THE NEED OF SCALE INVARIANCE FOR THE MANAGEMENT OF MICROSYSTEMS

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What does it mean to “manage”?

manage
/ˌmænɪdʒ/ ▪

Manage := be in charge of (a business, organization, or undertaking); run.

be head of, head, direct, control, preside over, lead, govern, rule, command, superintend, supervise, oversee, administer, organize, conduct, handle, take forward, guide, be at the helm of.

Management requires the ability to understand and describe what is going on, to influence what happens, to measure changes, and to evaluate them.
The boundary problem

Systems at different levels are usually managed in different ways. Since the levels are mutually dependent this creates a boundary problem.

Multiple mesosystems are in turn managed by a higher level (macro) system.

Multiple microsystems are in turn managed by a higher level (meso) system.

Microsystem: smallest functional units of healthcare systems (sharp end)
Concerns at different system levels

Macrosystems must manage multiple mesosystems as well as themselves.

Mesosystems must manage multiple Microsystems as well as themselves.

Microsystems can focus on managing themselves (the clinical “coalface”)

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What is scale invariance?

Scale invariance is a feature of structures or functions that does not change when the scale changes. Scale invariance is attractive because the same principles apply on multiple levels.

Fractals are an example of structural scale invariance: An object whose parts, at infinitely many levels of magnification, appear geometrically similar to the whole.

Concepts and methods that are preferred – and make sense – on one level may not be appropriate at another level.

The lack of commonality (scale invariance) impedes a smooth interface and interaction among (sub)systems at different levels or scales.

Managing how another system works presumes that the description of how it works (WAI) corresponds to what actually goes on (WAD).
Does WAI correspond to WAD?

WAD
- Internal Leadership style
- Measurements Targets / criteria
- External Leadership style
- Measurements Targets / criteria

WAI
- Internal Leadership style
- Measurements Targets / criteria
- External Leadership style
- Measurements Targets / criteria

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MACRO

MESO

MICRO

Examples of externally (imposed) ideas

Clinical pathway: a multidisciplinary management tool based on evidence-based practice for a specific group of patients with a predictable clinical course, in which the different tasks (interventions) by the professionals involved in the patient care are defined, optimized and sequenced.

Patient Safety Indicators (PSIs): sets of measures of adverse events that patients may experience when exposed to a health care system. The events may be preventable by changes at the system or provider level.

Leadership style: the recommended way of making decisions, providing direction, implementing plans, and motivating people. (Examples: authoritarian, paternalistic, democratic/shared, laissez-faire, transactional, transformational.)

Ideas or principles that make sense on one scale or level (e.g., macro or meso), may not make sense on another (e.g., meso or micro). Lack of scale invariance may lead to misunderstandings and reduced efficiency.
Decision making on different levels

**MACRO**
- Calculative - costs dominate benefits
- Parkinson’s Law of Triviality

**MESO**
- "Muddling" through Satisficing

**MICRO**
- ETTO (Efficiency-Thoroughness Trade-Off)
- Recognition Primed Decision Making
Do the performance targets and indicators used by one level match those used by other levels?
Management requires the ability to understand and describe what is going on, to influence what happens, to measure changes, and to evaluate (relative) developments.

Resilience is an expression of how people and organisations cope with everyday situations - large and small – by adjusting their performance to the conditions.

Resilient performance requires that an organisation has the potentials to respond, monitor, learn, and anticipate.

The four potentials for resilient performance are scale invariant.
Health care comprises systems on various scales (micro-meso-macro). When concepts/methods are not scale-invariant, additional efforts are needed to "bridge" the “cognitive distance” that can adversely affect the ability to cooperate and lead to misunderstandings and reduced performance efficiency.

Issues to consider:
How can the understanding of scale invariance be improved?
What kind of research is needed?
What practices should be adopted to improve scale invariance?

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