

RETHINKING the management of novel risks

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MA EMA *Effective Leadership in Crisis*

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ACTING IN TIME
Against Landscape-Scale Disasters

ICS Rule #1 :

If they can
see your
incident
from space –

it is generally
not a good
thing.



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My main message to you today ...



**YOU
ARE THE ANSWER
TO OUR PRAYERS**

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There is a major revolution underway ... and we are in the middle

- Revolutions are hard to see from the middle
- Already underway
- In many places, largely implemented
- But not *acknowledged* ...
 - Language does not reflect the post-revolutionary reality
 - Criticism is based on the pre-revolutionary perspective (and, therefore, often misplaced)
 - Not fully integrated into resource planning and allocation

***You all are on the front lines of this revolution –
and need to carry it through to completion***

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Types of Emergencies

Nature of the Event

Naturally-occurring

Man-made
Accidental Intentional

Storm

Earthquake

Flood

Fire

Epidemic

Explosion ...

Low

Severity

Moderate

High

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Types of Emergencies

Nature of the Event

Naturally-occurring

Man-made
Accidental Intentional

Storm Earthquake Flood Fire Epidemic Explosion ...

Impacts/
Needs

Housing

Food

Reconstruction

...

Housing Agency

Relief Agency

Reconstruction Agency

The Fundamental Classification Problem for emergency situations

- Usual classification schemes for emergencies:
 - By “vector of damage” (earthquake, fire, terrorism, ...)
 - By “complex of consequences” (this building will be out of commission for 8 weeks; this community needs food, water, transport, housing, education for 6 months; ...)
- An additional (commonly missed) classification:

Is the situation ...

 - ***ROUTINE*** (familiar, understood, response known and ready ...)?

OR

 - ***NOVEL*** (unfamiliar, *not* understood, response unknown ...)?

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Sources of Novelty in Emergency Situations

1. Completely unprecedented
 - Biology is a common source
 - 1918 Flu
 - 2003 SARS
2. Scale: “Beyond Threshold”
 - MA snowstorms in 2015
3. “Complex Combination”
 - More than one thing happening, causing conflicts in response protocols (Three Mile Island and Fukushima nuclear accidents)

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The First Problem: Recognizing Novelty

- Hard to spot – “what am I looking for?”
- “Signature” of novelty: **ANOMALY**
 - Something you don’t understand about what is going on
 - Routine events: you should be able to understand fairly completely and predict fairly accurately
 - Novel events: Surprises keep happening
- Examples of anomalies:
 - “It isn’t working” (Boston snowstorms)
 - “It isn’t following the usual pattern” (SARS)

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Japanese Encephalitis in Malaysia 1997

- Japanese Encephalitis is recurrent in Malaysia
- Resident in / carried by pigs (pigs are asymptomatic)
- Transmitted to people by mosquitoes
- Treatment:
 - Vaccinate pigs
 - Vaccinate humans
 - “Fog” for mosquitoes

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Japanese Encephalitis in Malaysia 1997

- Modest outbreak in September 1997 ...Treatment seems to work; outbreak subsides
- Renewed outbreak (late fall): (a) spreads and (b) mainly male Chinese pig farm workers are getting sick
- If it is mosquito-borne, who should get it?
 - All population groups: young, old, men, women, Chinese, Muslims
- So ... why mostly male Chinese pig farm workers?
- Also: pigs are getting sick (but the farmers are hiding this)
 - That is why it is spreading: farmers are selling their sick pigs

THESE ARE ANOMALIES!

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Japanese Encephalitis in Malaysia 1997: EXPLANATION

1. The Japanese Encephalitis outbreak in Malaysia in 1997 **wasn't Japanese Encephalitis**
2. It was “Nipah Virus” – a previously unknown virus that causes encephalitis (carried by bats, transmitted to pigs)
3. Nipah (a) makes pigs sick and (b) spreads to humans through direct contact with infected pigs
4. It took six months to notice and figure out the anomalies ... because everyone was so sure they already knew that it was Japanese Encephalitis

Events with undiagnosed novelty look routine!

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Types of Emergencies

Nature of the Event

Naturally-occurring

Man-made
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Storm Earthquake Flood Fire Epidemic Explosion ...

Degree of
Novelty

Low

Routine

Routine

Routine

Routine

Routine

Routine

Moderate

High

Very High

Cross-disciplinary Team to
Identify and Cope with Novelty

ROUTINE Emergencies

- Preparation
 - Skills and Training
 - Standard Operating Procedures / Routines / (Executable) Plans
 - Hierarchical organizations
 - Command and Control / High Authority
 - Domain-specific expertise
 - ...
- Execution
 - Rapid, efficient and effective
 - (Appropriate) expectation of success

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NOVEL Emergencies

- Preparation
 - Skills and Training for rapid improvisation and adaptation
 - No comprehensive executable plan available → rapid **PLANNING**
 - Multiple, coordinated organizations
 - Flat, Networked, Coordinated by “Unified Command”
 - Understand / Design / Execute
 - Creative combination of existing capabilities
 - Planning **PROCESS** (Incident Action Planning Process)
- Execution
 - No reasonable expectation of rapid, efficient and effective action
 - (Appropriate) expectation is best efforts and rapid learning

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Landscape Scale Disasters: “Katrina-class” and larger

- Overwhelmingly likely to be:
 - Multi-jurisdictional
 - Multi-level (federal, state, local)
 - Multi-sector

“Cross-boundary”

AND

NOVEL

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~~THREE~~ TYPES OF EVENTS

I. ROUTINE

II. NOVEL



III. EMERGENT

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Unitary Command and Control is *not* one of the alternatives ...

- Can't feasibly produce unitary command
 - All serious alternatives are decentralized
- Real alternative:
 - Decentralized action done *badly*
versus
 - Decentralized action done *well*

Making a virtue out of necessity

Actually, making a virtue out of a virtue

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Changing our Philosophy

Philosophically – we seem to be trying to *centralize* rather than *trying to make decentralization work*

Imagine the alternative:

What would it take to make
decentralized intelligent adaptation
work?

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“Fast and Light”

Analogy from mountain climbing

- 60's to 80's: “siege” mountaineering
 - Large expeditions (climbers, sherpas)
 - Large amounts of equipment
 - Fixed rope
 - Bottled oxygen
 - ...
 - Porters
- Alternative: “Alpine Style”
 - Carry little, move fast, reduce number of moving parts, increase skills and self-reliance, small support group, increase safety by reducing exposure time

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“Fast and Light” in emergency response

- Multiple operational units
 - Self-contained
 - Mobile
 - Communications capabilities
 - Practiced
 - Mix of specialized and more general
 - Authorized to act
 - Seeking to be coordinated
- Coordinating structures (“Unified Command” and “Area Commands”)

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The local role in “Fast and Light”

- Organized to integrate with and guide arriving teams:
 - Local knowledge
 - Local authority (for example, law enforcement)
 - Direct teams that are resourced and skilled but lack local knowledge and authority
 - “Unified Command”
 - Team commander retains command of the team
 - Local officials serve on command team
 - E.g.: New Orleans Fire Department trucks staffed by one NOLA firefighter and others from other jurisdictions
 - Team Unified Command seeks coordination, resources, instructions from appropriate higher levels

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The role for the “center” in “Fast and Light”

- Establishing overall goals and priorities
- Providing aggregated (big picture) information
- COORDINATION
- Resource procurement and allocation (“supply chain manager”)
- Monitoring progress
- NOT
 - Directing operational activity

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Example of “Fast and Light”: Coast Guard rescues in NOLA

- Self-dispatched
- Mobile
- Self-contained
- Self-sustaining
- Didn't wait to be asked and didn't wait for others to get established to work with
- Coordinated with others
- Established and shared awareness of the situation

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A (Mostly) Hopeful Note: Fast and Light is ...

- **Consistent** with the best of what we did in response to Katrina and other major disasters
- **Consistent** with the best of what we are doing now to prepare for future events
 - e.g., US: National Response *Framework*

But:

- **Inconsistent** with the mindset of many outsiders/critics (press, Congress, public ...)
 - e.g., US: National *Operations* Center

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Implications

- Design/Build **AND TRAIN** more Fast and Light units
 - Coast Guard
- Build the four elements:
 - Capabilities (units)
 - Structure / Systems (NIMS, Area and Unified Commands)
 - Skills (Red Card / training experience selection)
 - Coordination
 - Technical / Operational (common operating picture)
 - Political
- **Build local capacity to interface with F&L units**

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