THE ROBUST, THE RELIABLE, THE RESILIENT

GROOVE WITH AMBIGUITY
AMBIGUITY

Resilient
- Skilled Expertise
- Adaptive Capacity
- Graceful Extensibility
- Less immediate need
- More but smaller Risks
- Diverse
- Improvisation
- Discovered
- Scale
- Operational

Robust
- Instinct
- New Features
- Brittleness
- Shallow Expertise
- Hierarchical
- Static Operation
- More immediately understood

Reliable
- Guarantees
- Large but fewer Risks
- Efficiency
- Monochromatic
- Simplicity
- Unix Philosophy
- Mono-chronic

Design shapes Context
- Context shapes Design
- Dynamic Context
- Static Context

Elemental Design
- Complex Design
- Complicated Design
DIVERSE, INTERDEPENDENT, NETWORKED ENTITIES THAT CAN ADAPT.

Diversity and Complexity (Scott Page)
ROBUST TO FAILURE
1857 sound waves can be recorded as *images on paper*

**ÉLÉON SCOTT :: PHONAUTOGRAPH**

1877 record & play on cylinders of *foil & wax*

**THOMAS EDISON :: PHONOGRAPH**

1895 78rpm standardizes on *brittle shellac*

**ÉMILE BERLINER :: LATERAL-CUT DISC**

1925 higher fidelity enabled with *more durable materials*

**ELECTROMECHANICAL RECORDING**
ROBUST TO FAILURE

1950 STATE OF THE GROOVE

- Columbia has released the first 12" 33 1/3rpm LP shortly before RCA Victor's 7" 45rpm single, both will become standards.

- Post-Depression manufacturing settled on what we use today: polyvinyl chloride

- Many materials have seen the Groove and attempted the balance between robust fidelity, robust economics, and robust durability.
ROBUST TO FAILURE

HIGH AVAILABILITY

- Redundancy designed so that if one part of the system fails, another part will cover its function.

- **Decreases efficiency**, increases cost.

- **Complexity we accept** at the price of higher guarantees.

- Some systems are **HA by design** for scale and scheduling (Kubernetes).

- Distributed **data replicas** (Kafka).
ROBUST TO FAILURE

FALLBACKS

- A more granular form of availability that sacrifices accuracy or consistency.
- Calling services utilize local cache or static data when a dependency is degraded.
- Provide durability against network partitions.
- Could even be latent data: e.g. batching falls behind in one stage of a data stream without holding up downstream processing.
HISTORY IN RELIABILITY
VINYL

1970-2000 HIP HOP, SAMPLING, HOUSE
The magnetic direct drive changes history for the role of humans playing the Groove.

Grandmaster Flash pioneers the art of scratching, juggling, and other extended techniques that would make the sound an integral part of Hip Hop.

Christian Marclay takes to vinyl for experimental non-dance sound collages.

Frankie Knuckles mixes disco with rare soul beats, European synth, and rock music to make House.
HISTORY IN RELIABILITY

CHAOS ENGINEERING GAME DAYS

- Validate configurations & Verify outcomes
- Iterate for practice & Introspect models
- Measure capacity to Manipulate slack
- Operable tools & Operational readiness
- Bridge teams & Break assumptions
- Embrace ambiguity to Experiment assumption
RUNBOOKS

- Exploit learnings via Shared Experience
- Enhanced and informed by Game Days
- Critical points for Common Grounding
- Where we meet Mental Models
- Structures for Improvisation
RESILIENCE

SOURCES OF
X-RAY JAZZ
1946-1965
X-RAY MUSIC

- Much music became *forbidden* in post-war Soviet Russia, including popular jazz.

- **Telefunken recording lathe** made its way into Russia as spoils of war.

- **Golden Dog Gang** in Leningrad (St. Petersburg) the first record label to build their own lathes and record the *Groove* on *X Ray plates*.

- The creators were arrested multiple times over, only to return to underground Grooving once again.

Sources of Resilience

Graceful Extensibility

David Woods describes this sense of Resilience as "the ability of a system to extend its capacity to adapt when surprise events challenge its boundaries."

Adaptive capacity becomes shared by diverse, interdependent, networked entities.

...groove itself never changes!

The ways humans adapted together during extreme situations established the groove as a source of resilience.

The theory of graceful extensibility: basic rules that govern adaptive systems

https://doi.org/10.1007/s10669-018-9708-3
Hallmarks of resilience include graceful extensibility and sustained adaptability.

A small technical group to organize and revise a flexible technical support resource within a firm.

The organization and revision comprise an example of resilience engineering.

Resilience engineering occurs “in the wild”

**Building and revising adaptive capacity sharing for technical incident response: A case of resilience engineering**


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THANK YOU!
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