

The Living City

Mike Bennett & Vinay Gupta

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we solve your real problem

city as rain forest

- **biodiversity**
- **complexity**
- **synergy**

the great fires

- **Chicago**
- **London**
- **Edo / Tokyo**

how we beat fire

- **changed behavior**
- **building better**
- **public fire brigades**
- **building codes**

fire took systems level changes

- **individual, group,
organization, state**
- **all buildings / code**
- **brigades / business**

risks: new, point and systemic

- **climate: new and systemic**
- **earthquakes: point**
- **pandemic: systemic**

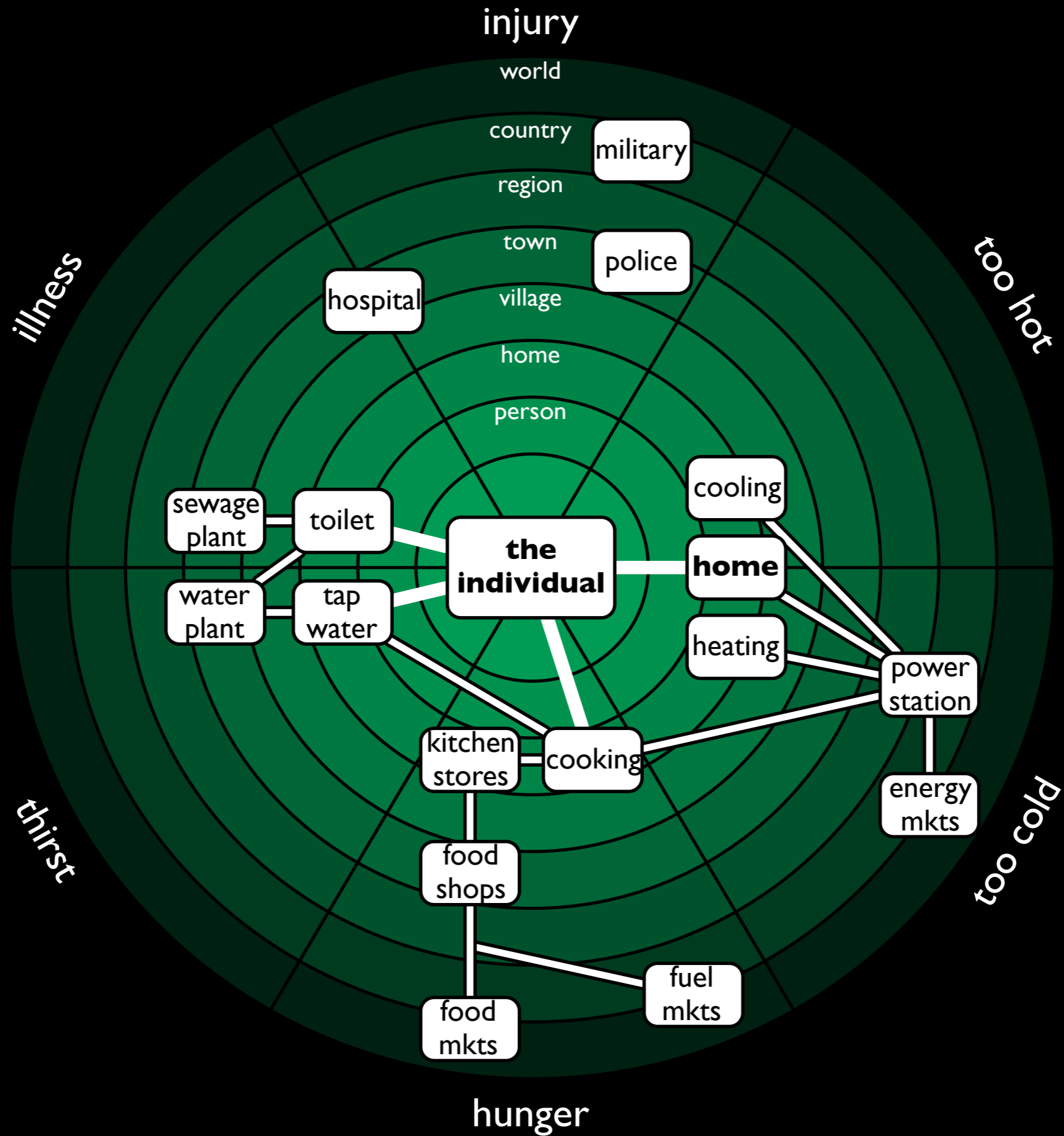
defining risks

- **six ways to die**

- hot, cold, hunger, thirst, illness, injury

- **economic risk**

- **population leaves**



injury

world

country

military

region

town

police

village

hospital

home

person

the individual

cooling

home

heating

power station

sewage plant

toilet

water plant

tap water

kitchen stores

cooking

energy mkts

food shops

fuel mkts

food mkts

hunger

illness

too hot

thirst

too cold

scenario one ***pandemic***

- **H1N1 2009 / 1918**
- **not if but when**
- **quarantine / supply chains**

the unexpected

- **how do you move supplies?**
- **what about food?**
- **what about insulin?**

six ways to die ***revisited***

- **flu hits people *and* supply chains**
- **interdependencies are the hardest part**

mitigating risks

- **stockpile / backup**
- **plan to do without**
- **training**
- **change systems**

who handles risks?

- **FEMA, CDC, FDA, EPA do their risks**
- **local responders**
- **including citizens!**

rational response is cross-level

- **individual, group,
organization, state**
- **good individual
choices help a lot**

scenario two

cold katrina

- **fragile grid** *“brittle power”*

http://www.natcapsolutions.org/publications_files/brittlepower.htm

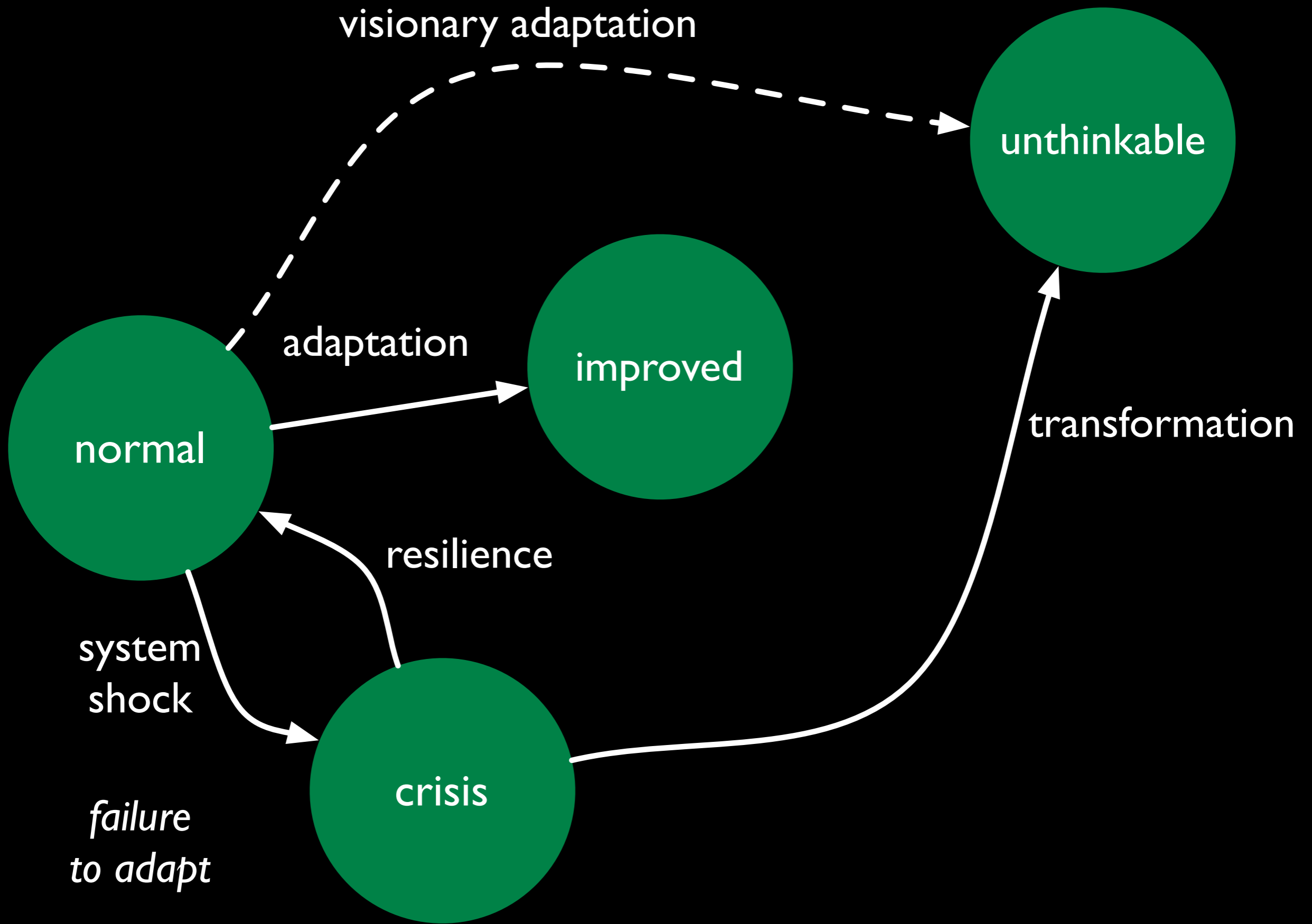
- **terrorist engineers**

<http://www.nuff.ox.ac.uk/users/gambetta/Engineers%20of%20Jihad.pdf>

- **prolonged winter**
grid failure

beyond resilience

- **CK requires change**
- **change our models**
- **unmake the risk**
 - **not just hardening**



how the mind understands risk

- **probability/impact**
- **risk estimation**
- **complex scenarios**
- **UNDER REACTION**

***change the system
one brick at a time***

- **everything changes**
 - **like beating fire**
- **buildings and cars**
- **we make, they buy**

***imagine if we had
not fixed fire***

- **6.5 bn, half urban**
- **the environment is
like fire once was**
- **policy backs tech**

it is an engineer's future

- **we made this mess**
 - **buildings and cars**
- **and now we fix it**

recommendations

- **investigate systems transformation**
- ***resilience now!* plans**
- **pilot project: Arup?**

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