

Variety Dynamics

A new dimension of CPTED

Dr Terence Love

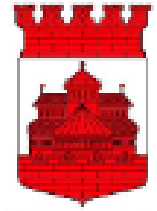
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Background

Design Out Crime and CPTED Centre provides CPTED services internationally:

- CPTED reviews and design advice (DAs and existing)
- CPTED training (police, planners, architects, government)
- CPTED policies and guidelines (government and commercial)
- Public presentations on CPTED, security and cyber-security
- Research to improve CPTED, cyber-CPTED and crime prevention outcomes
- Free CPTED resources
- CPTED, Cyber-CPTED & cyber-security reviews and advice

Key staff:



Dr Terence Love: CEO, founder and director

MICA, MIMA, MORS, FDRS, AMIMechE,
ICA Advanced CPTED Professional, NSW Safer By Design Cert. 51230252,
Security Agent Lic 61252. Security Consultant Lic. 61238
CPTED, Cyber-CPTED, systems analysis, sustainability analysis



Dr Paul Cozens: associate director

ICA Advanced CPTED Professional
CPTED researcher, criminologist and lecturer in planning



Professor Dr Trudi Cooper: associate director

Youth Work and Community Development, systems researcher, sustainability



Examples of CPTED Projects over last 25 years

- CPTED training for police, local government, planners, architects, security
- Government CPTED policies and guidelines
- CPTED analysis for Development Approvals
- 4H cyber-security
- Indigenous night patrols, community development, youth projects, drug use
- Federal crime prevention policy development
- CPTED and Cyber-CPTED research



Cockburn Centre \$1.1 billion



Night-time economy



Indigenous night patrols
www.julalikari.org.au



CPTED on public transport

Four new areas CPTED

- Importance of *feedback loops* in CPTED, planning and crime prevention and complex systems management of crime
- The new field of **Cyber-CPTED** and its new forms of crime
- New *causal* explanations of CPTED strategies and principles (mainly from Ethology)
- **Variety Dynamics** in CPTED

What is Variety Dynamics?

- New field in systems theory, mathematics, ecology, crime prevention, warfare and security studies, cyber-security and many other disciplines...
- New basis for understanding CPTED and developing new CPTED strategies and principles
- A new basis for taking control in asymmetric warfare
- A new approach to social control
- A new theory foundation for the fields of ecology, ethology, psychology, community development, design research and a theory basis for constructor theory in quantum physics

Developed by Dr Terence Love and Dr Trudi Cooper since 2002 based on earlier work on control of complex socio-technical systems.

What is Variety?

Variety is the **number of possible states** of something



Variety = 5 of the colour of the cakes

Variety example 1



Variety of cups in each stack is the **number** of cups in each

Variety example 2



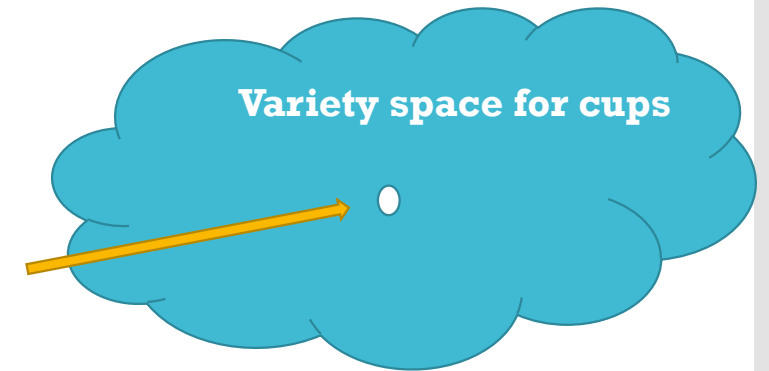
Variety of these cups is in **number** and **type**

Variety space (scalar)



Variety of cups in stacks is
in their **number** in each stack

Variety is scalar (number) and
variety for each stack is a **point
vector** in the **variety space**

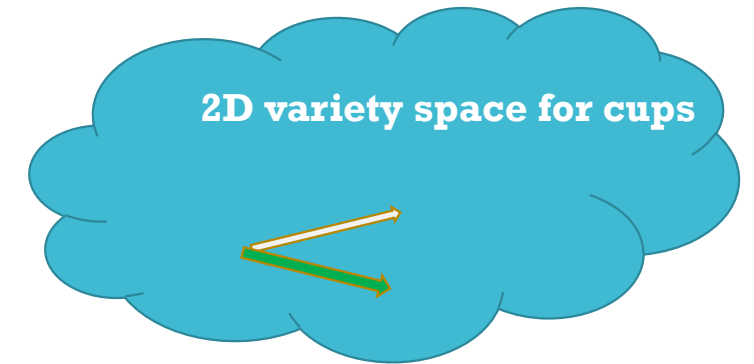


Variety space and variety as a vector



Variety of these cups is in **number** and **type**

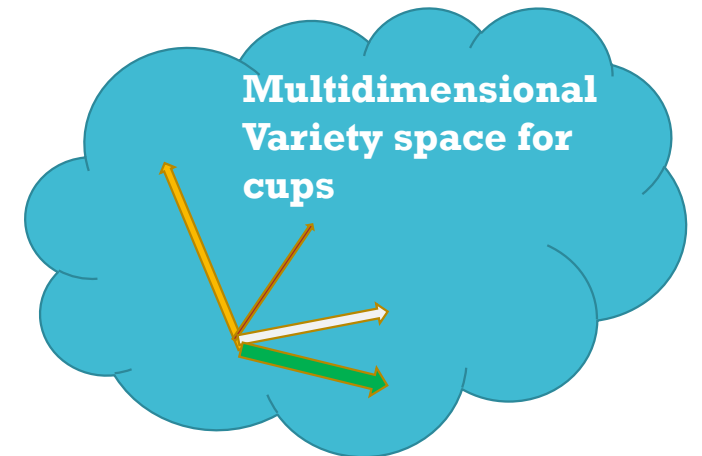
Variety of these cups comprises two dimensional;
vectors in **variety space** indicating cup type and number of that cup type.



Variety space multidimensional

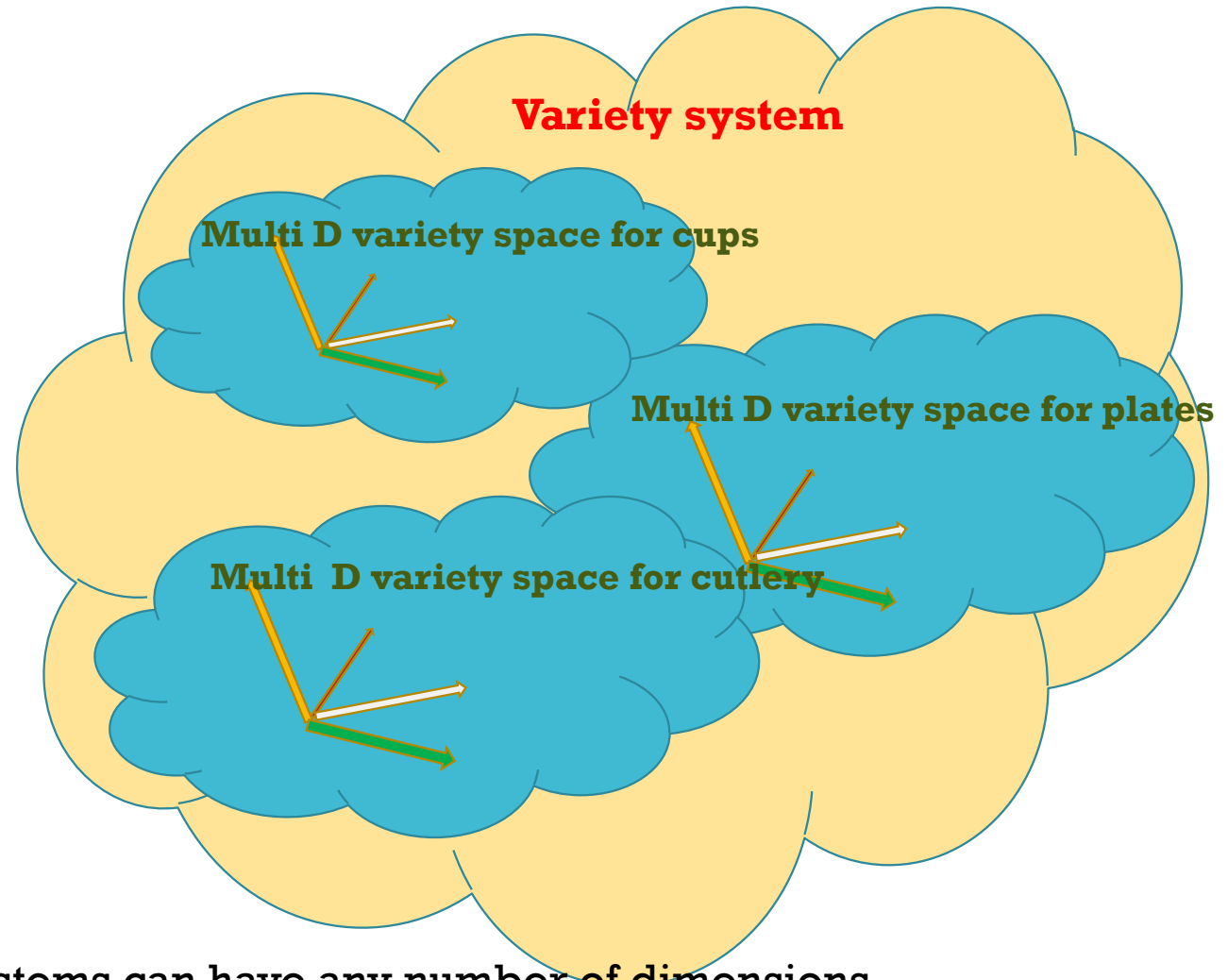


- The additional **variety** of handles, size, materials, style, coating etc can be represented in multiple dimensions in variety space



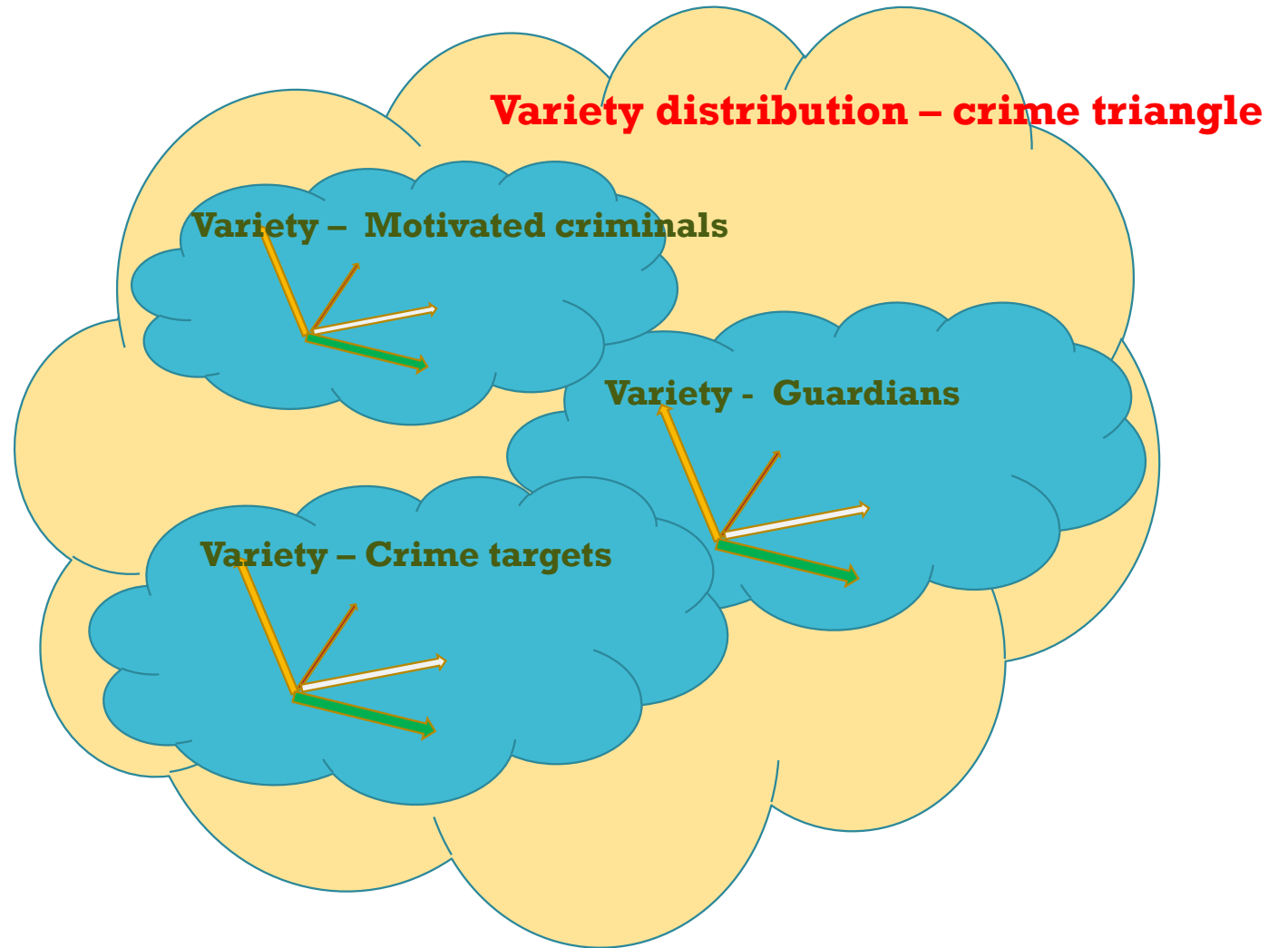
Variety systems

Variety system of cups, plates and cutlery



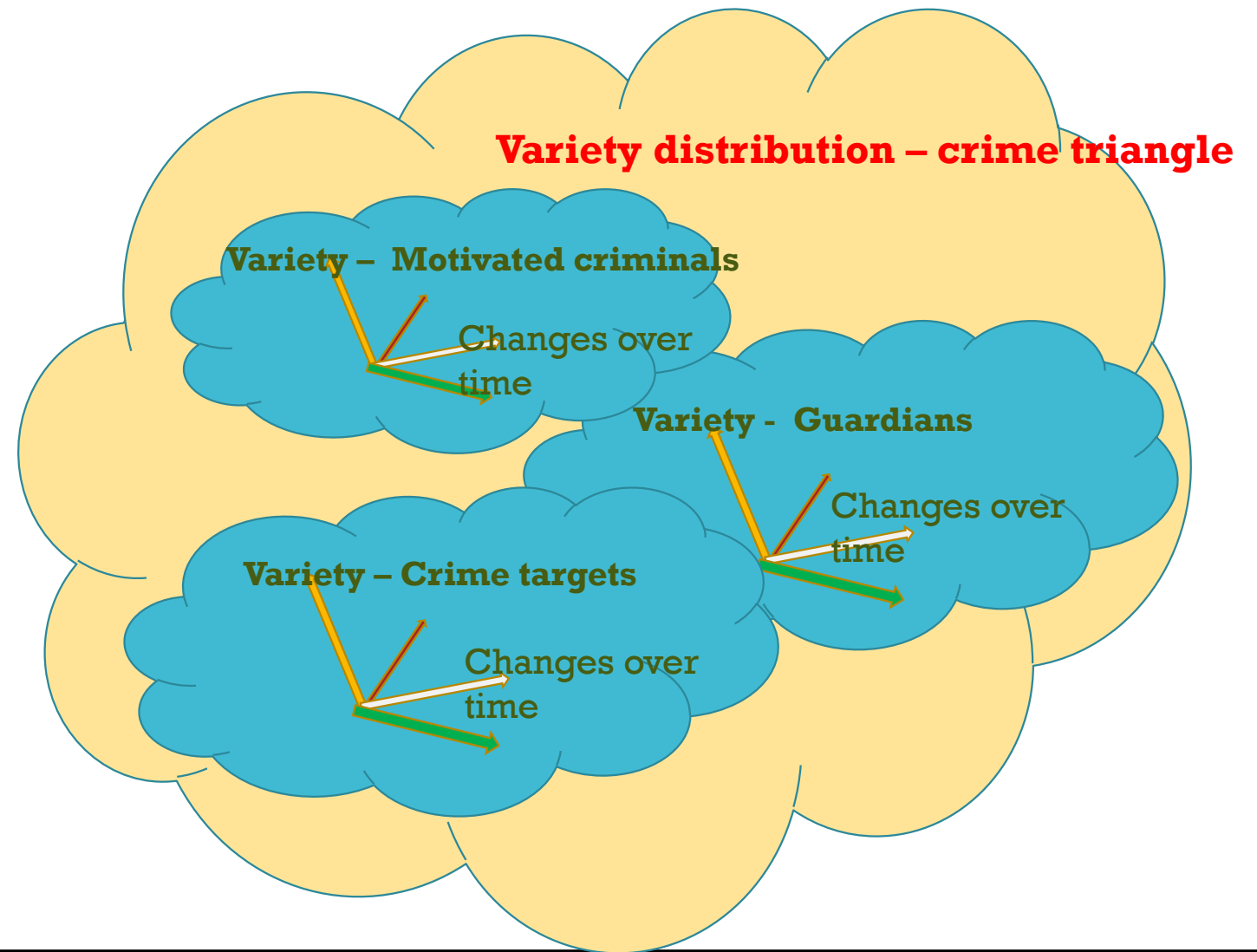
Variety systems can have any number of dimensions

Variety and the Crime Triangle

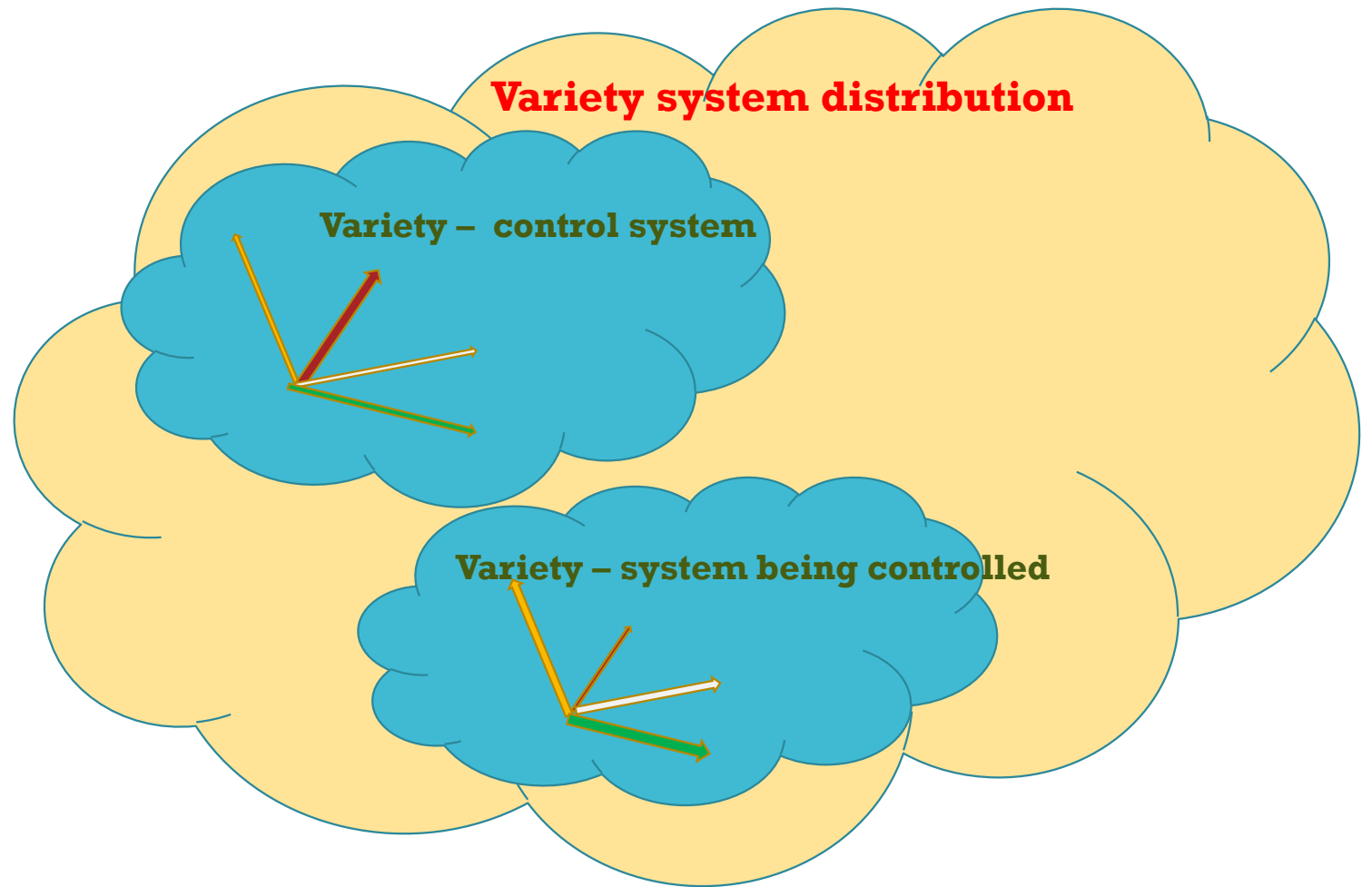


Variety Dynamics

Variety distributions can be ***dynamic*** – changing over time



Control variety and system variety (Ashby's Law)



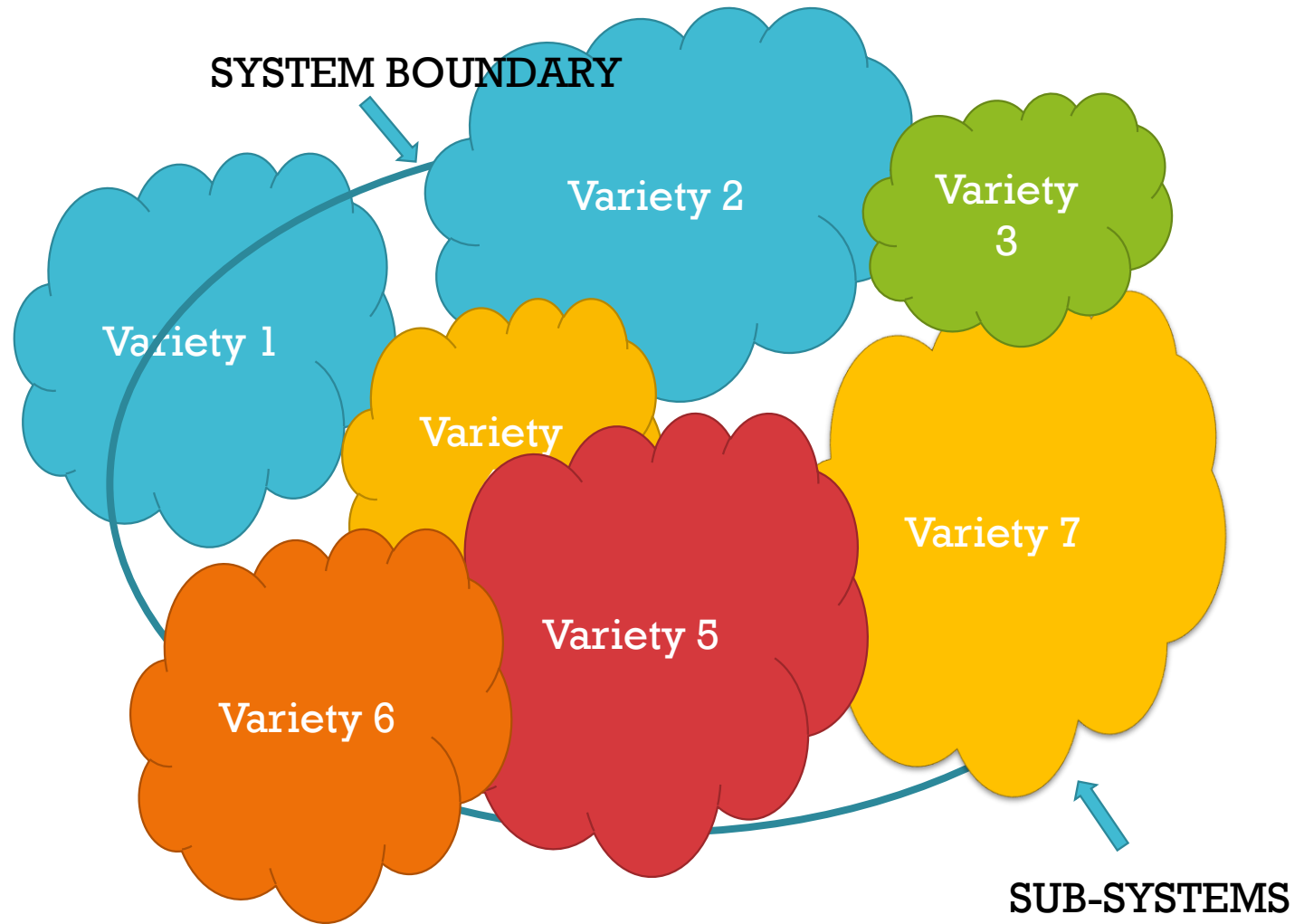
Variety of control system must be greater than the system being controlled
(Ashby's Law of Requisite Variety)

Example:
Control variety
(teacher) vs
System variety
(children)



Variety available to teacher must be greater than that generated by

Real situations with dynamic variety distributions



- Distributions of variety and control and ownership are changing continuously in highly interrelated ways

Variety Dynamics Axioms

We have identified **15 Variety Dynamics axioms** to date. For example:

Axiom 1:

For complex, layered and hierarchical systems involving multiple constituencies in which the distribution of variety generation and control is uneven across the system

THEN

The differing distributions of generated and controlling variety result in a structural basis for differing amounts of power and hegemonic control over the structure, evolution and distribution of benefits and costs of the system by particular constituencies.

Practical
example of use
of Axiom 1:

Activists vs
motor industry



Environmental activists were able to overcome motor industry resistance to emissions control:

1. Activists asked motor industry to implement strict emission standard - motor industry refused
2. Activists persuade each state to create **different** emission standards (i.e. increased variety beyond motor industry's ability to control)
3. Motor industry agrees to single strict emission standard

Management of variety resulted in transfer of power to activists from motor industry.

CPTED and Variety Dynamics Axiom 1 and Natural Access Control



Variety Dynamics Axiom 1 explains Natural Access Control works by:

- **Reducing the variety** available to criminals
- **Increasing the variety** available to guardians

Axiom 1 ALSO reveals that natural access control can be made more effective by **increasing the variety** available to guardians **in other ways** - in addition to CPTED methods

Variety Dynamics Axiom 1

Protecting women on transport



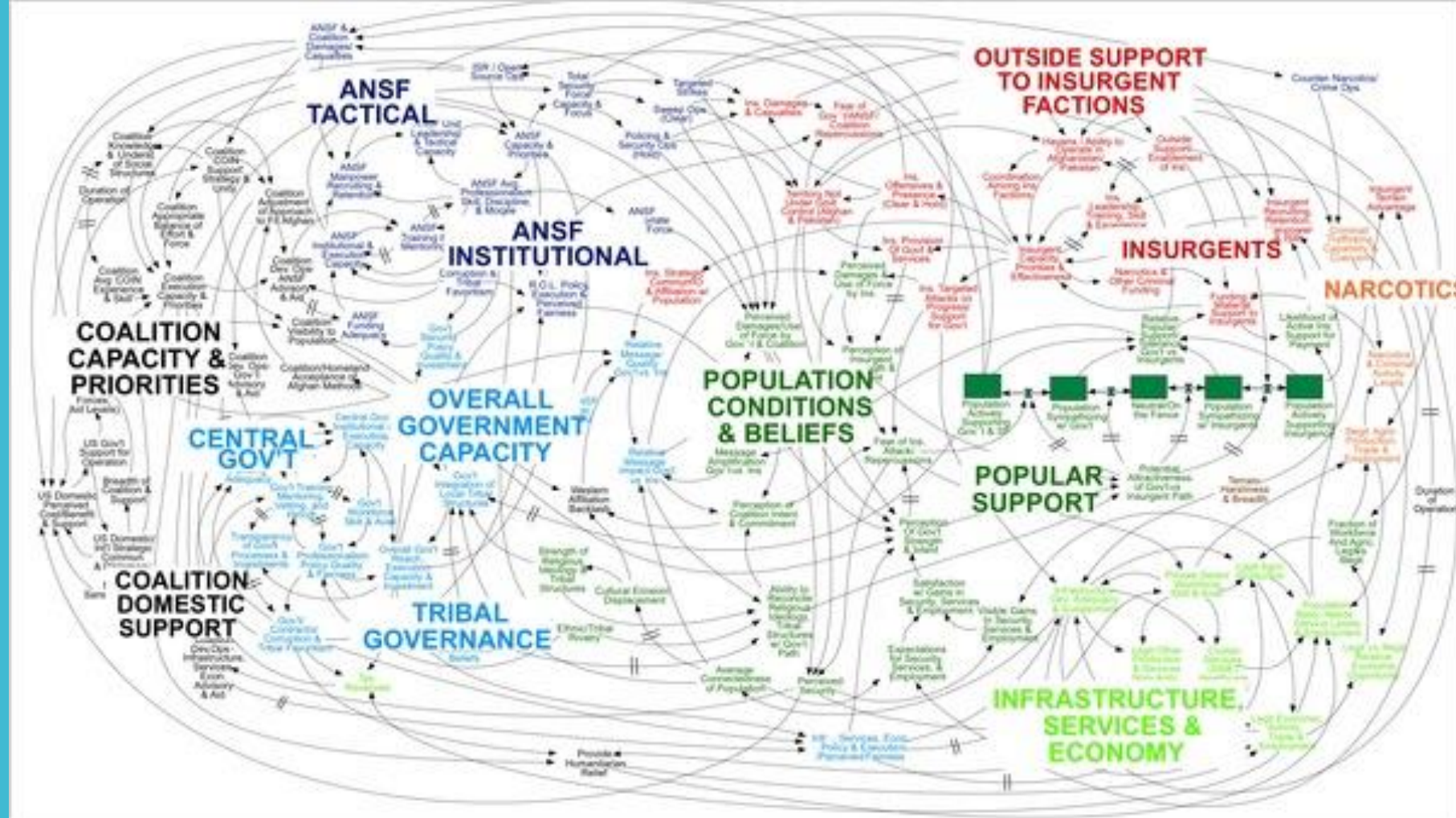
Applying Variety Dynamics Axiom 1 to **reducing assault of women in transport environs:**

- **Reduce the variety** available to men
- **Increase the variety** available to women

Only changes to variety are needed to change the outcomes.

No need to think in terms of specific CPTED or security methods

Example of variety dynamics in a complex context



Variety available to military **less than** variety available to insurgents, e.g. Pashtunwali

Benefits of Variety Dynamics for CPTED

Variety Dynamics provides:

1. Explanation of why CPTED strategies work or don't work
2. Makes visible other new kinds of CPTED strategies
3. Provides basis for integrating CPTED with other crime control
4. Enables CPTED to extend into more complex (wicked) situations
5. Provides basis for understanding effects of 2nd Gen, 3rd Gen and Cyber-CPTED approaches
6. Enables effective crime prevention without considering CPTED principles
7. Unifies CPTED principles and theories (including ones not yet identified)

Benefits of Variety Dynamics in general

In general, Variety Dynamics Axioms provide:

1. Understanding of power and control in complex contexts
2. Effective strategies for control of more powerful groups by less powerful groups and vice versa
3. Improved theoretical foundations for a wide variety of disciplines
4. Strategies for improving effectiveness of most activities

For more information on Variety Dynamics in CPTED

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CPTED Resources

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CPTED Resources

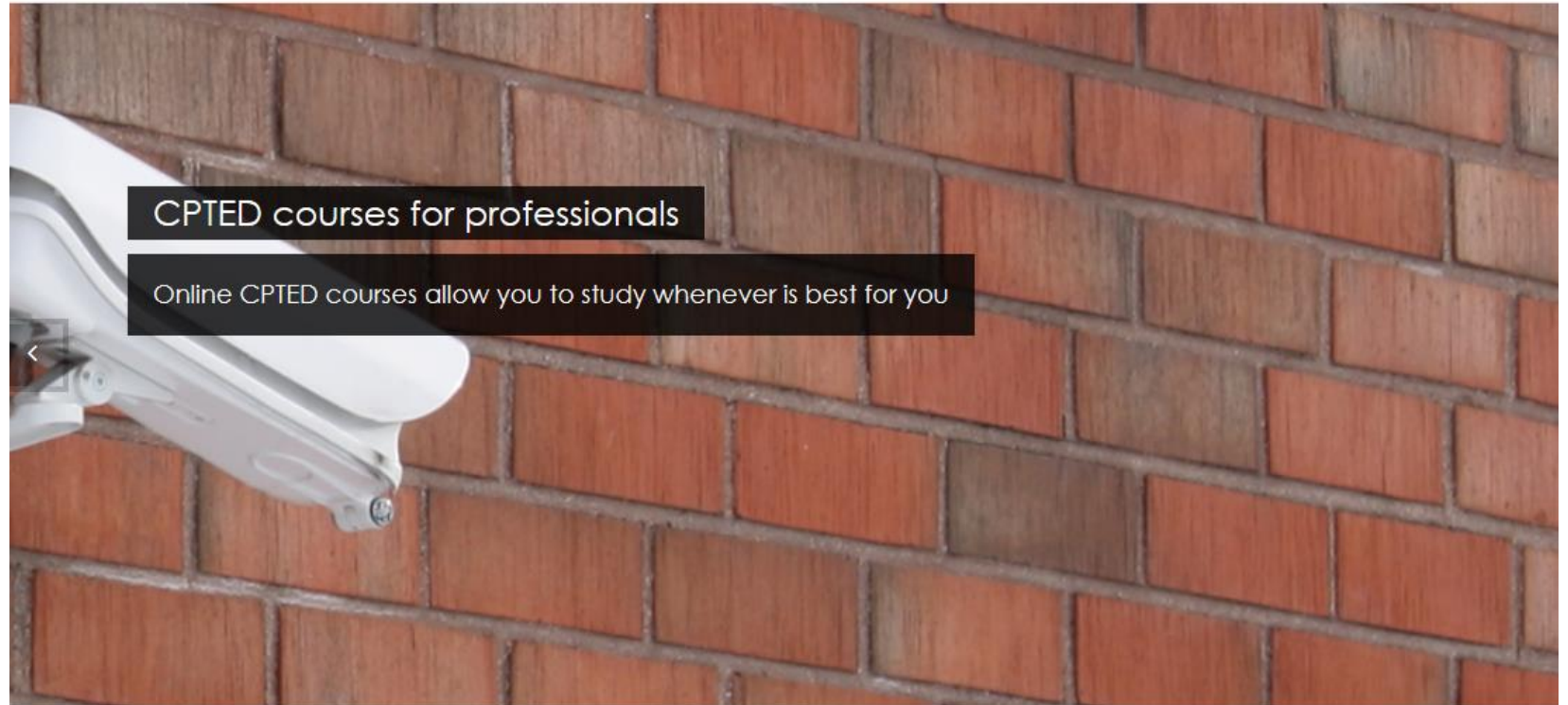
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Design Out Crime and CPTED Centre



CPTED Online Training and Certification

www.CyberCPTED.org



Available courses

Introduction to CPTED (ONLINE course with certificate)



The **Introduction to CPTED** course is a **certificated** foundation CPTED course for community safety staff, rangers, ne small business managers, and planning and architecture professionals.

The course provides a practical grounding in CPTED principles to reduce crime. There are 10 lessons each with a C

“The best available synthesis of information on CPTED”

from www.praxiseducation.com or www.designoutcrime.org

