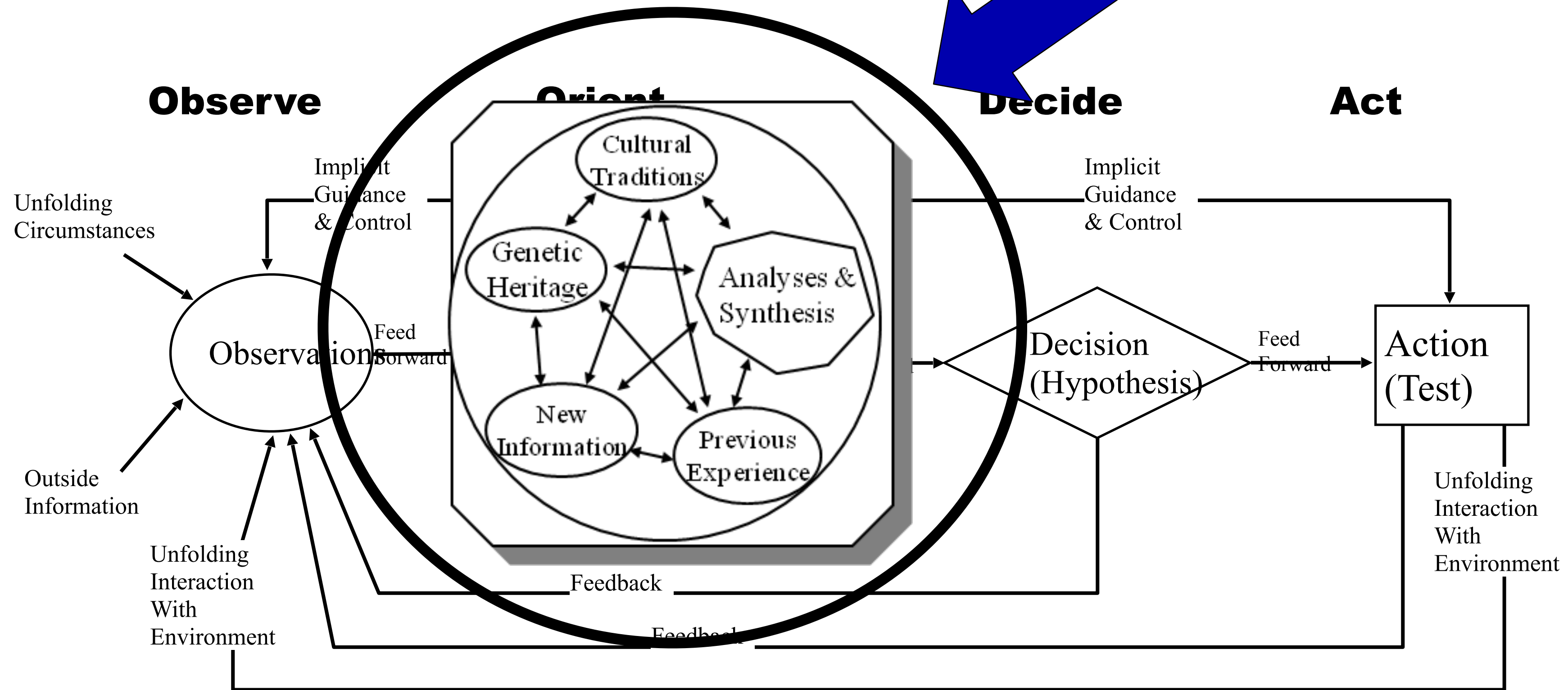
You need four things (in no particular order):

1. **Orientation** closely matched to unfolding (and brutal) reality
2. A **repertoire** of potentially effective actions that we can apply to shape and respond to that (unfolding) reality
3. A functioning “**implicit guidance & control**” linkage so that the vast majority of the time, actions flow smoothly and quickly from Orientation
4. **Analyses, synthesis, hypothesis** and **test** to update our orientations and to add to our repertoire.

We'll briefly look at each of these.



The “Big O”



Message

Referring back to our previous discussion, we can say: orientation **is an interactive process of many-sided implicit cross-referencing projections, empathies, correlations, and rejections** that is **shaped by and shapes** the interplay of **genetic heritage, cultural tradition, previous experiences, and unfolding circumstances.**

Illumination

- Orientation is the *Schwerpunkt*. It shapes the way we interact with the environment—hence orientation shapes the way we **observe**, the way we **decide**, the way we **act**.

In this sense

- Orientation shapes the character of present observation-orientation-decision-action loops—while these **present** loops shape the character of **future** orientation.

Implication

- We need to create mental images, views, or impressions, hence patterns that match with activity of world.
- We need to deny adversary the possibility of uncovering or discerning patterns that match our activity, or other aspects of reality in the world.



It's an ancient idea

योगाश्चित्तवृत्तिनिरोधः

The purpose of yoga is to still the ripples of the mind.

(Or, put another way:

The purpose of yoga is to achieve and maintain accurate orientation.)

The Yoga Sutras of Patanjali,
Sutra 2
400 BCE - 200 CE ??



Physiology of Orientation

The prefrontal cortex integrates information from sensory association areas and performs abstract intellectual functions, such as predicting the consequences of possible responses.

[However]

Feelings of frustration, tension and anxiety are generated as the prefrontal cortex interprets ongoing events and makes predictions about future situations or consequences.

Martini et al., *Anatomy and Physiology*,
p. 488

Where Boyd attacks!



First principle of orientation

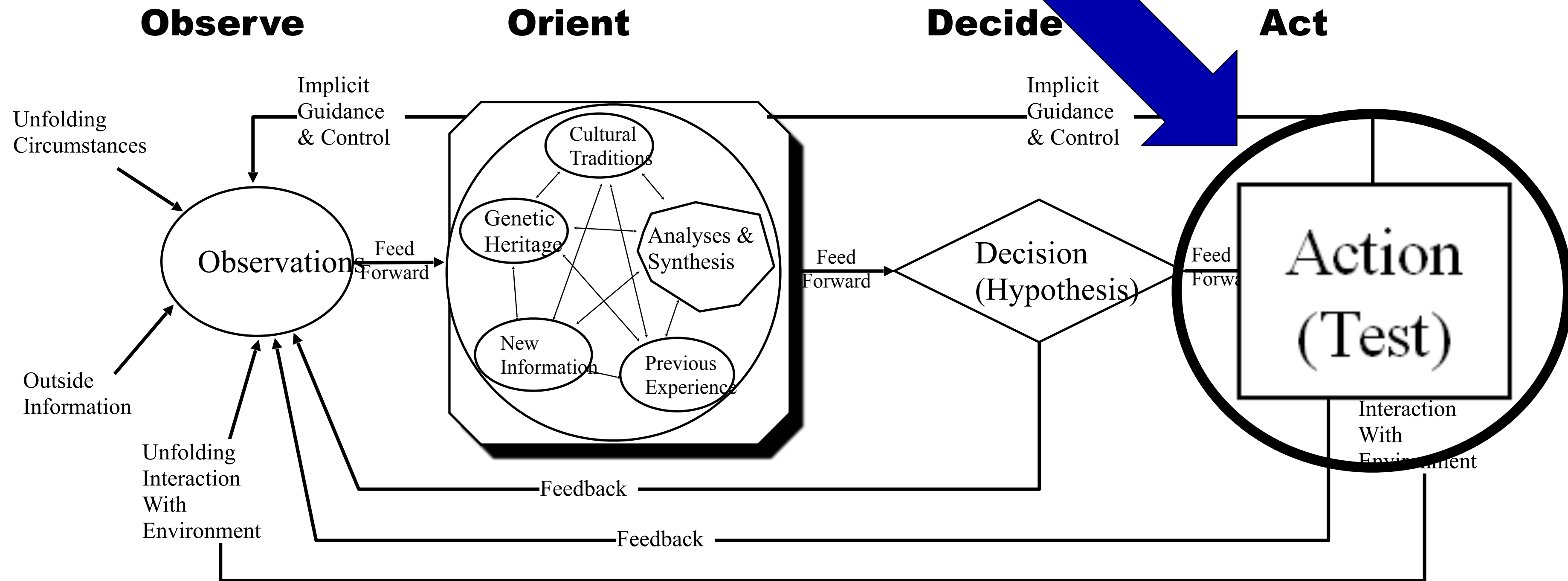
You must never confuse faith that you will prevail in the end — which you can never afford to lose — with the discipline to confront the most brutal facts of your current reality, whatever they might be.



A repertoire of potentially effective actions



Shaping the Unfolding Situation



Impression

- In examining these many points of view one is bombarded with the notion that:
 - It is advantageous to possess a **variety** of responses that can be applied **rapidly** to gain sustenance, avoid danger, and diminish adversary's capacity for independent action.
 - The simpler organisms—those that make-up man as well as man working with other men in a higher level context—must cooperate or, better yet, **harmonize** their activities in their endeavors to survive as an organic synthesis.
 - To shape and adapt to change one cannot be passive; instead one must take the **initiative**.
- Put more simply and directly: the above comments leave one with the impression that **variety/rapidity/harmony/initiative** (and their interaction) seem to be key qualities that permit one to shape and adapt to an ever-changing environment.
- With this impression in mind together with our notion of getting inside an adversary's O-O-D-A loop we will proceed in our historical investigation.

The kinds of actions Boyd is talking about

Create, exploit, and magnify

- **Ambiguity**

Alternative or competing impressions of events as they may or may not be.

- **Deception**

An impression of events as they are not.

- **Novelty**

Impressions associated with events/ideas that are unfamiliar or have not been experienced before.

- **Fast transient maneuvers**

Irregular and rapid/abrupt shift from one maneuver event/state to another.

- **Effort (*cheng/ch'i* or *Nebenpunkte/Schwerpunkt*)**

An expenditure of energy or an irruption of violence—focused into, or thru, features that permit an organic whole to exist.

Payoff

- **Disorientation**

Mismatch between events one (seemingly) observes or anticipates and events (or efforts) he must react or adapt to.

- **Surprise**

Disorientation generated by **perceiving** extreme change (of events or efforts) over a short period of time.

- **Shock**

Paralyzing state of disorientation generated by extreme or violent change (of events or efforts) over a short period of time.

- **Disruption**

State of being split-apart, broken-up, or torn asunder.

Aim

Generate many non-cooperative centers of gravity, as well as disorient or disrupt those that adversary depends upon, in order to magnify friction, shatter cohesion, produce paralysis, and bring about his collapse.

And these

Negative factors

- **Menace:**
Impressions of danger to one's well being and survival
- **Uncertainty:**
Impressions, or atmosphere, generated by events that appear ambiguous, erratic, contradictory, unfamiliar, chaotic, etc.
- **Mistrust:**
Atmosphere of doubt and suspicion that loosens human bonds among members of an organic whole or between organic wholes

Counterweights

- **Initiative:**
Internal drive to think and take action without being urged
- **Adaptability:**
Power to adjust or change in order to cope with new or unforeseen circumstances
- **Harmony:**
Interaction of apparently disconnected events or entities in a connected way

Aim

Pump-up friction via negative factors to breed fear, anxiety, and alienation in order to generate many non-cooperative centers of gravity, as well as subvert those that adversary depends upon, thereby sever moral bonds that permit adversary to exist as an organic whole.

Simultaneously,

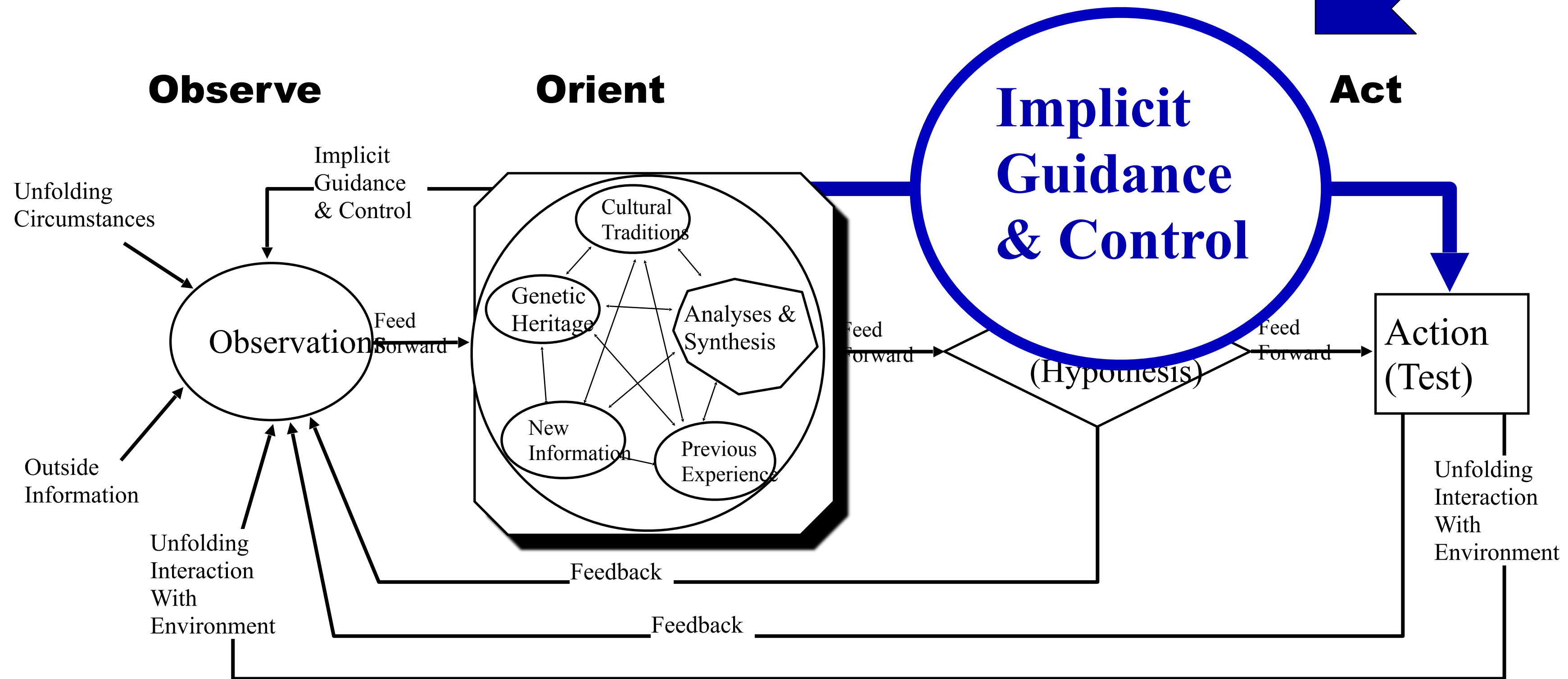
build-up and play counterweights against negative factors to diminish internal friction, as well as surface courage, confidence, and esprit, thereby make possible the human interactions needed to create moral bonds that permit us, as an organic whole, to shape and adapt to change.



Implicit guidance & control



How you should operate (most of the time)



Insight

The key idea is to emphasize **implicit** over explicit in order to gain a favorable mismatch in **friction** and **time** (i.e, ours lower than any adversary) for superiority in shaping and adapting to circumstances.

? **Raises question** ?

How do we do this?

Message

Expose individuals, with different skills and abilities, against a variety of situations—whereby each individual can **observe** and **orient** himself simultaneously to the others and to the variety of changing situations.

? Why ?

In such an environment, a harmony, or focus and direction, in operations is created by the bonds of **implicit communications** and **trust** that evolve as a consequence of the similar mental images or impressions each individual creates and commits to memory by repeatedly sharing the **same** variety of experiences in the **same** ways.

Beneficial payoff

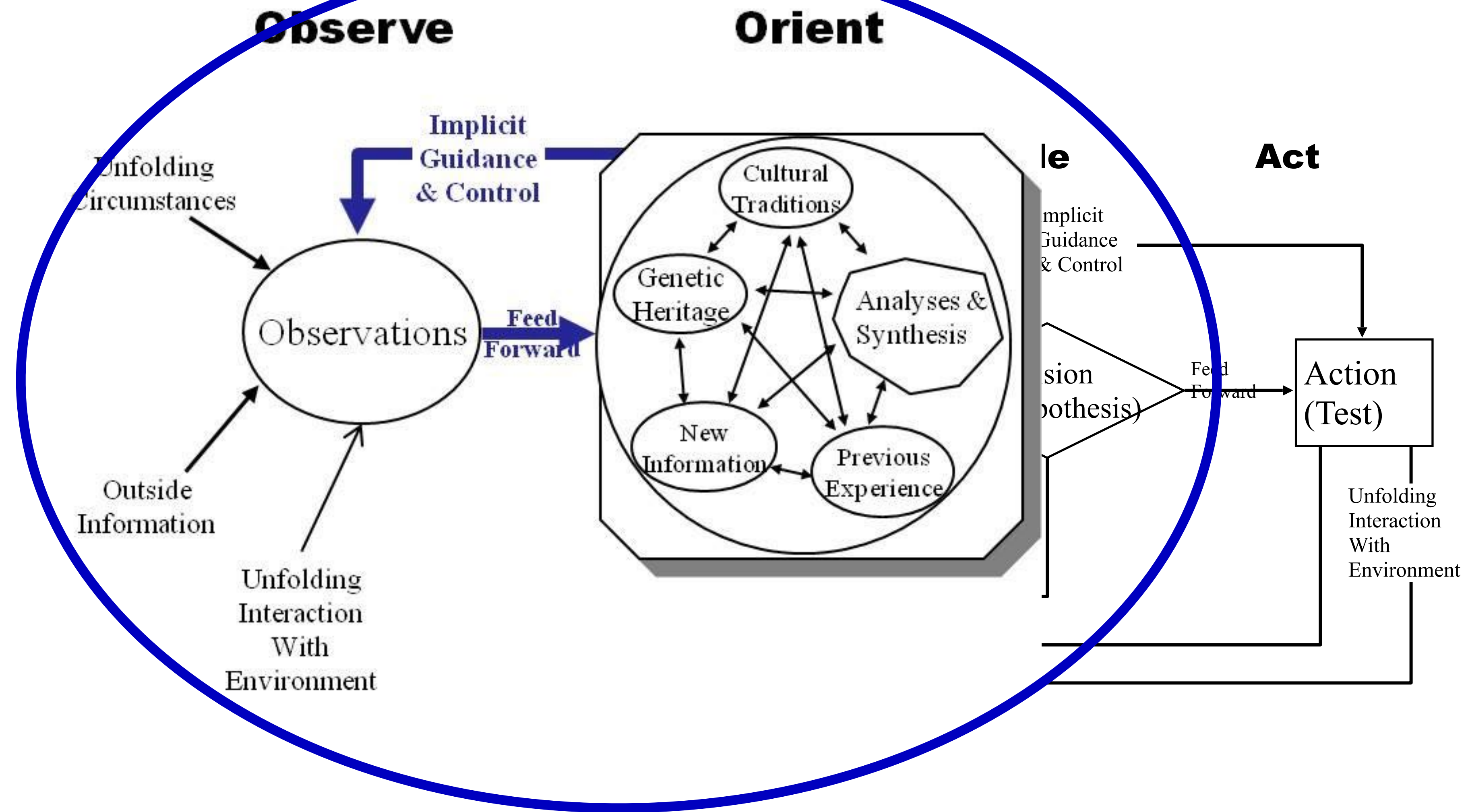
A command and control system, whose secret lies in what's unstated or not communicated to one another (in an explicit sense)—in order to exploit lower-level initiative yet realize higher-level intent, thereby diminish friction and compress time, hence gain both quickness and security.



Brutal reality



Where it starts to get nasty





Boyd on Observation

- He says practically nothing
- But Observation is the only feed into Orientation
- What he tends to emphasize is the idea of creating a deep understanding, where there is no separation of observer and observed. For example: “Guerrillas become indistinguishable from people ...” (Patterns 95)



Some ideas from another sphere

- When you start with an honest and diligent effort to determine the truth of the situation, the right decisions [note – he really means “actions”] **often become self evident.** (emp. added)
- Leadership is about creating a climate where the truth is heard and the brutal facts confronted.

From Jim Collins, *Good to Great*,
Chapter 4, “Confront the Brutal Facts
(But Never Lose Faith)”



It's VERY hard to do!

The sensory cortex, motor cortex, and association areas of the cerebral cortex enable you to perform complex tasks, but it is largely the limbic system that makes you want to do them.

Martini et al., p. 480.

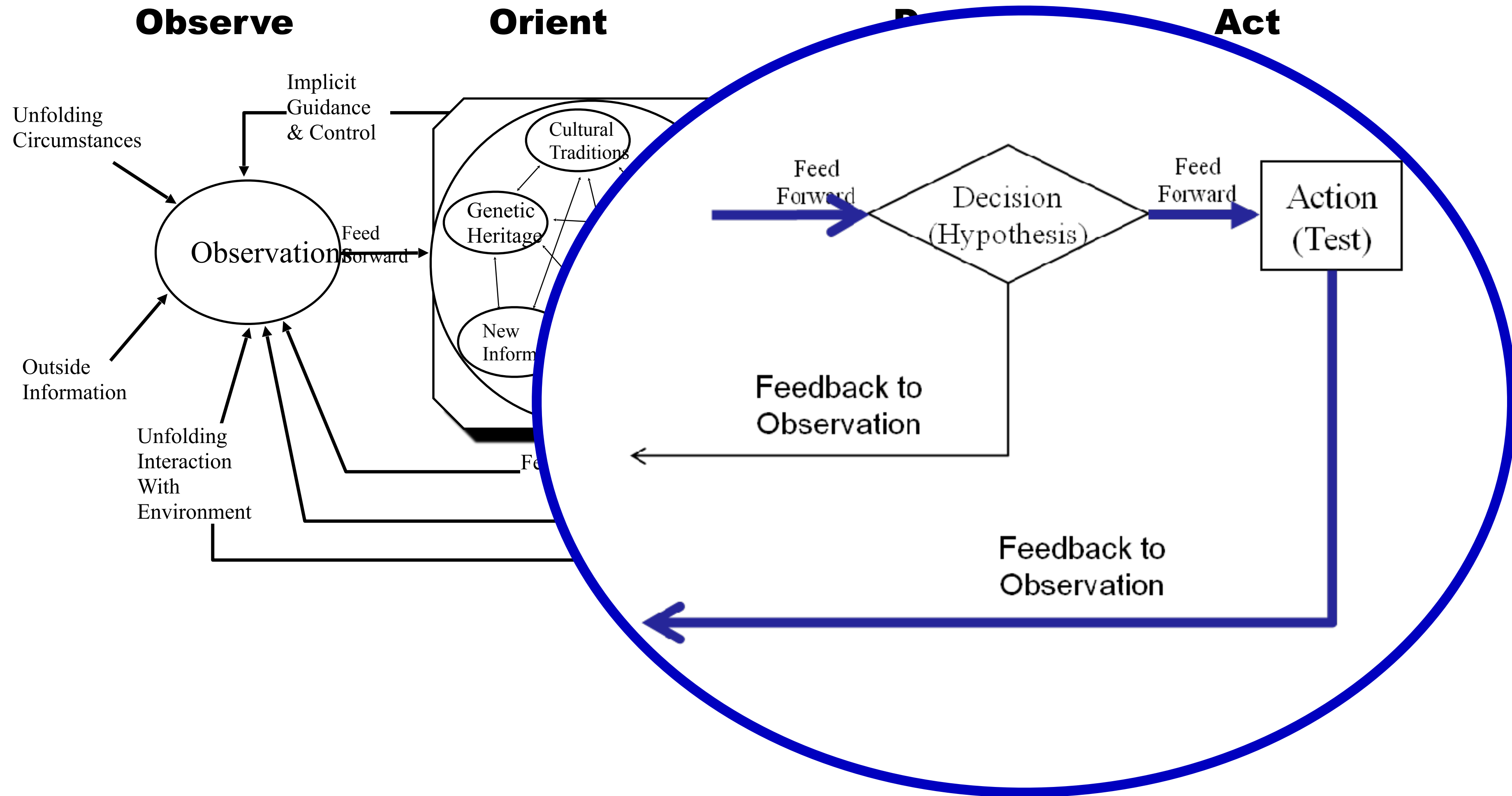
Where the heart leads, the mind will follow.



DECISIONS



Decision?





Why do we need explicit decisions?

Recall that Boyd insisted that we use implicit guidance and control:

The key idea is to emphasize implicit over explicit in order to gain a favorable mismatch in friction and time (i.e, ours lower than any adversary) for superiority in shaping and adapting to circumstances. Organic Design, 16



**By the way,
this is a very old idea**

If your mind stops on the sword your opponent is swinging at you, a gap opens up, and in that gap, your action falters...

If your attention lingers, your mind is taken over by others.

Japanese Zen Master Takuan, c. 1600





Why do we need explicit decisions?

Given that Boyd insisted that we use implicit guidance and control,

When would you use explicit decisions?

Viewed in This Light

The preceding statements seem to suggest that the "Simple-Minded Message" presented near the beginning whereby:

- **Science** can be viewed as a self-correcting process of observation, hypothesis, and test whereas
- **Engineering** can be viewed as a self-correcting process of observation, design, and test

should be modified as follows:

- **Science** can be viewed as a self-correcting process of observations, analyses/synthesis, hypothesis, and test
whereas
- **Engineering** can be viewed as a self-correcting process of observations, analyses/synthesis, design, and test.

Science and maneuver

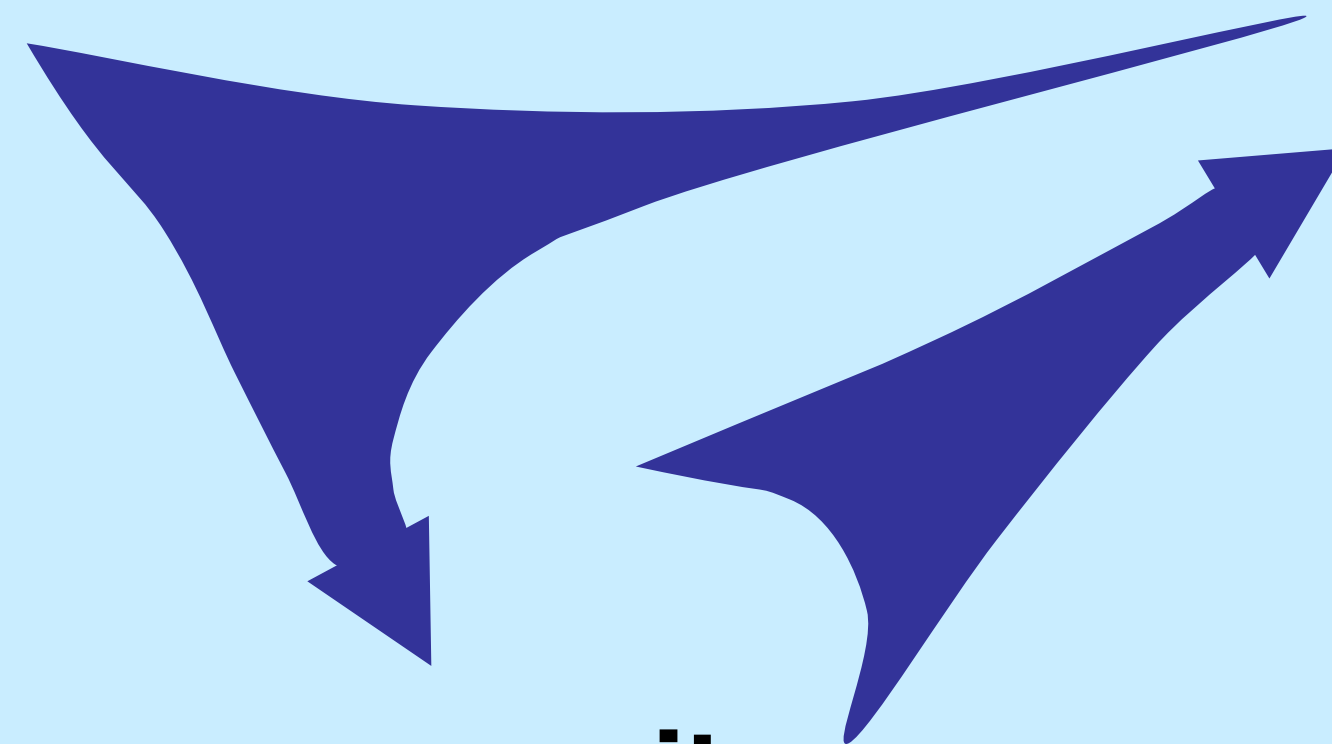
Transients

- Observe, orient, decide and act more inconspicuously, more quickly, and with more irregularity ...

or put another way

And update your own orientation

- Operate inside adversary's observation-orientation-decision action loops or get inside his mind-time-space.



**permits
one to**

Intentions

- Probe and test adversary to unmask strengths, weaknesses, maneuvers, and intentions.
- Employ a variety of measures that interweave menace-uncertainty-mistrust with tangles of ambiguity-deception-novelty as basis to **sever adversary's moral ties and disorient** ...
- Initiative (or response) that is least expected.
- Establish focus of main effort together with other effort and pursue directions that permit many happenings, offer many branches, and threaten alternative objectives.
- Move along paths of least resistance (to reinforce and exploit success).
- Exploit, rather than disrupt or destroy, those differences, frictions, and obsessions of adversary organism that interfere with his ability to cope ...
- **Subvert, disorient, disrupt, overload, or seize** adversary's vulnerable, yet critical, connections, centers, and activities ... in order to dismember organism and isolate remnants for wrap-up or absorption.
- Generate uncertainty, confusion, disorder, panic, chaos ... to shatter cohesion, produce paralysis and bring about collapse.
- Become an extraordinary commander.

Put another way: Develop *Fingerspitzengefühl* for handling novelty — and generating your own

Novelty is not only produced by the practice of science/engineering and the pursuit of technology, it is also produced by the forces of nature, by our own thinking and doing as well as by others. Furthermore, novelty is produced continuously, if somewhat erratically or haphazardly. **Now, in order to thrive and grow in such a world, we must match our thinking and doing, hence our orientation, with that emerging novelty.** Yet, any orientation constrained by experiences before that novelty emerges (as well as by the Grand Message discussed earlier) introduces mismatches that confuse or disorient us. **However, the analytical/synthetic process, previously described, permits us to address these mismatches so that we can rematch thereby reorient our thinking and action with that novelty.** Over and over, this continuing whirl of reorientation, mismatches, analyses/synthesis enables us to comprehend, cope with, and shape as well as be shaped by the novelty that literally flows around and over us.



Boyd's "Revelation"

A winner is someone—individual or group—who can build snowmobiles, and employ them in an appropriate fashion, when facing uncertainty and unpredictable change.

In other words:

- Build
- Employ
 - appropriate fashion
 - facing uncertainty
 - facing unpredictable change

"Creativity, under fire."

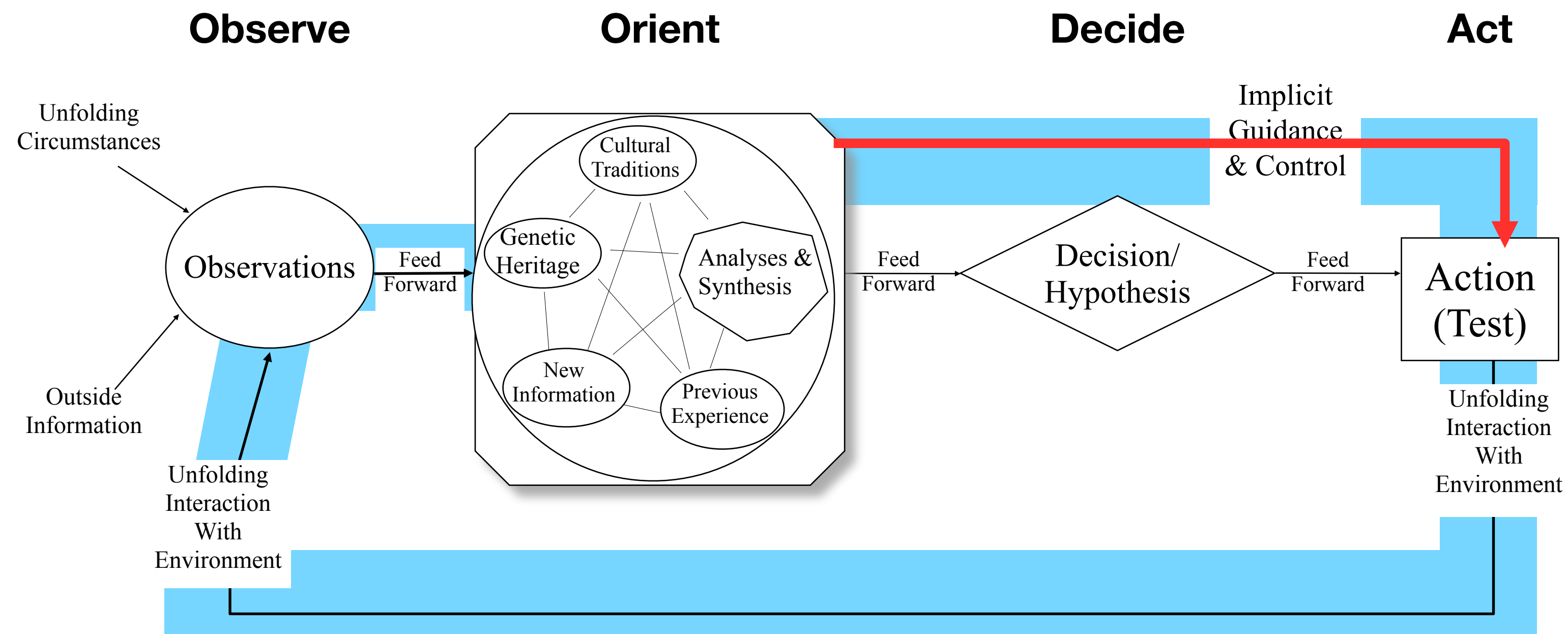


Why that chart was the most important

- A winner is someone—individual or group—who can build snowmobiles, and employ them in an appropriate fashion, when facing uncertainty and unpredictable change. (Boyd's "Revelation")
- Which we can restate as:
- A winner is someone—individual or group—**who has fingerspitzengefuehl** for building snowmobiles, and employing them in an appropriate fashion, when facing uncertainty and unpredictable change.

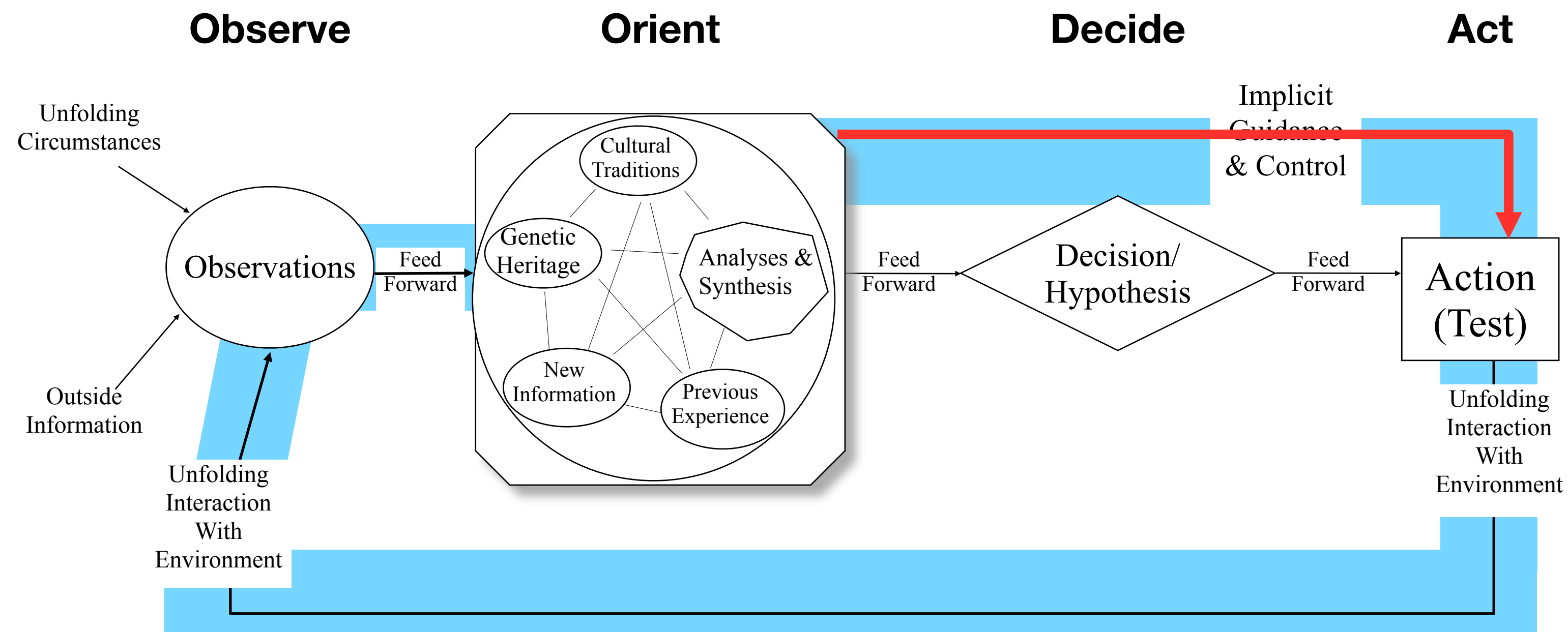
If you don't have fingerspitzengefuehl for it, you don't have it.

We act intuitively: Actions flow directly from Orientation

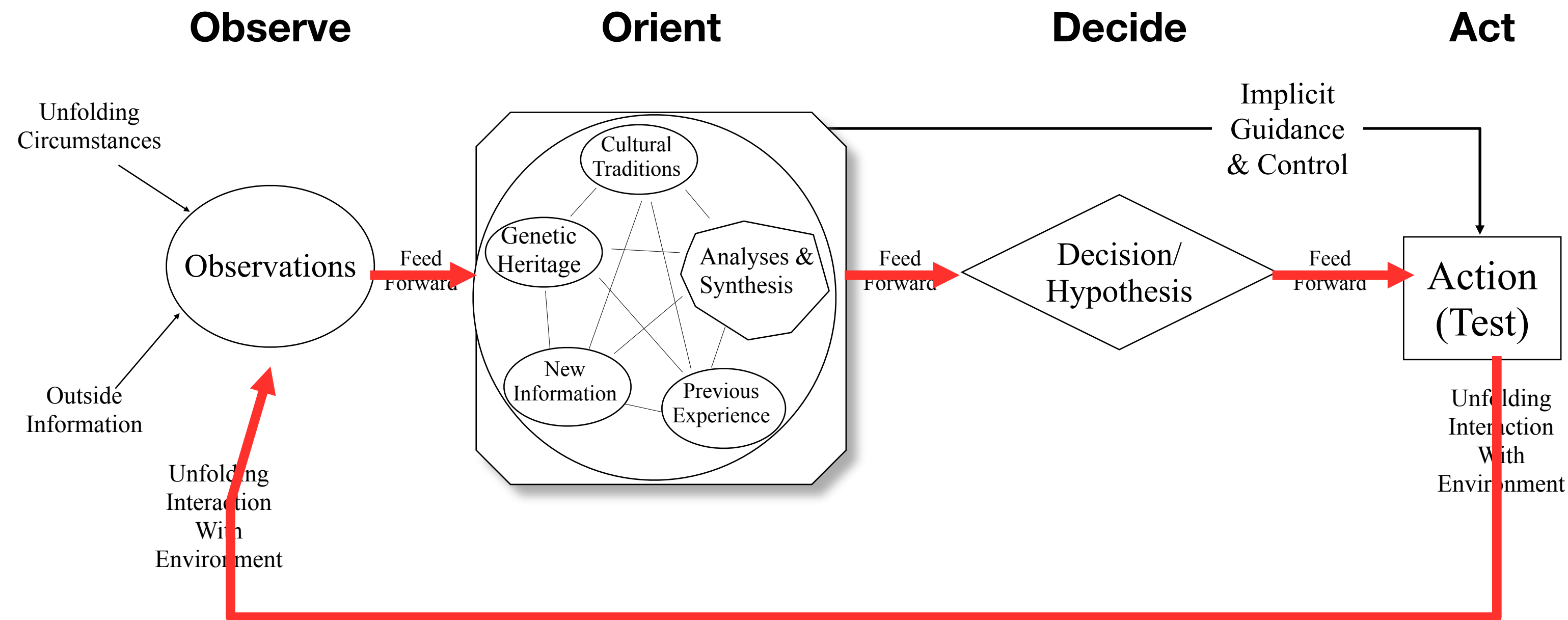


We act intuitively directly from Orientation

*Boyd: The key idea is to **emphasize implicit** over **explicit** in order to gain a favorable mismatch in friction and time ...*

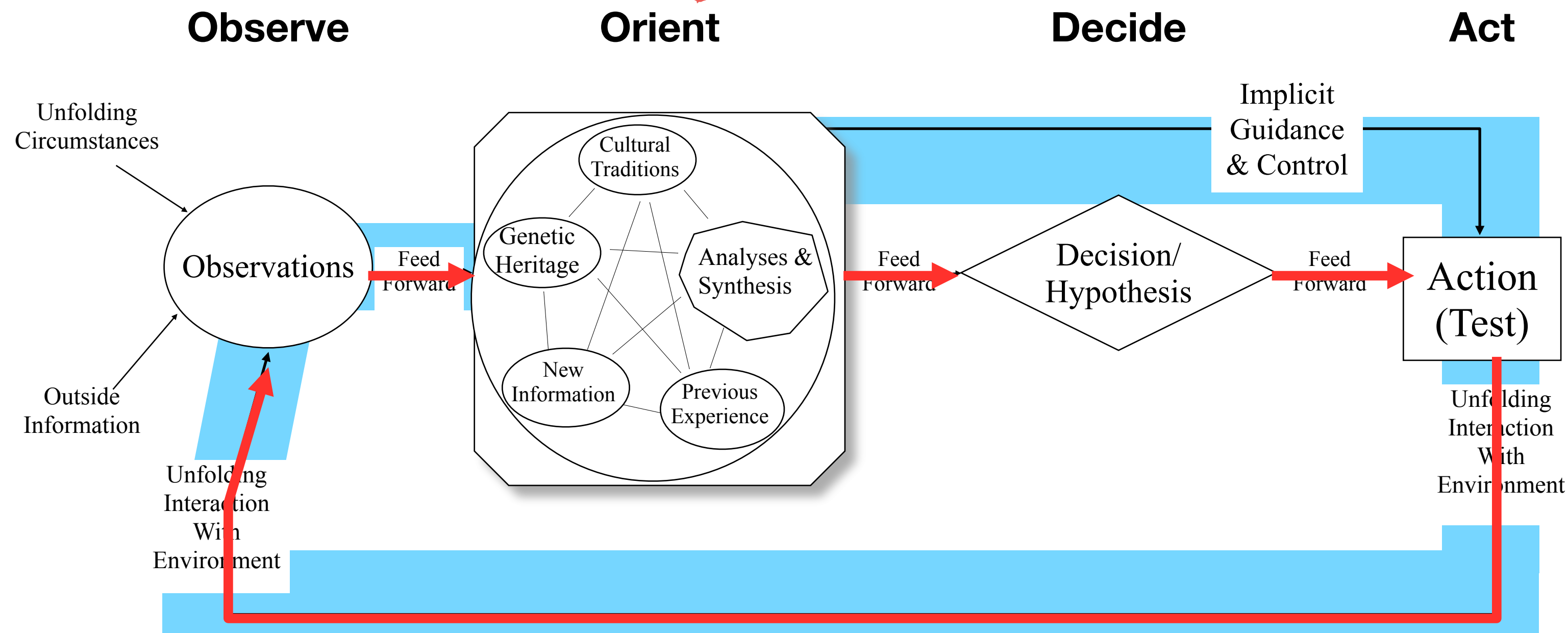


To stay better we have to
keep learning: Add new
actions to repertoire and
update Orientation



The trick is:
both at the
same time

And Orientation
controls everything!



All things are ready
if our minds be so.

Shakespeare, *Henry V*,
Act 4, Scene 3

October 25th, 2015, was the 600th
anniversary of the battle of Agincourt



Case study: The U.S. Marine Corps

- Very well trained and highly motivated
- But leadership not satisfied with performance in Vietnam
 - Difficulty achieving decisive results against guerrilla forces
 - Higher casualties than expected
- A few senior officers saw the need for change
 - Lt Gen Victor ("Brute") Krulak
 - Lt. Gen Bernard ("Mick") Trainor



A solution evolves

- Mentored junior officers to do extensive research into new modes of war fighting
 - Esp. Sun Tzu and guerrilla leaders like Mao Tse Tung
 - Also looked heavily into German WWII experience
- Evolved a synthesis known as “maneuver warfare” based heavily on Sun Tzu and the Germans



Selling the solution

- Cabal of junior officers, supported by key generals, begin developing specific doctrine, teaching at influential schools, and publishing in the Marine Corps Gazette (early 1980s)
- Key general, Al Grey, commander of the 2nd Marine Division, becomes a supporter. Installs doctrine in his division (1982 +)
- General Grey selected as Commandant of the Marine Corps (1987)
- General Grey commissions and then signs new doctrine, *Warfighting*, FMFM1 (1989)



Success (for now)

- In 1989, perhaps 25% of USMC supported doctrine
- Gen Grey initiated an intense educational effort: by 1991, 50% are true believers (maneuver warfare worked like a hot knife through butter for the USMC in Desert Storm)
- Some backsliding, but a new commandant, Gen Charles Krulak, laid down the law and issues a new version, MCDP 1, in 1997
- The USMC used extensively in the 2003 invasion of Iraq with great success



MCDP 1

Warfighting



U.S. Marine Corps

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In closing: Why “Lean and Profitable”?

Which unifies everything we've talked about

Unifying vision

- A grand ideal, overarching theme, or noble philosophy that represents a coherent paradigm within which individuals as well as societies can shape and adapt to unfolding circumstances—yet offers a way to expose flaws of competing or adversary systems.

Aim

Improve fitness as an organic whole to shape and expand influence or power over the course of events in the world

Ingredients needed to pursue vision

■ **Insight**

Ability to peer into and discern the inner nature or workings of things.

■ **Orientation**

An understanding of unfolding circumstances that is accurate and shared

■ **Harmony**

Power to perceive or create interaction of apparently disconnected events or entities in a connected way.

■ **Agility**

Power to adjust or change in order to influence and cope with new or unforeseen circumstances.

■ **Initiative**

Internal drive to think and take action without being urged.