

**Rewriting the grammar of secondary schools:
Lessons in paradigm change from multi-age
organisation**

Peter A Barnard

**Submitted in partial fulfilment of the requirements for the degree
of Doctorate in Professional Studies by Public Works
awarded by Middlesex University**

December 2020

Acknowledgements

As a lifetime teacher, I acknowledge that even I might have given-up if all students were like me!

It was my good fortune to be guided by academic tutors who felt that I might have something to say about schools as organizations and viewed me as some sort of project worthy of rescue. As such, Dr Gordon Weller and Dr Leena Robertson threw me many life-lines, showed unbelievable patience, and caused me to read, rethink, and rewrite endlessly, reminding this student of the joy in learning and abductive discovery.

I feel that I have travelled far in the few years at Middlesex University, grown considerably older, and perhaps a little wiser. It is at this journey's reflective end, that I begin to realize what I have been struggling to say in books and papers. Meanwhile, my house has become a tip containing more books and papers than I could ever have imagined, and my desk a mess felt-tipped markers, stickers, lost staplers, and miscellaneous and unreferenced notes. The photo-copier is now contemplating a well-earned holiday, and the shredder plans to go with it.

I know this small apple of thanks to my academic advisers will never be enough for the time and care given. You 'guys' (what else could I say?) have released into the world a wiser, more thoughtful, and more considerate version of me, and for that my autopoietic self is both surprised and grateful. Whether or not it lasts is debateable. While taking with me much that is new or changed, I will nevertheless hang on to my political incorrectness as a lasting reminder of our journey. Whether or not this submission is successful, it is well-intentioned and speaks to who I am, faults and all!

Finally, I am indebted to the thousands of practitioners and hundreds of schools that have listened to my ramblings and suffered on programmes of transformative learning. Working with the many saints who walk school corridors is such a privilege.

As for my partner of forty years, Patricia worries that I shall stop writing and get bored. She understands that I have spent a lifetime apologizing for one thing or another and thinks I would do far better writing a steamy novel.

Take care and thank you,

Peter A Barnard

05/12/20

Middlesex University

Table of Contents

Context statement and lines of inquiry	1
The wickedness of problems and assumptions	1
Lines of systemic inquiry contained in the public works	2
1. Organizational theory:	2
2. Autopoiesis:.....	3
3. Complexity theory:.....	4
4. Transformative learning (TL):.....	5
5. The linguistic turn:	6
6. Systems thinking:	7
A Word on governmental policy and regulation	7
The author of the public works and his situation.....	9
The organization of this commentary	11
Chapter One: Abstract: the main findings of the public works	11
Chapter Two: Public Works.....	11
Chapter Three: How the public works resolve wicked problems:	11
Chapter Four: The public works and the grammar of schooling	11
Chapter Five: Complexity, capacity, and practices arising from the public works	12
Chapter Six: Hermeneutic circles, capacity, and schools.....	12
Chapter Seven: Transformative learning as phronetic organizational research	12
Chapter Eight: The contribution to knowledge of the public works.....	12
Chapter Nine: End-word, and philosophical reflections	12
Chapter 1. The main findings of the public works	14
1.1 The other ghosts in the machine	14
1.2 Capacity and structure	15
1.3 VT schools, organizational change, and capacity.....	15
1.4 A virtuous circle.....	16
1.5 A service report on school systems	17
1.6 A short note on organizational learning	18
Chapter 2: The public works (books)	19
2.1 The list of Public Works.....	19
2.2 Written works (books)	19
Chapter 3. Public works (papers)	25
Section A.....	25

3.1 Resolving the challenge of parental engagement	25
3.2 Defining partnership	26
3.3 Parent partnership and the relational school	27
3.4 The challenge of Implementation	28
3.5 Partnership and change	30
3.6 Notes on relationships and trust.....	31
3.7 A short word on psychology, collaboration, and child development	31
Section B	32
3.7 The capacity issue	32
Footnote:.....	34
3.8 Capacity, the learning organisation, and the public works.....	34
3.9 Developing schools as learning organisations?	35
Chapter 4. The public works and the grammar of schooling.....	37
4.1 Right analysis, wrong prognosis.....	37
4.2 The school and organisational theory and practice.....	38
4.3 The grammar of schooling	39
4.4 Wicked problems and the challenge of social design	40
In conclusion	41
Chapter 5. Complexity, capacity, and practice.....	43
5.1 Organisational problem solving	43
5.2 Ashby’s law of requisite variety and the capacity issue.....	45
5.3 Autopoiesis and homeostasis:	46
5.4 Learning in loops	48
5.5 Summary:	48
Chapter 6. Hermeneutic virtuous circles, capacity, and schools.....	50
6.1 The problem of purpose	50
6.2 Capacity, change, and the virtuous circle	50
6.3 Defining capacity as a means of problem-solving.....	51
Chapter 7. Transformative learning	53
7.1 Phronetic inquiry.....	53
7.2 The process of transformative learning (TL).....	54
7.3 Levels of organisational consciousness.....	55
7.4 TL as phronetic organisational inquiry	57
7.5 Ethical considerations in transformational learning.....	59
Chapter 8. The contribution to knowledge of the public works.....	60
Chapter 9. Philosophical reflections.....	63

References	68
Appendices.....	78
Appendix 1. The VT system explained	78
Appendix 2. Additional information re books and papers.....	81

Context statement and lines of inquiry

The author's public works described below are systemic in style but embrace a multi-disciplinary perspective. They speak of incoherence in the traditional structure of schooling caused by same-age organization, more accurately, an incoherence in structuration, the duality of structure and agency described by Giddens (1979). The public works argue that as the complexity of social and learning demands on schools increase, the same-age structural form is increasingly unable to cope and that any attempt at an upgrade will not work. To mask this learning handicap, the school as an organization changes how it communicates, deploying semantics and linguistics to subvert the meaning of care, capacity, complexity, and collaboration. The public works argue that such an unconscious process negatively impacts both individual and organization learning besides being detrimental to participant wellbeing. Put simply, schools are using the wrong organizational system.

The public works argue that the perpetuation of the traditional same-age organizational structure used in secondary schools accounts for *the failure of reform* and the apparent resistance of schools to change. Such a problem is exacerbated by the absence of a viable alternative form of organization, a systemic way of seeing that exposes organizational assumptions and frames of reference, what is happening at the level of policy reception in the everyday. The arrival of the vertical tutoring system provides such a lens and the means by which the two systems (same-age and multi-age) can understand and see each other.

The thesis of the public works argues that the inability of schools to match their capacity to cope with system demand embeds an unconscious process (mindset) of reasoning, the "defensive routines" observed by Argyris and Schon and described by Dick and Dalmau (1990). The prolonged absence of a viable alternative exacerbates such unconscious self-deception.

The public works have six broad intentions:

1. To describe a viable and alternative form of organization called the vertical tutoring system (VT) trialled by schools worldwide.
2. To use the VT model as a means of interrogating existing assumptions and frames of reference used in traditional same-age schools.
3. To illustrate the transformative learning challenges involved in such a paradigmatic shift.
4. To show how the "lines of inquiry" (described below, pp. 2-6) can be used to account for the failure of reform.
5. To show how and why age-group organization determines the grammar of schooling (the way schools work)
6. To explain how vertical integration (multi-age grouping) releases the agentic capacity needed for paradigmatic change.

The wickedness of problems and assumptions

Thomas Kuhn (1962) noted that any paradigm shift has two necessary components. The first is the realization that the existing approach is failing and the second is the arrival of a viable and alternative strategy that explains such demise. Without the arrival of the replacement strategy, it is difficult to know what is going wrong and why the traditional model is unresponsive to the fixes applied and attempts at reform. While describing the characteristics of wicked problems, Conklin (2006) noted, "The problem is not understood until after the formulation of a solution". Without the

arrival of what Stafford Beer (1984) called “a viable alternative model”, there is no choice other than to persist in trying to upgrade the one that malfunctions.

The public works describe such a viable alternative (the vertical tutoring system), one equipped to respond ecologically to the complexity of individual and organizational learning demand. Without this viable alternative, “the defensive routines “ noted by Senge (2006) persist and become entrenched, and so can only access single-loop learning strategies that have failed in the past.

Among the assumptions of traditional same-age revealed by VT schools are the following statements of belief gleaned from multiple school prospectuses:

- Secondary schools are open systems that are receptive to ideas, embrace change, and serve their communities.
- Schools care passionately about their students and have multiple systems and policies designed to secure and enhance wellbeing and learning.
- Schools believe in parent partnership (collaboration) and have a communication strategy that ensures parents can engage in their child’s learning and development.
- Schools aim to develop the potential of every child through high-quality learning relationships and curricular programmes.
- Schools act in ways that are congruent with child development and psychology.

While all school can readily point to policies and provide copious examples of good practice to support these assumptions, the experience of participant actors (staff, students, and actors) tells a different story, one incongruent with such statements. By applying the following lines of inquiry to each system, the dichotomy becomes apparent.

Lines of systemic inquiry contained in the public works

The lines of inquiry set out here indicate differences between the beliefs and values espoused by school leaders (above) and the operating system meant to deliver such services. In simple terms, school organizational practice fails to reflect school rhetoric.

The fortuitous discovery that age-grouping acts as a leverage point provides a means of understanding what is happening and pinpoints where to look for evidence. These lines of inquiry and the hermeneutic circle, abduction, and empiricism they enable are as follows:

1. Organizational studies
2. Autopoietic theory as applied to social systems
3. Complex adaptive theory
4. Transformative learning processes (reflexivity via perturbation)
5. The linguistic turn
6. Systems thinking theory.

These lines of inquiry interweave; each one informs the others and is informed by the others. Some of the pertinent points that guide the public works are as follows.

1. Organizational theory:

Laloux (2014: 36) describes five colour-coded levels of organizational consciousness. He places public schooling at the second-lowest level (Amber), where organizational consciousness emerges from tribalism (Red) exemplified by militias, street gangs, and the mafia. Amber is a push-management world of stable hierarchies, Taylorism, Douglas McGregor’s system X (McGregor, 2005), new public

management (NPM), organizations driven by results and top-down decision-making. For Amber, practitioners cannot be trusted but are nevertheless compliant, conformist, non-ambitious, and change-averse. For Laloux (2014: 23), such an organization is wrapped in a social fabric of identity maintenance, siloed into insecure groups that exhibit an “us versus them” (staff v. bosses; school v. politicians) mentality. This organizational world comprises “titles, ranks, and uniforms”. For Amber schools, “stability is valued above all else through rigorous processes, and the future is repetition of the past”, Laloux (2014: 36).

Today, arguably, attempts are in hand to re-settle schools as “Orange” organizations (the next level of organizational consciousness), where the goal is to beat the competition using management by objectives and command and control systems. Laloux places *charter schools* in this group where innovation, accountability, and meritocracy rule. While the army and stable hierarchies signify “Amber”, “Orange” is signified by “the machine”.

The next stage of organizational consciousness (“Green”) is a culture-driven organization where empowerment, values, and stakeholder participation are critical, a level signified by “family” and the level at which VT schools have set up camp.

For change to occur (for organizational consciousness to develop), schools need a clear idea of their current level of organizational consciousness and an understanding of how power structures determine operational behaviour. Any increase in organizational consciousness is dependent on school leaders engaging with sufficient reflexivity to break through existing frames of reference (unlearning) and expose operational assumptions, the “metanoia” described by Senge (2006: 13). Like Senge (2006), Schein (1996), and Lewin (1948), Fred Laloux highlights the role of organizational consciousness in determining systemic activity and human behaviour. Beyond Green is Teal. Each colour brings with it evolutionary change. For Teal, this includes self-management, wholeness, and evolutionary purpose (Laloux, 2014: 56).

2. Autopoiesis:

Betts (1998) describes schools as being party to “paradigm paralysis or mumpsimus”. Betts describes a closed system as one that cannot import energy or create the new energy it needs to avoid entropy. It requires constant investment and new parts to maintain stability, minimize internal change, and control external input (reform). A school’s inability to adapt ensures maintenance of the status quo. Its hierarchical structure is too rigid and with too few levels, makes it unable to absorb complexity. The (Green) solution (Laloux, 2014; Wilber, 2014: xviii) is to release agency, liberate management and create multiple actuating mini-hierarchies that can form and dissolve as needed.

Banathy (1991: 80) describes an open system as follows:

- It interacts with constantly changing (multiple) environments.
- It copes with constant change, uncertainty, and ambiguity while maintaining the ability to co-evolve with the environment by changing itself and transforming and the environment.
- It lives and deals creatively with change and welcomes—not just tolerates—complex and ambiguous situations.
- It becomes an organizational learning system, capable of differentiating among situations where maintaining the organization by adjustments and corrections is appropriate (single-loop learning) and those where changing and redesigning are called for (double-loop learning) (Argyris 1982).
- It seeks and finds new purposes, carves out new niches in the environment, and develops increased capacity for self-reference, self-correction, self-direction, self-organization, and self-renewal.

- It recognizes that the continuing knowledge explosion requires a two-pronged increase in specialization and diversification *and* integration and generalization.
- It increases the amount of information it can process, processes it rapidly, distributes it to a larger number of groups and people, and transforms the information into organizational knowledge.

Much of organizational theory suggests that schools are non-adaptive, closed, and slow to evolve from command structures to networked structures (Magalhaes and Sanchez, 2009; Wilber 2014, Seddon, 2016).

Autopoiesis is concerned with system behaviour and has its “roots” in the theory of biologists Humberto Maturana and Francisco Varela (1980). Autopoiesis describes a process in which a system is concerned only with (re)-producing itself. Despite its biological genesis, autopoiesis reflects much of the modernist project and technical rationalism of “Amber”, as described by Laloux (2014). There is a systemic reason for seeing schools as hapless victims locked into a lonely and insecure design construct. In autopoietic terms, the school as an entity becomes increasingly self-contained and Borg-like, sculpted by the need to survive and maintain identity. To do this, the school differentiates itself from its external environment, creating an operationally closed system (Luhman, 1989; Wolfe, 2010) maintained by a combination of rationalization and a dormant level of organizational consciousness.

For Overwijk (2021: 143), “Rationalization must be understood as the operational closure of socio-technical metrological systems”. He describes such systems (like schools) as “spiralling into control”, citing “the historical irreversible complexity” described by Luhmann (1989: 41). For schools, structure and agency are tightly coupled, and this restricts self-organization and emergence. Organizational behaviour becomes aligned and attuned over time, restricting social change, political contestation, and critique (Overwijk, 1921). The autopoietic school’s single concern is (re)-production of its *self* and so tends towards homeostasis, treating external perturbation (like school reform) as an unwanted irritation (see, for example, Vanderstraeten, 2000; Magalhaes and Sanchez, 2009; Goldspink and Kay, 2003; Bunyard 2010; Luhmann and Schorr, 2000; Barnard, 2021; Overwijk, 2021; Mingers, 2003). Using autopoiesis as a metaphor, the school as an entity is described as self-referencing, self-constructing, autonomous, and closed (Atkinson, 2015: 18). It replicates (re-produces) itself over time and focuses on producing communication. For Luhmann, human agency is mainly absent in such a system and services the structural maintenance duties needed for (re)-production and controlling complexity.

3. Complexity theory:

The surprising lesson to learn about traditional secondary schools is that they are not complex systems (Glouberman and Zimmerman, 2002; Boisot and McKelvey, 2016; Barnard, 2021) and attempts to make them complex (Hawkins and James, 2018) cannot reconstruct them using existing elements. Without an alternative model like VT, it is all too easy to assume that complexity describes large same-age schools. The reason why traditional secondary schools are non-complex relates to the control that structure exerts on agency, described by autopoiesis.

Cilliers (1998) defines complex systems as open, consisting of large numbers of elements that interact dynamically in rich, non-linear, short-term ways “in conditions far from equilibrium”. In turn, these stimulate a multiplicity of feedback loops that produce large amounts of tacit knowledge and information that can be harvested and stored in learning networks. Schools do not operate in this way but believe they do or could with sufficient resources. Schools are undoubtedly confronted with

high complex social and learning demands on their system from participant actors and stakeholders. The school's response, however, is not to absorb the variety of demand on its system as claimed but to reduce (smooth) complexity to make it manageable, i.e., to treat complexity as though it were merely complicated (Pflaeging, 2014). Schools do this by exercising tight control over agency, limiting communication, and reducing the feedback loops needed for individual and organizational learning, maintaining their Amber credentials.

Descriptions of this process (Glouberman and Zimmerman (2002); Ashby (1956); Barnard (2019) highlight differences between the technical rationalism of closed, complicated systems with their long referral pathways for the disaffected and the complexity of open adaptive systems. The latter can be better suited to absorb the complexity posed by individual and organizational learning needs.

For a school to absorb the complexity of the learning demand on its system, the system must have an equally complex (not complicated) organizational response (Ashby's Law of Requisite Variety). The traditional same-age school locks structure and agency, rendering it unable to cope with fluctuational increases in learning demand. To cope, the school uses its control over communication to restrict (rather than enable) partnership and collaboration, closing down agentic feedback loops (smoothing). Given the way schools allocate human resources and control agency, they never appear to have the funding needed to do all the jobs asked of them. At the heart of traditional same-age schools is an unresolved issue concerning capacity and demand.

4. Transformative learning (TL):

In the public works, the candidate describes the development of a transformative learning strategy to support schools engaged in systemic change. Many of the realizations in these lines of inquiry emanate from leaders of traditional secondary schools that have chosen to abandon their same-age organizational system and transition to VT as their chosen viable alternative.

TL (organizational consciousness) occurs when participants critically reflect when exposed to the perturbations they might otherwise suppress. In an autopoietic system, perturbations are described as mere irritations to be ignored or assimilated in ways that ensure minimal impact on structure, the failure to adapt. The idea of TL (Mezirow 2003; Schein, 1996) is to create a discourse involving "disorientating dilemmas" and "disconfirmation" to coax school leaders into a reflexive response. The aim is to facilitate the move from "Amber" to "Green" in Laloux's terms.

An outline of the TL process developed by Barnard (2021) and based on the work of Kurt Lewin has three components, rationalization, deconstruction or unlearning, and co-construction:

a) School leaders are invited to give their unexpurgated worldview, an explanatory narrative of how their school works and the espoused reality. This picture is agreed without equivocation. The leadership team (LT) describes how the school operates, cares for all students, communicates, and collaborates. For every contingency, there is a policy. Without exception, leaders believe their schools do all they can to support student and organizational learning – the leadership team's reality.

b) The consultant as an insider-researcher then creates a narrative for discussion based on the leadership team's reality by role-playing system users (staff, students, parents). The narrative hinges on three direct and unqualified questions:

- I. Does the school care about the students?
- II. Does the school communicate and collaborate?
- III. Does the school believe in parent partnership?

Such questions are intentionally provocative and perturbational and posed in a rare moment when leaders elect to make themselves vulnerable and open to learning. The subsequent discourse reveals fundamental differences between participant actors' (lived) experience (the policy reception described by Gowlett *et al.*, 2015) and the account offered by the leadership team (LT). Two realities emerge, the system theory espoused (what leaders rationalize is happening) and the system-in-use (what happens in practice). Such a discourse allows the leadership team (LT) to critically reflect on practice, unpack espoused rationalization, and expose organizational assumptions masked by the unconscious use of linguistic interpretation.

c) Co-construction: only by deconstructing the same-age mindset can a leadership team engage with a design solution like VT, the process of “conscientization” described by Pablo Freire (1970). In effect, perturbations provoke the reflexive response needed to develop organizational consciousness. School leaders come to realize the frailties of their existing system, often an emotional experience of seeing their school and the behaviours it causes for the first time.

5. The linguistic turn:

Putnam and Cheney (1985: 131) describe organizational communication as “the study of messages, information, meaning, and symbolic activity”. Luhmann’s interpretation of autopoiesis suggests that schools produce communication, and communication determines organization (Luhmann and Schorr, 2000; Putnam *et al.*, 1996). For Deetz and Mumby (1985), linguistics is a means of interpreting and conveying meaning, a process Deetz says is “far from neutral”. Different hierarchical status layers have different access rights to information in schools, accompanied by different nuances and interpretations. These enable the system to retain power structures, control agency and shore up defensive relationships (Argyris, Putnam, and McLain-Smith 1985: 86).

Weakland, Warzlawick, and Fisch (1974) describe First and Second-Order Change, the equivalent of the single and double loop learning described by Argyris and Schön (1974 and 1978.) First Order Change refers to alterations within the norms of the system (e.g., pedagogy, curriculum, policies, and the role of leadership). Second-order (double loop learning) change occurs when the organizational norms themselves change. Given that the norms (ostensibly, hierarchical structures of power and control) have remained unchanged for so long, schools continue to use self-referencing, single-loop learning strategies to resolve issues that then repeat over time. Schools unconsciously justify a seemingly dissociative identity disorder by managing the school’s messaging and communication system (the rationale described by Luhmann).

Barnard’s bespoke work with large numbers of secondary schools (almost 300) engaged with transformative learning supports the two-model hypothesis described in the work of Argyris (1985; 1982, Ch. 5). During the rationalistic first stage of TL, school leaders describe their school as open, caring, communicative, collaborative, supportive, and partnering. They believe they use valid information, participative processes and encourage public testing of evaluations, all features of Model 2 (Argyris, 1982). They *espouse* a double loop learning view of the school as malleable, flexible, and able to absorb the complexity and variety of demand on their school’s system (again, Model 2). However, Argyris claims (as does Barnard, 2021) that in practice, leaders operate Model 1, restricting schools to single loop learning strategies that have no impact on organizational change (Argyris *et al.* 1985). Model 1 (single loop) is characterized by tight control over the working environment and tasks and exemplified by self-protection, defensive relationships, reduced production of valid information, no public testing of ideas, and low freedom of choice (Dick and Dalmau, 1995). To protect and validate themselves, leaders use linguistics to justify such an incongruence and so distort reality.

The unconscious adaption of linguistic meaning – in part the self-deception described by Trivers (2011) and Goleman (1985) – maintains an illusion that the theory of action and the system in use are congruent. In practice, the meaning of words like *communication*, *collaboration*, *partnership*, and *care* are continually redefined and adapted to mask discrepancies between the two models (1 and 2).

At the *Humpty Dumpty School of Management*, described by Lewis Carroll, Alice discovers that for Humpty Dumpty, words can mean whatever he wishes them to mean.

“When I use a word,” Humpty Dumpty said, in rather a scornful tone, “it means just what I choose it to mean—neither more nor less.” “The question is,” said Alice, “whether you can make words mean so many different things.” “The question is,” said Humpty Dumpty, “which is to be master—that’s all.”

6. Systems thinking:

Donella Meadows (1982) said, “A truly profound and different insight is the way you begin to see that the system causes its own behaviour” (cited by Senge, 2006: 43). While the social sciences point to frailties within organizational processes and what appear to be personnel (will and skill) issues, systems thinkers take a holistic view, seeking out distortions and behaviour caused by the system itself. Systems thinking is not a toolbox of reductionist tricks but a holistic and ecological means of understanding. Two immediate concepts come to mind. The first is *self-organization*, described by Meadows (2009: 188) as “the ability of a system to structure itself, to create new structure, to learn, or diversify” (Model 2 in effect). The second concept is *sub-optimization*, described by Meadows (2009: 188) as “behaviour resulting from a subsystem’s goals dominating at the expense of the total system’s goals” (Model 1).

Sub-optimisation occurs when (say) a school’s measuring system replaces its values system, establishing a *de facto* purpose, one that assumes or discounts individualism, diversity, and the goal of goodness. Systemic analysis of schools using these “lines of inquiry” suggests that performance measures have replaced values and created a *de facto* purpose. Instead of values determining what is measured and the measures informing method, a switch has occurred. When the production of performance measures becomes the purpose, this change distorts method (the pedagogy of teaching to the test), locking the school into inescapably defensive routines.

A Word on governmental policy and regulation

The lines of inquiry point to significant frailties within same-age design thinking. Stafford Beer coined the heuristic POSIWID; *the purpose of a system is what it does* (Beer 2001). If mental health and wellbeing are deteriorating, if the development of character proves problematic, if home-school partnership is in decline, if measures replace values, and if technology makes matters worse for many, these are allied to the systemic purpose, what the system causes to happen, i.e., the system creates the divisions it needs to function and to deliver on the purposes asked of it. Such unintended consequences are the fallout from the purpose.

As matters deteriorate and the variety of demand on schools increases, the technical rationalist school faces a capacity issue and calls for increased investment to address what it perceives as a resourcing and management problem. Legislations respond by pumping more money into the system or engage with curriculum editing and correction.

Two UK examples follow.

1) Given the marked decline in mental well-being associated with schools (see the overview by Adams, 2018), funding is provided to enable every secondary school to have a trained mental wellbeing coordinator or school counsellor. This intervention seems to be a sensible and rational response that has been welcomed passed largely unquestioned. With only one model, there is no rational alternative.

2) An equally complex set of concerns invariably lobbied by influential charities and vested interest groups involve student character, dispositions to learning, resilience, and what is called “grit” (Duckworth 2017). Once again, the UK government has responded to these concerns to deal with the social challenges concerning student character, perseverance, relationships, and learning (Dweck, 2010), by making personal and social education (PSHE) compulsory¹ (curriculum editing). Character, it is assumed, can be taught!

Both strategies increase costs, bureaucracy, and management. However, instead of addressing systemic causality (double loop), they treat the symptoms given the absence of any viable alternative. This is not to decry their perceived value but to suggest that such actions perpetuate sameness, increase costs and perpetuate the problems they seek to resolve. The public works posit that the totality of the school as a cultural learning experience should be addressed, not the reductionist assumptions.

Both are examples of single loop learning strategies that ignore structural causality. The effect is to increase costs and create further expenditure and the need for re-working downstream. Seddon (2003) calls this “failure demand”, a failure to do what is needed the first time of asking. Instead of dealing with a systems problem (second or triple loop thinking), governments believe (like the school) that such matters are personnel issues and so try and fix the child or the teacher rather than the system that is causing harm.

The road travelled is littered with white papers, reviews, dried-up funding streams, and reports such as *Every Child Matters* and *No Child Left Behind* that have made minimal impact on what might be termed social justice and social mobility. For Trivers (2011) and Goleman (1989), this is self-deception but on an epic scale. Schools continue unaffected, their autopoietic ways shored up by ever more layers of bureaucracy. Participant actors still get ill, staff are still over-worked, and school life still gets more complicated. This process will continue until the realization dawns that there is a viable alternative, a new lens to view the problematique. Placing schools in chains and multi-academy trusts (Salokangas and Ainscow, 2018; Greany and Higham 2018; Babb and Associates, 2019) adds to such homeostasis, stifling innovation, increasing costs, and strengthening control over agency.

The difficulty for schools is not the process of change (all schools can make the switch) but leaving the same-age mindset behind. Authenticity for *Dasein* as Heidegger suggest, is a choice (Heidegger, 1962: 27).

Summary: the six lines of inquiry above are not reductions but an interconnected means of enabling systemic analysis, finding the holes in the wholeness, and a means of understanding the existing mindset. For a learning system to be viable, it must provide a rationale that satisfies each line of inquiry and their hermeneutic interpretation.

¹ The majority of PSHE education became compulsory in all UK schools in September 2020 with the introduction of statutory Relationships Education at key stages 1 and 2, Relationships and Sex Education (RSE) in key stages 3 and 4, and Health Education at from key stage 1 to 4. PSHE education was already a requirement in independent schools.

The author of the public works and his situation

The author's headship career happened to coincide with what Pasi Sahlberg (2016) calls 'the global education reform movement' (GERM) and others call *neoliberalism* or *new public management* (NPM). It is a headship that began with 1980s Thatcherism, survived Michael Barber's Delivery Unit under Tony Blair's New Labour government, and side-stepped subsequent ideas on 'deliverology' and push management theory. It is a career that saw the development of an array of different school models from grant-maintained schools, specialist colleges, training schools, free schools, UTCs, and more. It survived the trauma of the implementation of a national curriculum, standardized targets, marketization, the introduction of stringent accountability procedures, and incessant regulation. More important, it is a career that took an unorthodox and contrary approach to that advocated.

Fortunately, the early influences on the author's management philosophy came from systems thinkers who offered a contrary view of running organizations, ones based on holism, ecology, and relational behaviour. I always viewed Russell Ackoff, W. Edwards Deming, Kurt Lewin, Donella Meadows, Gregory Bateson, Peter Checkland, Kenneth Boulding, Peter Senge, Chris Argyris, Donald Schön, and Margaret Wheatley among others, as being part of my private school leadership team. Other influences come from psychology and other disciplines including Uri Bronfenbrenner, Abe Maslow, Cyril Rutter, Jack Mezirow, John Bowlby, Jonathan Haidt, Daniel Kahneman, David Brooks, and (yes) even Jordan Peterson.

Systemic thinking offers a different tool bag of management skills and a different management rhetoric. Schools are too easily persuaded to distort the behaviour they seek to improve. Deming's fourteen management principles remain an influential guide, including his distrust of systems of appraisal and rewards, and Ackoff's means of resolving /dissolving wicked problems is reflected on every page of my books and papers. Among many others mentioned throughout this commentary, John Seddon and his work on organizations is also influential. John gave feedback on the draft of *The Systems Thinking School* (Barnard, 2013) prior to publication. Seddon remains an advocate of systemic organizational management as opposed to command-and-control structures and shares an optimistic view of people and a pessimistic one of the organizations in which so many work.

Right at the end of this commentary, the realization dawned that I have been following in the footsteps of three others. One is my namesake, Chester Barnard whose insights have proved so accurate. Another is Niklas Luhmann whose systemic application of autopoiesis² to social organizations (like schools) concurs unerringly with the rhetoric of the many school leaders with whom I have worked. The last, but not least, is Bent Flyvbjerg who was kind enough to offer sage advice on the current limitations of social science.

As a former headteacher, a background steeped in systems thinking made it possible to see through the frailty of new public management (NPM) and to experiment with different leadership and management strategies. Eventually, this systems approach set in motion a school design known as *vertical tutoring*, a viable, organizational alternative to traditional same-age structuration (described in more detail in Appendix 1). Its success has led to many schools adopting VT as their chosen organizational form. After 40 years at the chalk-face I was able to build an international consultancy

² Autopoiesis, for any unfamiliar with this expression, is a biological term used to describe living entities as closed, autonomous, self-referencing able to reproduce themselves (almost). When applied to social systems, even metaphorically, the term becomes hotly contested. The author of these public works shows how autopoiesis, nevertheless, offers a useful explanation of how structure and agency work in schools, and the relationship between the school and its environment.

specializing in school organizational change, one that continues to collaborate with individuals and institutes worldwide, my own *candle in the wind*.

This commentary tells two stories. The first is a serendipitous story of organizational change in schools, and the second is one of personal growth. For schools, the story is of an unintended discovery, a system leverage point that led to the development of new practices and a revised theory of organization and ways of knowing based on multi-age tutor groups; a journey in phronesis and autopoiesis. The second is about a contrarian, someone who wanted to be a professional cricketer and drifted into teaching and suddenly found himself climbing to the top of what Chris Argyris called 'the ladder of inference', a place built on assumptions and self-referencing, where very little makes sense. Following a successful career as a headteacher and consultant, I returned to university (2018-2020) as a septuagenarian to put a disparate intellectual life into a more orderly form and to test my theories.

The VT system describes schools organized in ways that enable them to increase their learning and collaborative capacity. They are in their infancy and may yet fail to survive the powerful structural forces like multi-academy trusts, that surround them. However, at this moment, they exist as a values-led alternative and a viable system template. VT schools report that they are happier places of learning and teaching. Because they exist, researchers have access to new avenues of discovery and seeing past old assumptions should they wish. While changing a school is relatively easy; changing minds is not so. One of my few triumphs is the creation of a transformative learning programme based on the ideas of Kurt Lewin and Jack Mezirow, and always 'in-development' thirty years on, but one that schools worldwide continue to access.

There is a caption at the top of my vertical tutoring website, '*One school at a time and a thousand lives made better*'. That 'thousand lives' is now a far more significant number and includes families and communities. It is a number that continues to grow exponentially. Few can claim to have created a new type of school, one values-led, and driven by a goal-of goodness, and I hope the benefits are many and life-changing for participant actors (staff, students, and parents).

In various scribbles and papers, the author has tried to share what he has learnt about system change from the schools that have taught him. These constitute 'public works' and although they comprise a completely inappropriate means of judgement, hopefully, they will be of interest.

The traditional same-age system is far from benign and remains the author's *bête noir*. Such a structure is a major cause of individual and organizational learning problems that schools spend years trying to fix, over and over. Preaching such alchemy to potential converts wrapped in such a comfort zone is not easy, but this is the author's career and his passion. It is a life on a road less travelled, and the experience of returning to university to study has made me strangely understanding of the many lulled into travelling in the opposite direction. Life is full of surprises.

The organization of this commentary

A potted version of VT is available as Appendix 1 and above, and for those for whom time is precious, a summary of the public works is contained in Appendix 2.

Chapter One: Abstract: the main findings of the public works

Chapter one concerns the main findings of the public works, a three-decade investigation into schools as organizations, one that reflects the insights of multiple schools and the practitioners who work tirelessly to make them work. This chapter offers the insights that were previously inaccessible and guarded by a heavily rationalized mindset of assumptions. Chapter Two sets out the main concepts described in later chapters and so precedes the list of public works described in Chapter Two. There is no doubt that Chapter One is controversial and challenging but reflects what the author sees and interprets from extensive experience working in and with schools. The commentary adopts a systems thinking perspective throughout.

Chapter Two: Public Works

Here, the reader will find a list of public works. Only those published and presented are included within the commentary. This chapter offers a reflective summary of published books and how the VT system has developed within a context of rapid environmental change. A more detailed summary of the books and papers is contained under Appendix 2, where a more comprehensive account of the academic papers is provided.

Chapter Three: How the public works resolve wicked problems: two examples

Chapter three highlights the public works by giving two examples where insights from working in and with VT schools, can reformulate an existing problématique. The first is home-school partnership, a subject that attracts seemingly endless research, lists of corrective advice, but no viable solution. By positioning the challenge as an organizational matter rather than a personnel issue, it is possible to analyze what is happening and why based on VT organization, one that adds clarity to the positionality and behaviour of participant actors. This analysis stems from a combination of capacity theory and practice, and complexity theory and shows why and how schools *smooth* value demand.

Similarly, this chapter is critical of attempts to develop schools as learning organizations. It outlines a typical reform strategy and explains why same-age schools cannot develop as learning organizations. Again, there is a smoothing effect, this time in reverse. The reform comes pre-smoothed to give an appearance of change that verges on self-deceit.

Chapter Four: The public works and the grammar of schooling

Chapter four highlights the more general challenges to schools and schooling that the public works seek to resolve. These include a more detailed analysis of *the grammar of schooling* – the school's organizational form, and function – and an organizational explanation for the failure of reform. The public works always work from the organization as the source of school behaviour not from the classroom-out. Central to these public works are a series of puzzles that make no systemic sense. How can schools maintain such sameness over time? Why are schools misdirected from organization to the classroom, pedagogy, and the curriculum as being a remedy for all ills? Why is it they remain behind the learning curve and what can be done about such a plight? Why is the same-age structure treated as benign when it is causal running the whole show?

Chapter Five: Complexity, capacity, and practices arising from the public works

Chapter Five drills deeper into organizational theory and practice by resolving the confusion and between complex and complicated systems. Evidence is presented, and a clear conclusion drawn, i.e. same-age schools are not complex; instead, they treat complexity as being merely complicated, and this leads to a multitude of assumptions and irresolvable problems. Other insights emerge and in this section school capacity becomes an increasingly important issue, and explains why schools are so misunderstood. This chapter starts a conversation about socially collaborative schools, the subject of the author's 2018 book and issues that have arisen from the public works and especially the academic papers (1917-1920). These include applied autopoiesis, complexity theory, definitions of capacity, structuration theory and practice, organizational learning, learning organizations, collaboration, innovation, and emergence.

Chapter Six: Hermeneutic circles, capacity, and schools

From Chapter Five, another difference emerges between same-age organization and multi-age organization which involves access to a virtuous circle. For a school to be regarded as a viable system whose purpose is learning, it must exhibit high connectivity and a cross-border flow of information. This requires collaboration, organizational learning, learning capacity, learning networks, feedback loops and more. An explanation based on capacity shows that same-age schools cannot access this virtuous circle, and this endangers schools and participant actors. In this chapter, autopoiesis comes to the fore together with the work of Argyris and Schön on learning loops, problem-solving, and theories-in-use.

Chapter Seven: Transformative learning as phronetic organizational research

Much of the learning and data that form the basis of the public works derives from the andragogy of Mezirow's ideas on transformative learning. Over two decades, I have developed a training programme based on critical reflection that creates sufficient perturbation to break through overly rationalized assumptions. These sense-making group conversations with school leadership teams are like phronetic organizational inquiry, so much so, that Flyvbjerg's four questions guide this commentary. This process enables schools to expose previously assumed organizational assumptions and co-construct a different form of organization, i.e. a paradigmatic change. It is a process that appears absent from school leadership training in the UK.

Chapter Eight: The contribution to knowledge of the public works

The author is challenged by this area given that so much contradicts the status quo. Nevertheless, the section offers a summary of contributions, and it is for others to judge its value.

Chapter Nine: End-word, and philosophical reflections

Here is a reflective and philosophical summary and an indication for future research possibilities.

It is not possible to painstakingly write a significant commentary without feeling relief and exhaustion in equal measure. This commentary is unashamedly multi-disciplinary in form and is both its strength and weakness. An amateur interest in philosophy allows this systems and organizational activist to reflect on a totality of professional experience spanning fifty years, on schools and the thousands of practitioners, parents, and students that have contributed to this work. It is a peaceful and private end to this part of the journey.

This commentary and the written works together with around one hundred in-depth sessions with school leadership teams involving transformative learning offers insights on how secondary schools operate: the system in use as opposed to the systems espoused!

In presenting the case for a paradigmatic change, the associated public works and the data collected from schools confronts vested interests, challenges processes of power, and reveals unconscious organizational bias and self-deception. They reveal how the same-age system flatters to deceive. But such deconstruction is the starting point. What follows is a reconstruction, a design template for an alternative form of secondary school organization, one that provides a new way of seeing based on the creation of the *higher levels of organizational consciousness* noted by Laloux (2014), the *real social science* advocated by Flyvbjerg *et al.*, (2012), and Niklas Luhmann's multiple and dense work on autopoiesis as communication.

The commentary takes a systemic stance throughout, attempting to reassess the reductionist components of schools and showing how they can be made more ecologically coherent. In her paper, *Bringing Schools Back to Life*, Margaret Wheatley (1990) said this:

Those of us educated in Western culture learned to think and manage a world that was anything but systemic or interconnected. It was a world of separations and clear boundaries: boxes described jobs, lines charted relationships and accountabilities, roles and responsibilities described the limits of what each individual did and whom we wanted them to be. Western culture became very skilled at describing the world with these strange, unnatural separations.

It should be no surprise that this commentary and the public works they describe are a homage to the systems thinkers and teachers who have contributed so much to the author's development as an organizational practitioner.

Guiding this commentary, therefore, are the four questions posed by Flyvbjerg (2006: 374) that form the cornerstone of phronetic organizational research, i.e., 'the practical activity and practical knowledge in everyday situations and organizations'. They are also the basis for the transformative learning programme developed by the author and described in more detail later.

- 1. Where are we going?**
- 2. Is this development desirable?**
- 3. What if anything should we do about it?**
- 4. Who gains and who loses, and by which mechanism of power?**

This commentary refocuses these questions as follows:

1. Where is the same-age model, now 175 years in the making and resistant to any attempt at renewal, taking us?
2. Is it sensible to persist with a model of schooling about which so much is assumed and so little known? If not, what options are there for change?
3. What exactly are the mechanisms of power at work in and around schools, and how can they be accessed in a way that drives a more equitable and ecological modes of learning?
4. Who are the beneficiaries of such a system and who are the losers? If there is limited impact on social mobility, what processes of power are at work to maintain sameness over time, and how might they be reconfigured?

Chapter 1. The main findings of the public works

1.1 The other ghosts in the machine

For a long time as a school practitioner, the author of these public works sensed an organizational flaw at the heart of the secondary school, an annoying and intuitive itch; a feeling that the pervasive thinking about schools and how they work, made little sense. There seemed to be a problem involving organizational consciousness and ways of knowing and seeing. Finding the answer proved to be lifetime's work.

Somehow, it seemed that an organizational truth had been air-brushed out and replaced by a set of organizational assumptions that made no sense. But how, by what? There was a puzzle that required a resolution, an annoying systemic jig-saw with parts missing. Three decades on, this researcher is confident in the following assertion: on balance, the traditional same-age structure, the year-based system that secondary schools use as their operational platform, does considerably more harm than good and especially so for the more vulnerable. Further, any claim by schools develop potential, to be inclusive, to care, and to put participant actors (staff, students, and parents) first, may be well-intentioned, but is nevertheless bogus and rationalized self-deception.

This has little to do with school personnel, children, or parents but a structure that imposes itself on an agency to maintain stasis. The school presents as a classic autopoietic structure, a predictable and familiar form of shadow puppetry that repeats over time and never changes. What we see, however, is not all there is. Behind the curtains are unseen hands pulling the strings and operating the levers ensuring that every performance is untouched by time, reproducing itself again and again.

A second assertion follows. There is much that is wrong with the traditional way secondary schools work that requires attention: this includes how they operate, how they organize their work, how they learn, and the service they provide to participating actors. Paradoxically, there is little wrong with UK teachers, students, or school leadership; they require less attention and management than they currently receive and have more than enough undeveloped potential to be successful. In fact, the way practitioners make the existing same-age structure appear to work is nothing short of astonishing. Any reason for underperformance, therefore, should look quizzically in the direction of the organizational structure in which practitioners work, and this has not happened. Inventing new schools does not change their structural form and only serves to mask deep-seated and uninterrogated causality. To date, there has been no credible or telling analysis of schools as organizations, not for want of trying, but because of the absence of an alternative working template and the presence of a deep-seated organizational mindset forged over time.

Instead, the current same-age organizational system is considered benign, and this creates the belief that when things go wrong as they often do in schools, someone is to blame, or a policy adjustment is needed (a single loop learning approach) to fix the situation. The advent of schools that have abandoned same-age organization for multi-age organization (VT schools) provides the missing template, an alternative means of managing a school and coping with the complexity of variation in the everyday. Such a template reveals management structures and relational assumptions concerning their former same-age iteration that until their formation, were not previously realizable.

A brief explanation suggests the following. Secondary schools operate as closed systems using internal structures of power and bureaucracy that have remained largely unchanged for well over a century. They remain close to stasis and inertia and maintain a fixed level of organizational capacity.

This serves schools well when demand on their system is constant, but in fast-moving environmental conditions when the complexity of demand on the school increases, the capacity to respond can fail, sometimes catastrophically. A key finding evident in the public works shows that schools operating with a same-age structure (year or grade systems) are unable to flex capacity to match demand and this disability sets in motion a chain of other causalities that obstruct innovation and learning. The public works and this commentary explain how and why this is.

There is also obfuscation at work. The school's operating structure is unquestioned and any when mistakes and breakdowns occur, the single loop learning strategy is to see the fault as a leadership error, a failure of pedagogy, or an absence of accountability. While it may be convenient to criticize the will and skill of practitioners, perceived character flaws in children and inadequacies of parenting, such quixotic adventures serve only to avoid systemic interrogation of structural causality.

1.2 Capacity and structure

In recent papers, (see, for example, Barnard 2020), I have tried to show why same-age school structures have limited capacity for absorbing complexity, that an over-reliance on formal organization limits agency. Flood and Romm (2018) describe how schools maintain internal processes of power needed to control using 'task-oriented methods.' Same-age organization is resource-heavy, a system laden with regulation, detailed job profiles, and rules and routines used more to enable inspection and support bureaucracy, than learning. This makes the organizational capacity to handle the value demand on the school's system learning vital.

For a same-age school, *capacity* comprises resources such as available staff, sufficient expertise, and the equipment, time, and space needed to manage complex tasks. These comprise *cost centres* which explain why schools never have enough money. If the tasks asked of schools increase, i.e., value demand rises, more resources are needed. Demand and supply are close-coupled. Problems occur when the formal structure of the school exercises a tight grip on the informality of agency; there is no elasticity to create extra capacity.

Basic system thinking says that for any formal structure to work in a situation where value demand is high, there must be a balancing informal structure with sufficient redundancy (agency in effect) to help absorb demand complexity. For schools with traditional same-age organization³ serving areas of deprivation, the value demand on their system fluctuates creating a capacity supply issue. This insight may seem obvious, and the solution is further investment. But what happens when that investment is not forthcoming, and demand threatens to overwhelm the school? The school starts to reduce (smooth)⁴ demand by cutting back on time, programmes, curriculum, and anything it deems as a none-core essential. The essential structure, however, is maintained. There are no interventions in processes of power.

1.3 VT schools, organizational change, and capacity

VT schools make such an intervention, and so have a different strategy when faced with increased demand. They liberate management by decoupling the same-age (structure/agency) controls. Their workforce has already moved *en-masse* to the organizational edge where distributed leadership can absorb complexity, lessening any need to reduce learning demand. They embrace unpredictability and create an organizational architecture based on trust, training, and enablement. By returning their human resources (leaders, teachers, teaching assistants, and ancillary staff) to tutoring, they

³ Here, *organisation* refers to the relationships between participating actors (staff, student, and parents).

⁴ Smoothing capacity (Barnard, 2020) is discussed in detail later in relation to complex adaptive theory and school management.

create an organization where staff, students, and parents coalesce in a sense-making conversation. All participant actors are engaged in the process of learning.

Effectively they switch from a back-office system with a single-entry portal, to a front-office system with multiple points of entry. The system boundary becomes porous as the school moves from the safety and predictability of a closed system to an open system allowing more information to flow. This process of complexification ensures that a given school has sufficient capacity to intervene faster and cope with whatever value demand arises preventing unending processes of referral. Instead of single loop learning strategies (costs), the school employs a triple loop strategy (systemic change) to solve capacity problems.

Organizational change leads to a massive increase in participant feedback loops and the tacit knowledge needed for innovation. However, it is not without risk. The hidden cost is unpredictability and instability, the so-called *dance with chaos* at the organizational edge. The patterning from such a change liberates management and opens the system in a way that includes parents and families within a newly extended and permeable border. The effect is to energize the school and set it on a more phronetic and synergetic path.

Schools that undertake guided transformational learning are encouraged to reflect critically on system structures and their effect on participant actors (policy reception). While the changes to multi-age organization are interesting, it is the insights such schools offer on same-age organization that are the more revealing. Transformative learning (triple-loop learning) enables the school to critically analyze its same-age iteration and interrogate any organizational assumptions. Once a deeper understanding of the same-age system is known, the wicked problems that plague the schools' being and provide social researchers with an infinite list of speculative inquiry, can be resolved.

An example of such a realization is discussed in chapter three and relates to parent partnership, too long mistakenly considered a personnel issue. Others include the school's approach to care, wellbeing, behaviour, and learning, all of which rely on largely uncontested organizational assumptions.

The advent of VT schools suggests that grouping by age for organizational purposes is far from benign. Instead, it posits that same-age organization is causal and pervasive in its effect, and to think otherwise is to embrace an overly rationalized view of the school's approach to organization, especially so in complex societies like the UK. Social scientists and reformers seem convinced that school improvement is dependent on the 'will and skill' of practitioners and research-based practice while politicians perceive leadership issues as causal. Not only are these views of school improvement insufficient and mistaken, but they unknowingly misdirect attention from organizational causality, inadvertently maintaining sameness over time. We bend to the will of autopoiesis.

If therefore, there is a wish to orientate schools towards more in-depth learning both individually and organisationally, and if there is a wish for a paradigm more cognisant of ecologically-minded values, we need to look to the school for organizational change, not to teacher *will and skill* or curriculum change. Schools in their same-age form neither embrace nor respond to external reform; only schools can change how they operate, and this requires a significant increase in organizational consciousness and a complete reassessment of school leadership training.

1.4 A virtuous circle

There are two more findings to mention here. Same-age structures by dint of their closedness and static capacity issues, cannot access a virtuous circle that combines other organizational contingencies. These involve the way collaboration, complexity, communication, and capacity combine as enablers of innovation and emergence. The necessary information feedback loops in same-age structures are either broken, missing, or only partially functional. In short, these structural contingencies are not connected to enough of themselves, and are obliged to operate on limited information, and this makes schools fragile, insecure, and fearful.

Such organizational disabilities rob the school of agency and subsequently prove harmful to the wellbeing of participant actors (staff, students, and parents). To survive, the absence of sufficient same-age school capacity can only be resolved by working harder, taking on multiple responsibilities, and stretching time on task. VT schools, on the other hand, rely on a full complement of feedback loops to ensure that participant actors (staff, students, and parents) can collaborate in sense-making and information exchange, the intervention and complexification that ensures that all participant players are engaged in the learning process, and the load shared.

The last issue is a concern. A large social industry is now established around schools based on the idea that young people in the UK lack resilience, character, perseverance, and what Angela Duckworth (2018) calls . Further, it is often claimed that disaffected children lack empathy and are unable to form stable relationships. Further, their parents are too often regarded as uninterested and unsupportive (the process of “othering”). Such views, sailing under the flag of inclusion, lead to an ever-expanding personal, social, emotional, and health curriculum (PSHE). Insights from VT schools suggests that many of these perceived problems are caused by the relational culture inherent to same-age organization. Having created such problems, schools spend five years trying to fix what they broke aided by obliging charities and training agencies reliant on schools remaining broken.

Lessons from VT schools that use a design strategy based on mentoring and empathy appear to have less need for bolt-on social programmes. The University of Wolverhampton research team investigated the performance of socially disadvantaged children (2020) and found they performed significantly better in VT schools. However, the number of VT schools was insufficient to be included in their data. VT schools design empathy and relationships into the school not as programmes but as the relational culture (see Dweck 2007 on praise). Only the matters that organizational culture cannot address find their way to the PSHE curriculum, and that (I suggest) should be far less than currently imagined.

1.5 A service report on school systems

If this author were to write a service report on the same-age secondary school system imported from Prussia by Horace Mann 175-years ago, it would say that the current system continues to function correctly, as per its design specification. It separates by age and ability and ensures that social mobility remains unaffected by social justice reform. Such a report might describe how the system continues to assimilate external change to suit its operational mechanisms, thus maintaining internal processes of power and preserving identity, its autopoiesis untouched. It would describe how organizational constructs continue to regulate the behaviour of system operatives and agents, ensuring stability by containing agents within acceptable working tolerances that prevent unnecessary innovation. The report might recommend that a little pedagogical oil is all that is required to keep such schools functioning optimally, plus a turnover of operatives lulled into the false belief that such a system can be improved by working to rules garnered from an effect list and

a quest for laws that social scientists have yet to discover (see Flyvbjerg 2002, 2012; Schram 2012; Bardonne et al., 2017; Petersen and Olsson 2015).

If such a system is what is deemed appropriate in a world growing increasingly dangerous and dysfunctional, then it should be kept. Otherwise, we should recognize that the same-age school is non-adaptive and past its use-by date. The author's public works explain why that is, and the alternative organizational architecture needed.

1.6 A short note on organizational learning

Without organizational learning, change is impossible. Traditional same-age schools are closed from their external environment and rely on self-referencing and an incremental or 'first-order' change process. These public works show that reform must be reconsidered. This is because schools adapt or reject information (perturbation) to suit their formal structure, always returning to what the school knows and understands – one of the many autopoietic⁵ properties of the same-age school. The same-age school functions optimally when the variation of demand on its system is low, and cultural homogeneity high, i.e., no capacity change is required.

Second-order organizational change is transformational and discontinuous (Henderson, 2002; Argyris and Schön, 1978) and of an entirely different (second) order. Bess *et al.*, (2011: 36) describe second-order organizational learning as:

A qualitative change in the structural or cultural systems of an organization that requires the development of new cognitive schemas among members for understanding the organizational setting or context in relationship to its purpose or mission (Bess et al., 2011: 36).

For schools, the irony being laboured suggests that schools cannot learn in their current form until the cognitive schema of participant players (mindset) accords with values – a phronetic change that requires critical reflection. It is why Margaret Wheatley (1999) believes that such schools fail the systems test. To see the school differently requires participants to stand back beyond what happens in the everyday and are invited to look again. Heifetz and Linsky (2017: 51) call this 'seeing from the balcony'. Organizational learning was never in the original design spec of the same-age school. Because they cannot learn, they cannot change, and so require assistance in seeing, not reform.

When Cyert and March (1963) coined the phrase *organizational learning*, they described adaptive behaviour. Schools adapt all the time, but for same-age schools, they adapt in ways that retain identity, sameness, and internal structures of power. VT schools are complex adaptive. Such change does not make schools perfect, but it drives phronesis which in turn drives the epistémé and techné needed.

⁵ The link between the autopoietic biology described by Maturana and Varela (1980) and how this concept is metaphorically adapted to social organisation is contained in the final section of this commentary.

Chapter 2: The public works (books)

2.1 The list of Public Works

Set out below are the public works that form the basis of this commentary. A more detailed analysis of the books and papers is in Appendix 2. Chapter four deals with academic papers and how the public works resolve wicked problems.

A) Books describing the development of vertical tutoring and its context

Barnard, P. A. (2000). *Culture, Chaos, and Third Millennium Schools*, Apocalypse Press, Guildford.

Barnard, P. A. (2010). *Vertical Tutoring: Notes on School management, Learning Relationships and School Improvement*, Grosvenor House Publishing, Guildford.

Barnard, P. A. (2013). *The Systems Thinking School: Redesigning Schools from the Inside Out*, Rowman and Littlefield Publishers, Inc. New York, and London.

Barnard, P. A. (2015). *From School Delusion to Design: Mixed-Age Groups and Values-Led Transformation*, Rowman and Littlefield Publishers, Inc. New York, and London.

Barnard, P. A. (2018). *Socially Collaborative Schools: The Heretic's Guide to Mixed-Age Tutor Groups, System Design, and the Goal of Goodness*, Rowman and Littlefield Publishers, Inc. New York, and London.

B) Papers on organizational change showing how VT resolves organizational problems

Barnard, P. A. (2018), "Mixed-age groups, leverage points, and applied systems thinking: how changing from a same-age system to a mixed-age system leads to social and collaborative professionalism and a happier school". Paper presented at *BELMAS International Conference*, Windsor, July 2018.

Barnard, P. A. (2018a). "A systems thinking investigation into the rise in mental health and wellbeing issues in UK secondary schools, with particular reference to same-age systems: a call for more research". *Mental Health in Schools*, Vol. 2, Leeds Beckett University.

Barnard, P. A. (2020), "Secondary school structure, organizational learning capacity and learning organizations: a systemic contribution", *International Journal of Educational Management*, Vol. 34, No. 8, pp. 1253-1264. <https://doi.org/10.1108/IJEM-01-2020-0037>, Emerald Publishing.

Barnard, P. A. (2020a). "Why UK secondary schools fail the complexity test and what they need to do to pass it". *International Journal of Education Management*. Emerald Publishing. (Final stage of peer review). NB. A shorter version of this paper is available on the Plexus complexity website.

Barnard, P. A. (2020b), "Capacity, parental engagement, and home-school partnership: a tale of two systems". *International Journal of Educational Management*. Emerald Publishing. (Final stage of peer review).

2.2 Written works (books)

A) *Chaos, Culture, and Third Millennium Schools* (Barnard 2000)

If the books and papers listed above represent a journey of discovery, it was unplanned. Like Heidegger's *Dasein*, this author was *thrown* into a situation, a mess created by the 1988 Education Reform Act (ERA) and the arrival of new public management (NPM). ERA threw the various

component parts of education into the air. New public management (NPM) then rearranged them in a marketized, push-management system based on targets, accountability, and inspection. It was the kind of chaotic situation that systems thinkers relish. For this author, such conditions provided a world of opportunity rarely available.

Chaos, Culture, and Third Millennium Schools (Barnard, 2000) started as a hitch-hiker's guide to the future, a systems thinking response to clumsy governmental attempts at change. The book offers a reinterpretation of ERA and an unstinting rejection of NPM. It was intentionally written at the cusp of the new millennium to offer a new direction for the next hundred years. Twenty years on, I am still writing the same book, fine-tuning ideas, creating more sophisticated arguments, and staying up to date with developments in the fields of systems, organization, and complexity theory.

This book contains seemingly endless diagrams (over twenty) and metaphors intended to provide schools with a systemic view of the changes happening. The book shows how systems thinking can reassemble the reductive elements and disparate parts into something resembling a values-led school. An ex-pupil wrote to me many years later saying they were discussing the book at Kings College as part of their philosophy course. That was never the intention. As a first book, it remains relevant given that most schools have yet to reach its first page. As Senge tellingly said, you never really know what your book is about until long after it is written.

Here was the idealistic and optimistic headteacher/author, preaching to others about the system toys he had found and wanted to share. On re-examination, this first book remains a systems thinking primer for schools, leaning heavily on the work of Danah Zohar (1999) and her ideas on collaboration and spiritual intelligence. It is a journey through rational intelligence (IQ), emotional intelligence (EQ) and spiritual intelligence (SQ). Later, Donella Meadows wrote one of the great system primers, on treasure (Meadows, 2009).

These are not the matters that I realized at the time, but they are there on every page. The intention of the first book (Barnard 2000) was to draw a different, safer, and ultimately more productive pathway through *the Land of ERA*. It is a book that reveals far more of the author's vulnerabilities than intended. However, it did contain the various systemic constituents needed to create a quite different organizational model, one told ten years later in *Vertical Tutoring* (Barnard 2010, below).

The book taught the author that his role was to be a pathfinder and contrarian. He should record the journey of this school model over time, teach schools how to use it, and protect it during its fledgeling years.

B) *Vertical Tutoring: Notes on School Management, Learning Relationships, and School Improvement* (Barnard 2010)

Between 2000 and 2010, my school had travelled far in *The Land of ERA* but in a contrary organizational direction. This new book called for ERA to be consigned to the past and replaced by a collaboration of participant actors (staff, students, and parents), and for headteachers to be servant leaders.

From the diagrammatic of the first book emerged the vertical tutoring system, a model expressed in a single operational diagram (see Appendix 1). It took a few weeks to arrive at this conceptual design and only a few months to implement, to turn the school upside-down so that organization made sense. In this model, students were at the centre and the organisational architecture built around them in an inclusive form. Tellingly, the model included parents.

The confusion wrought by ERA created conditions where entrepreneurial heads could experiment providing a smokescreen where non-compliance passed unnoticed. The new model did not require anything from the NPM toolbox. Because the new model was self-organising, the bureaucratic mechanisms and routines of targets, appraisal, external inspection, extrinsic rewards, and excessive accountability, were unnecessary. My concern was to build learning relationships through an alliance of parents, students, and staff based on mixed-age tutor groups, pumping information and life into learning as a joint enterprise. Had I known more of autopoiesis at the time, the book might have been better explained.

Much later, as an amateur academic studying at Middlesex University, it is easy to see this book and the system it produced retrospectively, as systems thinking in action, applied complexity theory, and an organisational study. But at the time, such a degree of organisational consciousness was crude in form and leaned more towards intuition than rationalisation. Only by reading Weick, Heidegger, Gadamer, Freire, Senge, Laloux, Flyvbjerg, and others, did the idea of action preceding knowledge dawned, of epistemé, techné, and phronesis combining like string theory. I ponder still about vision and its link with ethics and morality rather than the vehicle of organisation.

Vision is not *knowing*; we know what we do after the deed, and this requires the risk, the leap, the phronesis. Our school took a leap into a new and more authentic way of being, a different ontology. Only when *the leap* is made does the awareness grow of where you are. But equally important is understanding where you were and what caused the behaviour at that time and provided the motivation for a more authentic way of being. While the ontology of the VT school is positive and beneficial, it is the understanding of the previous iteration that is more telling given that is where most schools are. For the first time, same-age organisational structure revealed itself, an emperor devoid of clothes, exposed, frightened, and found wanting. I see same-age organisation as a living system, autopoietic, insecure, and the cause not only of its own woes, but of those participants who still seek to offer it comfort.

The journey to better organisation began in 2002 when our school set out to solve an unrelated problem. The problem was how to deal with the high number of parents advocating for their children, all of whom felt they could run the school better than the headteacher (me!). A 'normal' head would ensure that parents never reached the head's office, offering a single portal and a convoluted referral system to keep them at bay.

As a new servant-leader, however, I fielded all calls from parents for a year, dealing personally with as many as I could. I made the mistake of opening an otherwise closed system of listening to clients. Parents occupy time and rightly demand attention. On reflection, the challenge was to *smooth demand*, in simple terms to reduce the incessant contact by parents with the school and trying to solve the capacity issue inherent to same-age organisation. The solution required a leap of faith. Not one of us realised that the decision we made would lead us to an unexpected place, one that combined the elements of IQ, EQ, and SQ.

The solution suggested by staff was elegant, logical, and high-risk. However, given an environment of confusion and change, it would pass unnoticed. The idea involved repopulating tutor groups with children from all age groups. Annual school reports could be sent home at critical learning times for each year and discussed in deep learning conversation (DLC) involving tutors, children, and parents, finally resolving the need of parents to be kept informed.

This action spread the partnership load equitably, satisfied the parents wish to be more involved, and prevented the constant parental intrusion into the working life of the school. We were unaware

that we had stumbled upon one of the unique features of systemic thinking, the mythical 'leverage point' described by Donella Meadows (2009), a point of power in a system that creates a domino change effect. Instead of managing parent demand as intended, the school not only released it but discovered a method to absorb it.

Accidentally, the school complexified its collaborative capacity to absorb value demand, pure systemic thinking. Complexity absorbs complexity. The school had created a system capable of listening to a multiplicity of voices, harvest tacit knowledge, and store information in networks of learning that united staff, students, and parents. The school had redefined what it is to *care*.

The DLC meant that tutors could need to meet up to four sets of parents during a reporting week once a year without a time limitation, supplementing the annual subject meetings between parents and teachers. The evaluation surpassed expectations. Parents welcomed the opportunity of a forty-minute conversation with tutors, a sharing of stories and an opportunity for staff, students, and parents to agree on strategies for improvement (not targets). The atmosphere in the school changed overnight. The school shifted from being a teaching system to a learning system, and staff felt at last that they were *making a difference*. Students believed the school cared, and parents knew that the school listened. Despite being in an area of social deprivation, the school achieved an outstanding Ofsted and no longer needed pro-social programmes. We had reinvented autopoiesis.

Vertical Tutoring described the mechanics of VT. It explained a fundamental truth: it is the system (triple loop learning) that needs attention, not the teachers (single loop) who every day try to make the system work. The book, however, failed to appreciate that the VT system was in a crude and fragile form and it was difficult to change the mindset of the leadership team from a command positionality to one that enabled others. Not only did the school (inadvertently) redistribute leadership, it distributed unpredictability too. A VT school, when understood as a system, designs itself and achieves self-organisation, the natural social evolution of a living system. The role of leadership is to listen attentively to what the system is trying to say, as voiced by users (policy reception) just as Donella Meadows, Seddon, Deming, Ackoff, and others said.

C) *The Systems Thinking School; Designing Schools from the Inside-Out* (Barnard, 2013)

The systems Thinking School is a pivotal book. I had published an article for the *Duffy Papers*, an online academic series of work edited by Professor Frank Duffy, a leading proponent of systems thinking and school change in the USA. He invited me to write a book for his prestigious series, *Leading Systemic School Improvement*. Ralph Tabberer CB, Director General of Schools at the DfES, wrote the foreword and Sir David Bell, university vice-chancellor endorsed it.

This book took all that experience had taught, the phronetic ideas of organisation gathered and combined within a more academic picture of systemic thinking. It moved VT into a transdisciplinary and ecological mode, showing how VT satisfied child psychology, cognitive learning, social development, and attachment. It showed how VT is party to Bronfenbrenner's bio-ecological systems theory (Bronfenbrenner, 1979), Maslow's motivational pyramid (Maslow, 1943), and Bowlby's attachment theory. The *child system* and the *school system* are inextricably tied. This is in complete contrast to a system that limits and separates, one that consistently chooses to pull the change lever in the wrong direction and makes decisions to maintain sameness against human need.

Seventeen years on, the book is pivotal for another reason. It exchanged one set of frustrations for another. By 2013, I had trained many schools in VT, but the take-up was less than expected. Many schools had decided that the change to VT was so easy that they required no consultancy help.

Instead, school leaders made hideous errors of judgement, and many retreated to the safety of their previous same-age iteration claiming that VT did not work (for them). Often, when successful VT leaders left, they would be replaced by new headteachers anxious to restore their power base unable to appreciate how VT worked. They preferred predictability and control and the autopoiesis of the past.

A new set of frustrations emerged from my university studies. Systems thinking worked in a parallel universe to the social sciences each understandably suspicious of the other. Schoolworld had become inhabited by researchers focused on minutiae, convinced that by aping the natural sciences, schools could yet function properly. The *Effect lists* to which the appeal, rely on research harvested from a dysfunctional same-age system, 175 years old and designed for different purposes. Yet social science remains convinced that it can find undiscovered pedagogical laws able to revolutionise teaching and create a great teacher in every classroom. Worse, schools have become convinced that they should do nothing unless it is research-led. The effect is to misdirect schools from the systemic causality of their many self-induced learning problems.

Research too often acts in its own interests and bias, searching for an objective purity it cannot find, and warped by organisation. What the observer sees is not all there is and most that it does see constitutes behaviours that caused by structures not the will and skill of participant actors.

D) *School Delusion to Design* (Barnard, 2015)

Book number four quickly followed. No-one was listening. Universities seemed uninterested in a few schools (perhaps a hundred or so) developing and trialling a bespoke VT system. Systems thinkers started to explore complexity theory and the possibility of developing schools into learning organisations but lacked a viable working template (like the VT school) from which to work. VT was absent in the academic literature even though many masters students (especially at Bath University) wrote theses based on VT. One student (Graham Best) wrote his doctoral thesis on VT (Best, 2012). The 2015 book is an *idiot's guide* to VT, a step-by-step approach to ensure schools intent on DIY would understand what is needed. It is, therefore, the weakest of the books. However, it covers the main systemic points and adds more. As such, it continued to report on the ongoing developmental process of VT, but one that shows the author's increasing frustrations. The title says it all.

E) *The Socially Collaborative School: A Heretic's Guide* (Barnard 2018)

If the frustrations concerning the lack of academic interest in VT showed in book four, they palpably erupted in book five. Writing that began in the optimistic chaos of the Education Reform Act (1988), and the push management theory of new public management moved to attack mode. By 2018, the dust cloud of ERA was settling, and a new unpleasant school landscape beginning to form. Here, the mix of hierarchies, markets, and networks made up the self-improving school system described critically and pessimistically by Greany and Higham (2018). At its pivotal heart are large multi-academy trusts, closed systems cut-off from local communities. Power rarely strays far from the centre.

The book lists a dozen pillars on which NPM relies and research tries to support. The book exposes the flaws in each. For example, the much-hyped professional collaboration (high on the effect list) between schools seems sensible. However, not only is it rare and difficult to achieve, but it fails to include parents and students, the client-side. It relies on the convenient assumption that the only learning worthy of attention occurs in the classroom. It is teachers who need attention, supervision, accountability not the system in use. Without an alternative model, the school system remains

autopoietic, continually reinventing itself, and leaving schools and their inhibiting structures of power unchanged.

See Appendix 2 for a more detailed appraisal of these books.

Chapter 3. Public works (papers)

The following two chapters highlight the academic papers in two ways. Chapter three illustrates how the author's public works and associated research are applied to other problematic areas. The first involves home-school collaboration, and the second, the challenge of developing schools as learning organisations. In both cases, the organisational analyses would not be possible without the contrasting template of the VT school as an alternative design solution.

Chapter four, returns to the grammar of schooling, explaining the organisational structure behind the grammar.

Chapter 3 divides into two sections (A and B). Section 'A' describes how an organisational capacity issue, not 'the will and skill' of teachers, determines the success of home-school partnership. This section identifies and builds on relevant literature, especially Dougherty (1996) and Brown and Duguid (1991). Section 'B' explains why schools in their same-age organisational form cannot develop the capacity they need for partnership and why they cannot develop as learning organisations.

This chapter draws on the papers listed above but specifically, one presented at the Annual BELMAS International Conference, Windsor (Barnard, 2018a), and another recently published (Barnard, 2020).

Section A

3.1 Resolving the challenge of parental engagement.

Russell Ackoff (1919-2009) believed that managers manage messes. In 1976, Ackoff said,

Messes are characterised by no clear agreement about exactly what the problem is and by uncertainty and ambiguity as to how improvements might be made, and they are unbounded in terms of the time and resources they could absorb, the scope of enquiry needed to understand and resolve them and the number of people that may need to be involved (Ackoff 1979, s. 93) .

Messes, according to Ackoff, must be dissolved and the entity affected redesigned. Home-school partnership falls into this bracket. Ackoff notes the capacity issue. With the wrong organisation (the mess) the system becomes dysfunctional and its capacity 'unbounded in terms of the time and resources they could absorb'. Had home-school partnership been a 'people problem' involving the 'will and skill' of practitioners, as the research literature (below) suggests, it should have been resolved long ago. However, because there is a single dominant model, social science has succeeded in prolonging the existing model by trying to fix a problem that doesn't exist i.e., questioning the will, skill, and character of participant actors. This is because the organisational problem that does exist is difficult to unlock, and in Ackoff's terms has not been dissolved and reconstituted. Giddens (1998: 59) called this the "double hermeneutic" of the social science (interpretations of other people's interpretations). Based on Flyvbjerg's (2001) book, *"Making Social Science Matter"* (Flyvbjerg, and Schram (2012: 17) said, "social science was hopelessly lost if it persisted in seeking to emulate the natural sciences with a quest for theory-driven abstract knowledge of universal rationality".

The arrival of the VT schools as a different way of organising brings with it the lines of inquiry (pp. 1-7) and offers social science a new set of analytical tools and the opportunity to be paradigmatic (Clegg et al., 2012).

Parent partnership and the idea of parental engagement in learning is just such a “mess” indicating that any resolution involves a redesign. An analysis of the partnership literature (Barnard, 2020d), reveals four recurring themes:

1. The value of home school collaboration is well-researched with widespread agreement that parental engagement is critical to learning dispositions, support, and successful outcomes.
2. Home-school collaboration splits into three separate parts; parent involvement (school controlled), parent engagement (home-controlled), and parent partnership (an aspiration that combines the previous two).
3. The advised improvement strategy is to improve school outreach using lengthy tick-lists focused on school leadership and improving the “will and skill” of teachers.
4. There is a near-universal call for reform and improvement from social scientists which is stymied by the absence of a viable alternative needed to provide a comparative means of establishing cause and effect.

For the most part, schools are offered lists of advisory skill-based actions needed to build home-school partnership and support parental engagement in their child’s learning. The role of the school is to reach-out to parents. Unfortunately, the autopoietic school can quickly tick such boxes and readily show how they respond to issues that arise by smoothing demand.

Recently, the partnership literature has taken an ecological turn (Palaiologue and Male, 2017; Torre and Murphy, 2020; Goodall, 2019) following Bateson (1972, and 2000) and Baum et al., (2006), and new home-school models have been proposed that hint at organisational change. However, the community-oriented shape of these models is sketchy and conceptual rather than viable and substantive but at least acknowledges a more helpful and contrary direction. Without a viable alternative and a working template, system designers cannot escape the mindset and limitations of same-age structuration.

The author’s work with almost three hundred school leadership teams over three decades has a strong home-school focus. Without exception, leadership teams claim that their partnership with parents is good or excellent and cite their many successful interventions and how they resolve behaviour problems. Many hold certificates indicating their partnership excellence! However, as leadership teams engage with critical reflection and policy reception (Gowlett et al., 2015), they become less sanguine and invariably downgrade their assessment and recant such positivity. They understand how organisation can both inhibit partnership and grow it depending on the form of structuration in play.

3.2 Defining partnership

Identifying three unsatisfactory and often interchangeable concepts (parent partnership, parent engagement, and parent involvement) only creates a reductive mess, and defining a satisfactory outcome is not possible. One involves shared power, one parental power, and the other school power.

A systemic approach is to start with the concept of partnership and purpose. Ross Kanter (1994) describes three kinds of ‘business alliances’:

- They must yield benefits for the partners, but they are more than just the deal. They are living systems that evolve progressively in their possibilities. Beyond the immediate reasons they have for entering a relationship, the connection offers the parties an option on the future, opening new doors and unforeseen opportunities.

- Alliances that both partners ultimately deem successful involve *collaboration* (creating new value together) rather than mere *exchange* (getting something back for what you put in). Partners value the skills each brings to the alliance.
- They cannot be “controlled” by formal systems but require a dense web of interpersonal connections and internal infrastructures that enhance learning.

This approach raises difficult questions for fixated same-age schools: how can schools learn to forsake control and limitation for complexity and added value? Similarly, Johnston and Clark (2001: 68) write on customer relationships in the service sector and describe four critical partnership elements (adapted here for schools).

- **Communications:** the extent to which there is a two-way conversation between parties (staff, students, and parents); the ability to deliver and interpret information and listen.
- **Trust:** the degree to which one partner depends on the work or recommendations of the other without seeking extra justification. In some cases, one partner may commit the other to work without prior consultation.
- **Intimacy:** the extent to which information and strategies are shared to remove barriers to learning
- **Rules:** a mutual acceptance of how home/school partnership operates, i.e. what is acceptable and desirable and what is not.

Both Beth Kanter (1994) and Johnston & Clark (2001)⁶ offer elaborate descriptions of how partnerships and alliances operate, much of which is beyond the central control of schools and requires high trust (discussed below) and organisational enablement. However, they more than satisfy the ‘fuzzy’ areas noted by Dougherty (1996) that rely on the distribution of leadership.

3.3 Parent partnership and the relational school

If the school is to develop as described in 3.1 and 3.2 (above), the home school relationship cannot be left to chance and should be integral to the learning process. The public works (Barnard 2013, 2018, 2021) describe how traditional secondary school structures constrain the agency on which building partnership depends (see “lines of inquiry” in context statement, pp 1-7 above). The public works (Barnard 2018 and 2021) suggest that unless the organisational issue of power and control is recognised, the result is a lengthy “to do” list for overworked staff reflected in the approach taken by researchers, described in 3.4 below.

In their paper on home-school collaboration, Cowan *et al.* (2004: 201) define *collaboration* as “working together toward a common goal”, one that “recognises that parents are invaluable members of the educational team”. They describe *partnership* as a relationship “based on the premise that coequal power and coequal participation are prerequisite conditions for meaningful collaborative endeavours” (Cowan *et al.*, 2004: 208). This definition hints at a non-linear system based on complexity (described as one of the “lines of inquiry” pp. 1-7, in the frontispiece). Similarly, Johnston and Clarke (2001: 68, cited in Barnard, 2013: 120) note four partnership requisites described above (3.2).

The challenge for secondary schools is to develop a means of building and maintaining a partnership whereby all participating actors (staff, students, and parents) are involved in the learning process

⁶ These definitions were considered inappropriate and unacceptable for schools by peer reviewers because “schools [apparently] are not the same” as other organisations. Graham Clark, one of the authors, was a school governor and interviewed the headteacher, Peter Barnard, on parent partnership to help inform the defining characteristics for his book.

throughout a child's school career. The following paragraph is an overview abstracted from the public works.

This commentary accords with the idea that effective home-school collaboration is not only desirable but essential for individual and organisational learning (Christenson and Sheridan 2001; Fan and Chen 2001; Seginer 2006; Hill and Tyson 2009; Hill and Chao 2009). It accepts that the research literature has a full grasp of the benefits of home-school partnership, "the evidence is consistent, positive, and convincing" (Henderson and Mapp 2002). For Desforges and Abouchaar (2003), effective partnerships increase attainment, build self-esteem, and raise aspirations. This commentary further accepts that when home and school combine their agentic roles, learning dispositions improve, including increased self-regulation, positive school attitudes, and better study habits (Fan & Chen 2001; Harris and Chrispeels, 2006; Henderson *et al.*, 2007). This commentary also accepts that meaningful home-school partnership supports academic, social, and behavioural adjustment (Izzo *et al.* 1999; Christenson & Sheridan 2001).

The case for effective home-school collaboration in learning is unequivocal.

3.4 The challenge of Implementation

However, difficulties emerge in the literature (e.g. Bryk, 2009) regarding implementation, i.e., how such a partnership is realised, operationally actioned, and (linguistically) defined. The challenge facing schools is to release and develop the agential reciprocity of staff, students, and parents in ways that support learning, improve outcomes, and reduce inequality (Boutte and Johnson 2014; Connors and Epstein, 1994). This suggests that a more extensive understanding of organisation and especially the relationship between structure and agency is a prerequisite for collaboration and school leadership.

While there is a laudable focus on how home-school collaboration might be improved (Hoover-Dempsey and Sandler 2005; Souto-Manning and Swick 2006; Goodall and Vorhaus, 2011; Goodall and Montgomery, 2014;) and no shortage of recommendations and strategies, researchers face a system unresponsive to external reform, one that maintains autopoiesis over time. Without a viable alternative, the research community can only work with what it sees and knows. The effect is twofold:

1. It calls into question the "will and skill" of participant actors.
2. The term "organisation" refers to a particular systemic type, i.e., same-age organisation.

For example, the Hoover-Dempsey and Sandler 5-stage model (1995, 1997, 2005: 75) offers an academic analysis of the many variables explaining why parent partnership (PP) is essential and presents parent motivation as a critical factor. Their overview (Hoover-Dempsey *et al.*, 2005) notes the importance of schools welcoming parents and validating their contribution and collaboration. The 5-stage "model of parent involvement" (not collaboration) is technical and offers little advice on practical implementation but indicates the difficulty of working with such a structured environment of (elementary schools).

Epstein (1991) suggests that parents should involve themselves through parenting, communicating, volunteering, home-learning, decision-making, and community collaboration, entering the school by the back door, perhaps. Again, there is scant advice offered by way of implementation, costs, personnel involved, actuation of feedback mechanisms, bureaucracy, and the actualité of how such relationships combine to further learning. A similar "scatter-gun" approach comes from Hornby (2000), who offers eight strategies: communication, liaison, education, support, information,

collaboration, resourcing, and policy-making. Again, how these turn into collaborative practice is unclear when faced with same-age constructs. In the absence of organisational deconstruction, there is little alternative other than to bolt parts onto what already exists. In systemic terms, such a strategy increases workload and has a counterproductive and detrimental effect on wellbeing. Epstein (1995) said:

The way schools care about children is the way schools care about children's families. [...] If educators view students as children, they are likely to see both the family and the community as partners in children's education and development (Epstein, 1995: 76).

The difficulty with same-age structuration is turning such a worthy statement into practice. There is no doubt that the research community is increasingly aware of systemic intransigence calling for fundamental change (Epstein, 2018; Goodall, 2019). However, no viable alternative (a working model) is suggested, just the component parts.

Helpfully, Sauto-Manning and Swick (2006) describe a client-based perspective suggesting a six-point strategy based on "an appreciation of families". Although welcome from a policy reception perspective, implementation in traditional secondary schools remains the challenge. In such a pyramidal management structure, information resides at different access levels, time is precious, and trust restricted. The Connecticut School-Parent Compact provides a not untypical example of standard home-school agreements, promoting a ten-step guide. However, these reductionist approaches make no mention of the capacity needed to meet such an exacting list of client demands, just that they should. Bill Lucas (2013: 34-39) provides a useful 35 point survey of partnership for schools but fails to make the systemic leap needed to reform the collaborative process, i.e., it is a check for the current system, not the one needed.

There is an ever-present risk of drowning the essence of partnership described by Johnston and Clark (above) in a sea of tick-lists and reductionism. While the research literature (e.g., Cowan et al. 2004; Fan and Chen, 1999; Welch and Sheridan, 1995; Hendersen and Mapp, 2002) is precise regarding the benefits of home-school collaboration, the consensus on the affirmative action to build such partnership remains non-specific. The need for change hinges on a concern that current organisational practice favours some groups over others (Goodall 2019), the cultural capital described by Bourdieu and Passeron (1977) .

While traditional schools espouse the importance of PP, "parents can contact the school at any time", this is far from the reality of practice. Secondary schools in their current form are difficult to reach, advantaging some over others (see, for example, Goodall 2019 and 2018; Hornby 2000; Jeynes 2018; Harris and Goodall 2008; Henderson *et al.* 2007; Crozier, G. and Davies, J. 2007). This is the 'smoothing effect' whereby schools convince themselves that they do all they can to facilitate partnership but have no viable alternative to suggest that what they do falls well short of what is needed. Autopoiesis shows how they convince reformers, too!

For example, Hornby and Lafaele (2011) note other potential barriers, including age, economic issues, behaviour, context, and language. They call for "clarification of the specific factors responsible for the rhetoric-reality gap", a "precursor" for the realisation of effective collaboration. The rhetoric stemming from TL (Ch. 7 below and as outlined pp. 1-7) shows that such a reality gap is organisationally driven and exacerbates inequality.

Two ethnographic studies go to the heart of the problem. A (rare) study of four secondary schools (Walker, 1998) describes parents' report evenings as "a unique interactional event which creates a problematic interface between the power bases of home and school, concentrating on the

assessment of a (frequently absent) individual." The title of Walker's study, *Meetings without Communication*, references examples of mistrust, anxiety, and confrontational approaches far from any notion of partnership, joint enterprise, and commonality of purpose. A dozen years on, it seems there has been little progress, with the parties of home and school irretrievably locked in boundary maintenance issues. For McClure & Walker (2010), "The complex negotiations and skirmishes that take place during these encounters testify to their precarious location on the boundary between the two institutions of home and school", the "two worlds" described by Lucas (2013).

3.5 Partnership and change

Bryk et al. (2009) offer a more systemic view of school improvement and change, positing four component factors and adding a fifth. These are:

- Instructional guidance
- Professional capacity
- Learning climate
- Parent / community relations

The fifth is leadership. For Bryk et al. (2009), the four components are necessary, while the fifth, leadership, is there to lock the whole together into a "productive reciprocity" (Bryk et al. 2009: 117) involving relational trust. By reversing the order, the VT system emerges, but the order presented reflects the traditional same-age structure. They assert that "Meaningful improvement entails orchestrated initiatives across multiple domains (Bryk et al. 2009: 197).

In a later paper (Bryk et al., 2010), the emphasis is networks of learning and mainly how they might be built and whom they should involve. The task of leadership to ensure that all reductive components connect in a way that enables a learning network to form. Bryk *et al.* liken this to "baking a cake", the menu approach featured in Glouberman and Zimmerman (2002). Although they offer no alternative model, Bryk et al. (2010) provide conceptual systemic maps that draw on the principles of systems thinking and entirely support the basic tenets of the networks of learning on which a VT system depends. Bryk and Barnard are in complete accord.

Goodall and Vorhaus (2011: 20) also affirm the need to rebalance the agentic role of home, school, and child within the learning process, while Torre and Murphy (2016: 205) reject the "categories of parental involvement that have defined school-parent relationships (e.g., Epstein, 1996)". They note, "**For the past century, the scaffolding for school-parent connections has been constructed from an ideology based on the principles of hierarchy, bureaucracy, and institutionalism as opposed to strong family and community relationships (Murphy, 2005)**". Torre and Murphy (2016: 217) call for "a community of engagement", one with "shared values of trust and respect, authentic membership, collective workload and vision". Palaeilogou and Male (2017) too, suggest an "empowerment paradigm of partnership" one based on ecological principles. Like Torre and Murphy (2016), they analyse the previous models and provide a laudable list of components, but without a working alternative, sidestep implementation issues.

The call for change is getting stronger. Unfortunately, the references in the literature (e.g., Palaeilogou and Male, 2017) to "models", although useful as guidelines, amount to little more than a list of desirables, void of form and shape. This is not a criticism but speaks to the absence of a viable alternative to interrogate and unmask systemic assumptions and blockages.

In her reflective summary, Goodall (2019) argues that progress has stalled around the discourse of change, leaving ever more questions unanswered. For Goodall (2018 and 2019), the challenge to school leaders is to find a means of working with parents and especially those whose children are at risk of underachievement. The real challenge is to address the mindset of those who purport to train school leaders and reify existing management strategies (see Barnard, 2013: 120).

In her reflective critique, Goodall (2019) poses a provocative and unanswered question, "How can we support parents to engage with learning – and others to engage with parents – in ways that challenge, if not dismantle systemic inequalities?" The VT answer is to ensure that parents and students are included in the learning process by building an enabling architecture based on equality of support, input, and opportunity, one that involves all participant actors. It does this by recognising individual identity, not assigning people to identity groups.

3.6 Notes on relationships and trust

Tschannen-Moran and Gareis (2015: 271) emphasises the centrality of trust in schools and raises implications for school leadership. They state, "the challenge of cultivating high trust school environments may be one of the most important tasks facing school leaders in the times in which we live".

Note the implied existing schools. A later paper (Tschannen-Moran 2020) describes how risk and vulnerability are tied into the notion of trust and how its absence might lead to unwanted behaviour and negative relationships in schools. While highlighting the importance of trust in an organisation, Tschannen-Moran says much of leadership and possible benefits but little about the influence of organisational constructs and the autopoiesis that determine much of leadership behaviour. In a same-age structure, behaviours are regulated by rules, policies, procedures, and protocols. Practitioners are trusted and empowered within the limitations of a highly controlled environment.

Throughout the previous sections is a hidden dichotomy between structure and agency, the degree to which leadership is distributed and, by implication, trust developed. Senge (2006: Chapters 2 and 3) discusses organisational learning disabilities and explains the connection between being "prisoners of the system" and "prisoners of our own thinking". It is the nature of a system and its concomitant organisational structure that determines so much of participant behaviour and relationships built on trust. Transformational learning (Barnard 2021) shows how same-age structuration inhibits human creativity and capability and negatively impacts well-being and learning. Attempts to work around this structure invariably result in lists of desirable characteristics and models unable to form.

3.7 A short word on psychology, collaboration, and child development

The public works cite an incongruity between the processes required for social and cognitive development (learning relationships based on trust) and how traditional schools operate.

VT follows the bio-ecological systems model of Bronfenbrenner, who notes "five critical processes for positive development" (Bronfenbrenner, 1990). These involve five propositions outlined in brief below and abstracted from Barnard (2013: 84).

1. Participation in progressively more complex reciprocal activity
2. Patterns of progressive interpersonal interaction under conditions of strong mutual attachment

3. A third party (school) to assist, encourage, and express admiration and affection
4. Two-way communication, mutual accommodation, and trust
5. Public policies and practices that provide place, time, stability, status, and recognition

Bronfenbrenner (1990) said, “I am sometimes asked up to what age do these principles apply. The answer is debatable, but I would say up to the age of 99”.

Too often, “models” are proposed that school leaders are somehow expected to assemble. In the models of the two systems (Figures 1 and 2) above, the same-age system fails to effectively achieve the five propositions proposed by Bronfenbrenner in an equitable way. Neither does it meet the basic needs proposed by Abraham Maslow’s motivational pyramid or the attachment theory of John Bowlby (discussed in Barnard, 2013). These are assumed more than practised. The VT model builds a foundation composed of Bronfenbrenner’s five propositions (Barnard: 2013: 84, illustrated in figure 2, above). It then creates the nested system architecture to enable supportive learning relationships to flourish. It achieves this change by re-engineering human resources, redistributing leadership to the organisational edge, improving professional development, and re-routing communication and assessment strategies to where they are needed.

Section B

3.7 The capacity issue

The question that the literature (for example, Crozier 2007) seeks to address is this. How can schools reach out to parents and engage them in the learning process? Suppose we ignore personnel and instead look to the organisation to see what is happening.

By having only one school model and accepting such a model as benign, the answer to the question (above) always turns to personnel matters, ‘will, skill, and leadership, just as it does when the focus is on school underperformance. Schools, of course, will point to the above definitions of partnership and show exemplars of each within their organisation.

When a home-school situation arises, all schools have a strategy and procedure to absorb that demand. There are, however, four initial failings. First, schools deal with situations after the event, i.e. schools fix problems that emerge (say, bullying) often from within its system. This strategy deviates the school from triple loop learning and issues of organisational causality. Second, the ‘fix’ can enter a complicated referral system that always delays action and so fails the space and time issue. Third, most parents do not call on the system and have an arm’s length relationship with the school, making them dependent on the school for information. This situation makes schools unaware of what seems evident to parents. Fourth, the same-age school’s capacity for engaging parents in their child’s learning is highly speculative and homework driven, opening the door to *othering* and the reproduction of inequity.

The autopoietic same-age school uses the capacity it has and the procedures that have always served it well in the past, to deal with the partnership demand faced. Looking at Ackoff’s description above, parent partnership satisfies the mess managers must manage.

However, the same-age school has its own incredibly unique approach to demand complexity. The school knows that it is unable to provide a bespoke partnership, i.e. it cannot absorb such a heavy resource demand on its system, so the school plays its trump, autopoietic card. It *smooths* (reduces) demand to match its capacity and so protects what it sees as its core service, teaching and learning. This act sets in motion a litany of unintended consequences that have a detrimental effect on families, the school, learning, and innovation.

The *smoothing* effect is achieved in several ways but mainly by invoking the organisational distortions created by NPM and push management theories of System X.

The school redetermines and redefines the rhetoric (grammar) of schooling and the definitions and defining characteristics used by participant actors. Although nothing untoward changes in the school, *teaching* (an onerous school responsibility) is replaced by *learning* (everybody's responsibility), a subtle semantic deceit. First, the school presents the classroom as the only important place in the school where learning occurs. Second, it redefines the parents' (engagement) role as one of ensuring attendance, pupil readiness, correct school uniform, and homework completed on time. Parents are judged on these revised partnership-engagement criteria. Third, the school redetermines purpose.

Developing the potential of all students (as published in the prospectus) is effectively reduced to how well students do in standardised tests, albeit in a value-added sense. In this way, measures of performance become a *de facto* purpose, and this changes method (teaching to the test). By narrowing what is important, the school redefines what parents need and would like to know (the complex part) to minimal quantitative data (the complicated part). The complex personality of the child reduces to a complicated datasheet of grades sent home. This act enables the school to save time and match demand with capacity.

Soon, this becomes regarded as good management. Teachers are no longer required to write detailed reports because the newly defined child can be computerised into grades, adding to the atomisation described by Philip Blond (2009). This process of redefining what counts as communication involves minimising school reports to data-sheets that have scant regard for who the child is and their needs.

Fourth, the school can now determine how meetings with parents occur, their content, place, date, and the time needed for the school to convey to parents the little data they have. The total effect is to minimise incoming information and with it, tacit knowledge. The knock-on effect is to dislocate the virtuous circle (described above and below), interrupting organisational learning, reducing innovation, preventing triple loop learning solutions to triple loop learning problems. Self-organisation is rendered unachievable, and the school lives with the falsehood that only learning and teaching in the classroom matters.

Smoothing demand is the same-age school's way of managing complexity. It has no alternative other to bolt-on partnership in ways that are harmful to those already hard to reach. Every school team with whom the author has worked adopts this strategy and rationalises this as good practice. The result is to isolate many families leaving those with the wherewithal and advocational skills to maintain an advantage over others, a classic application of social capital theory and habitus (Bourdieu, 1990: 55) reified in the school.

However, there is a final self-deception! In an atmosphere of what Biesta (2019) calls 'learnification' and others (Ball, 1998; Rasmussen et al., 2014) call 'performativity', the school is not only able to rationalise its actions as benefits but to call what they do good home-school partnership. Every school has a final failsafe appeal to justify its positionality, i.e., parents are free to contact the school at any time! However, such an offer *others* the onus on parents who often feel ill-equipped to participate in *Schoolworld's* technical and revised rules of discourse. It is no surprise that Crozier and Davies (2005) query whether it is communities that are hard to reach or schools.

Putnam et al. (1996:141) said,

Discourse refers to language, grammars, and discursive acts [...] In the discourse metaphor, communication is a conversation in that it focuses on both process and structure, on collective action as joint accomplishment, on dialogue among partners, on features of the context, and on micro and macro processes.

So it is that school practitioners worry about their authenticity, values, and their increasingly Quixotic quest 'to make a difference.' Smoothing increases in direct proportion to work demands.

Footnote:

Submission of the partnership paper (Barnard, 2020) for peer review, resulted in rejections. Expert reviewers felt that the paper failed to understand partnership, that schools as professionals have every right to control the rhetoric, that the paper failed to build on existing research and expertise. It seems that such a systemic analysis is close to unpalatable with peer reviewers because it is contrary to existing lines of social science research and is critical of epistemological claims. The paper (Barnard, 2020d) says that schools do all they can within the limitations of their capacity. Asking more of practitioners (will and skill) is to create a bigger mess. Same-age schools do what they do because they assimilate activity rather than change processes of power. Schools that believe in a genuine home-school partnership must redesign themselves to dissolve and resolve the issue, just as Ackoff suggests.

While these observations and insights may sound cynical, they arise from schools that have reflected critically on their organisational assumptions. VT schools have no such concerns having designed parent partnership into their organisational architecture.

3.8 Capacity, the learning organisation, and the public works

The learning organisation (LO) features as an aspirational idea throughout the author's public works, positing the VT school as a prototype form of LO. VT schools redesign their organisational architecture in ways that liberate participant agency needed to increase capacity and absorb the complexity of demand on their system (Axelrod and Cohen, 1999). In general terms, this involves:

- Moving from a complicated system to one that is complex
- Moving to a collaboration of participant actors
- Moving from a closed to an open system
- Moving from a back-office bureaucracy to personalised front office services.

A fifth bullet-point might involve 'moving from a teaching organisation towards a learning organisation'.

To move to a LO, it is reasonable to expect the kind of organisational changes (above), but there is no evidence of this happening. Theory and practice remain separate. These bullet points (above) are the VT school's way of re-establishing abandoned, missing, and disconnected feedback loops it needs to harvest and store information and advise action. From these networks, the organisation can extract the patterning and learning it needs for innovation, self-organisation, and emergence. To get to this point, however, requires transformative learning (discussed below), critical reflection, and a willingness to invite perturbation. Schools that attempt such a change without engaging with unlearning will take existing organisational assumptions into the future allowing the original system to simply reproduce itself, as autopoiesis suggests.

The papers on learning organisations (Barnard 2020f), and capacity and complexity (Barnard, 2020a and 2020c) make the case as to why schools in their same-age organisational form cannot be

learning organisations. Such a case rests on the form of organisation and its effect on organisational learning capacity. In Barnard (2018: 207), I offer a description of the Buurtzorg school, an invention based on the Dutch nursing system, one agentially dependent and showing how a learning organisation might work.

It was a surprise, therefore, to read that the Principality of Wales had managed to develop a substantial percentage of its secondary schools into learning organisations almost overnight (OECD, 2018). Having worked with schools in Wales, only those that had transitioned to a VT system would have sufficient capacity to cope with the complex learning demands inherent to a LO.

The case for LOs rests on the need for schools to be adaptive to a fast-changing work environment and the need for flexible knowledge workers and problem solvers (Drucker, 1985; Fullan and Quinn, 2016; Schleicher, 2012). For Gil et al. (2019) the LO is ‘an ideal model of organisation in which learning develops, behaviour improves, and a climate created that facilitates learning’ (see Fullan 2020; Silins and Mulford, 2004; 2016; Opengart and Bierema, 2015; Santa and Nurcan, 2016; Lytras and Sicilia, 2005). Desirability, however, does not easily equate with achievability.

3.9 Developing schools as learning organisations?

Throughout the public works, it is demonstrated that traditional same-age organisation is unable to flex capacity. Moving from a teaching system to a learning system is not easy. The idea of the LO posits a significant increase in environmental adaptation achieved by broad participant engagement in both individual and organisational learning, i.e., a polyphony of voices. This situation leads to a conundrum; how to develop traditional schools into learning organisations knowing that (a) such schools are unable to make substantive organisational changes to their internal processes of power, and (b) they have no design template.

The strategy is to agree on a definition of the LO, highlight the characteristics of a LO, and arrive at a list of descriptive factors (dimensions). Finally, a mechanism is needed to judge the degree to which the school complies with the agreed dimensions. The public works follow the process avidly.

A typical definition, based on Senge, is supplied by Kools and Stoll (2016: 10). For a school to be called a learning organisation (LO), it must have ‘the capacity to change and adapt routinely to new environments and circumstances as its members, individually and together, learn their way to realising their vision’. This definition is sound but rests on many assumptions (e.g., how an agreed vision is achieved, and why vision plays any part at all!).

The next stage (Goh, 2003; Randeree, 2006) is to draw up a list of dimensions or characteristics such as those contained in the *Dimensions of the Learning School Questionnaire* (Akram, Watkins, and Sajid, 2013), or *School Success Profile-learning Organisation (SSP-LO)* survey (Bowen, Rose, and Ware, 2006). These criteria are *tested* in schools and then refined. However, therein is a problem. Inviting feedback from same-age schools practised in the art of recursion and self-referencing, and reliant on a form of organisation forged by long-standing and intransigent rationalisation, contains unrecognised biases and assumptions that tell more about the past than the present.

Kools and Stohl (OECD, 2016) worked with Welsh schools, the OECD, and ‘experts’ to arrive at the following LO characteristics (dimensions).

1. Developing a shared vision centred on the learning of all students
2. Creating and supporting continuous learning opportunities for all staff
3. Promoting team learning and collaboration among all staff
4. Establishing a culture of inquiry, innovation, and exploration

5. Embedding systems for collecting and exchanging knowledge and learning
6. Learning with and from the external environment and more extensive learning system
7. Modelling and growing learning leadership

So far, so good! The idea is that schools can use these dimensions to judge their development as learning organisations. The preceding definition (Kools and Stoll, 2016) states, schools must have the 'capacity' to meet these dimensions, but insights from VT schools show that organisational capacity is something traditional schools do not have. For VT schools, increasing capacity is an integral part of their reason transformation, shifting to a self-organising state. For same-age schools, institutional change is not on their recursive, self-referencing agenda.

It is relatively easy for schools to tick the LO box of dimensions (above), and schools did not disagree during the consultation process. So, how have so many Welsh schools suddenly become LOs? The answer is they have not transformed at all. Instead of schools developing the seven dimensions by increasing their learning capacity, the dimensions have been brush-stroked and smoothed to near meaninglessness to give the impression that they are achievable with minimal effort and change.

Once again, classic autopoiesis describes what is happening, schools' subversive way of dealing with unwelcome perturbation from the external environment and from would-be reformers who seek to change schools. Everybody colludes in the self-deceit. Like the building of parent partnership, schools are given a tick-list of actions that exclude organisational renewal, the one, paradoxically, it needs to execute change. Welsh schools, far from changing, are simply self-producing.

Far from any tick-list of developmental dimensions and reductionist actions, the organisational capacity for learning is more ontological in form (Crossan, Lane and White, 1999), a state of being that stems from the organisational architecture and liberation of agency. A school should exhibit these seven dimensions not through separate actions but from the systemic relationships that comprise its organisational being, the way it absorbs complex demands.

Senge, like Moses, delivered the necessary commandments needed for systemic change but failed to lead his systems thinking tribe into any Promised Land. It is a fixation on the tablets of stone rather than their meaning that proves problematic.

Chapter 4. The public works and the grammar of schooling

The road travelled by schools is littered with the debris of failed and unfinished projects, lost funding streams, and abandoned government initiatives that have seemingly bounced off schools. Weick (2001) noted how 'Our ability to deal with chaos depends on structures that have been developed before the chaos arrives'. He cites Lagadec (1993: 54),

When the chaos arrives, it serves as 'an abrupt and brutal audit: at a moment's notice, everything that was left unprepared becomes a complex problem, and every weakness comes rushing to the forefront (Lagadec 1993: 54).

There have been many such audits, each signalled by a new Act, a white paper, or damning report but no change.

In 2020, chaos arrived in the form of COVID-19 and the capacity of schools and the system to respond was found wanting. Today, there is again 'talk in the shires' of change, and critical theorists and post-modernists are staking claim to a so-called post-colonial curriculum and a new order, one initiated by the BLM movement and the neo-Marxist interpretation of critical theory. Boisot and McKelvey (2010) show how complexity theory bridges such a divide while VT provides the communicative means necessary.

In politics, doing nothing is not an option and satisfying as many think-tanks and focus groups as possible remains a preferred means of maintaining popularity and offering the illusion of things happening. Substantive change, however, is unlikely and is far more in the hands of individual schools than realised. It is not that there has been too much change as many argue, more that there has been none that can be called substantive, let alone paradigmatic. According to Tyack and Cuban (1996), there is a long and persistent "failure of reform" during which time schools "Tinker to Utopia". The message from autopoiesis is simple. Schools as systems respond to external perturbation that perpetuate decisions already taken. For change to occur, the school must change its mind through reflexivity and openness to learning both of which require considerable risk.

4.1 Right analysis, wrong prognosis

By backtracking through a secondary school, the grades and separations of its work culture, the endless referral networks, and the division of knowledge and power to the classroom, it is possible to discern same-age structure as the causality of the relational systems and the structures of power that pertain. Tyack and Tobin (1994) coined the phrase "grammar of schooling" and began the search for causality. They asked, "Why have the established institutional forms of schooling been so stable and why did most challenges fade or become marginalized?" Tyack and Tobin (1994) describe the grammar of schooling as,

the regular structures and rules that organize the work of instruction. Here we have in mind, for example, standardized organizational practices in dividing time and space, classifying students, allocating them to classrooms, and splintering knowledge into "subjects" (Tyack and Tobin, 1994: 454).

It is a definition that from a systemic perspective, contains an error in "the work of instruction" leaving the reader with the narrow impression that school is entirely about what happens in the classroom. For Tyack and Cuban (1994) schools are rigid organisations, with clear objectives, a closed curriculum, traditional methodologies and evaluating systems, and subject divisions. While

the blueprint is easy to see, the rationalism behind the design is obscure and not easy to undo. Arbelaz and Gorospe (2009: 6) said,

schools and society need to be more critical with their own assumptions regarding the educational system. The first step towards change is to identify and to challenge the ordinary way of proceeding within the school system or unveiling the internalised rules and principles in order to bring them to consciousness.

Tyack and Tobin ask why it is that attempts at major reform fail, why some marginal changes are assimilated and most flounder. Building on the grammar of schooling, Arbelaz and Gorospe (2009) suggest, “Administrators, teachers, parents and students usually have an unconscious underlying knowledge of what the “real school” consists of and consequently, any innovation or teaching changes that deviate from that internalized model, hardly if ever, succeed”. However, there is no precise rationale to describe how and why processes of power and issues of agency (Flood and Romm, 2018) have become so embedded.

Commenting on the grammar of schooling, Yong Zhao (2020) said,

It is so powerful that it has persisted despite many repeated challenges by very courageous, intelligent, and powerful innovators. It has persisted despite mounting evidence and widespread acknowledgement that it is obsolete and does not serve our children well.

However, the standardised organisational practices, divisions of time and space, and splintering of knowledge into subjects, nominated by Tyack and Tobin (1994), tend to mask the real and underlying causality of grouping by age.

The somewhat fortuitous arrival of multi-age organisation (not multi-age teaching) provides a different lens to analyse what seems to be the case. Tyack and Tobin, (1994) Tyack and Cuban (1995), Cuban (2019), and Fullan (2000) all point to the grammar of schooling as causal to such mumpsimus. But they too are locked into the same biology, culture, and language they seek to observe. They believe that the grammar of schooling is somehow preventing pedagogical development of classroom practice, a non-paradigmatic view. The popular tack glosses over how the traditional model of schooling operates, positing only that *the grammar of schooling* distorts teaching and learning (Cuban, 2019) and consequently, life for participant actors is a constant challenge that damages wellbeing (see the overview of Adams 2018; Bor *et al.*, 2014).

The effect, however, is pervasive. The necessary actualité of how the grammar itself is constructed is absent. Pundits sense things are wrong in secondary schooling but have a scatter-gun approach as to any possible cause, one that concerns management style, leadership issues, training inadequacy, pedagogical development and effect lists, curriculum editing, uninterested parents, children lacking in character and perseverance, and always an ongoing lack of financial resources? The systemic mistake is to view pedagogy as the prerogative of the classroom and the domain of the “great teacher” able to win over the reluctant pupil. The systemic option is to see pedagogy as the total cultural experience of schooling, one that combines both individual and organisational learning and personal development, i.e., the school as a system that can support learning and development through the communicative and social structure it creates.

4.2 The school and organisational theory and practice

This route, the embedded view that all the important learning occurs in classrooms, explains why secondary schools cannot shift. The grammar of schooling steers the observer to the classroom and school closure through the biological language of autopoiesis. It is why this commentary has no

interest in the reductionism of the classroom as such or the research that seeks to develop pedagogy. No matter how worthy such strategies, autopoiesis suggests that it will always (re-)produce the same system. To participate in any discussion on personnel or pedagogy, the idea that with enough effort, research, competition, and high-quality teachers and leaders, the same-age system can be made to work, does not lead to systemic improvement and change, but to reification of what already pertains.

The lines of inquiry (pp. 1-7, above) unveil the organisational assumptions and expose differences between the rationalised view of schooling and the system in use. When school leaders release themselves from their rationalised assumptions via the reflexivity of transformative learning, the “first step towards change” identified by Arbelaiz and Garospe (2009) occurs. The VT school provides an alternative template that makes any rationalised assumptions easier to see. Without the VT school, that first step is better facilitated. The VT school afforded a unique opportunity to analyse more precisely the link between organisation and the relational behaviour of participant actors (staff, students, and parents), i.e., what is going on throughout the school experience or how the work works. School leaders that engage with paradigmatic change see the root learning problem as their former organisational structure and the processes of power that stem inevitably from same-age organisation and determine the work culture of the school (in many ways the agentic distribution of trust and leadership). In effect, they release themselves from self-deception.

The effect of the multi-age system is to close-down feedback loops, distort learning, and deny participant actors the essential socio-psychological support relationships they need. All of those is a reflection of the degree to which agency and management are either controlled or liberated. In short, the decision (there is one) on the way students are grouped for organisational purposes, sets in motion and determines the work culture of the school, the leverage point described by Meadows (2009) and the autopoiesis of (re)-production described by Luhmann.

By building the organisational architecture around a conversation between the tutor, a child, and parents, the school becomes ecologically open and power shifts to the perimeter. Provided that the school listens to what the VT system is trying to tell it, the school can restructure itself one domino at a time to an emergent form. The effect is to disrupt the autopoietic process of communication that emanates from the existing structural form, releasing agency and liberating leadership. Only when this occurs, is it reasonable to attend to other matters.

4.3 The grammar of schooling

The explanation offered by Cuban (2019), is straightforward:

Age-graded school organisation, an innovation from the mid-19th century, contains within it the basic grammar of schooling [...] The key point I make is that the efficiency-driven wing of the progressives used the age-graded organisation to shape the how and what of teaching then and now.

For Cuban, there is no other satisfactory explanation for such prolonged stagnation, drift, and reformational failure. Like many, Cuban focuses on an *organisation-teacher* effect, the idea that the structure of the organisation has a detrimental effect on classroom learning and teaching, one that leads to separation and limitation. However, Cuban’s account is unsatisfactory in three respects. First, it fails to explain the processes and mechanisms at work deep in the school’s system, only that they are there and have an influence. Second, it assumes that only the classroom matters and is the only place where the magic of learning occurs. Third, it fails to recognise the pervasive effect on participant actors (staff, students, and parents) and the learning relationships that are mal-formed, assumed, and absent. Such an approach is part a reductionist error and part an error of omission.

Although such a tack is understandable and well supported, it is not the direction of this commentary or the author's public works, in part because it fails to include the organisational learning needed for systemic change. The classroom is important but is a component of the whole, a reflection of the bigger culture. It is far from all there is and to travel in such a narrow pedagogical and curricular direction is to forsake other phronetic possibilities vital to human learning and growth. The same-age system is profound both in its effect and the control it exercises and so requires far greater scrutiny than it receives.

Otherwise, this commentary is in broad agreement with Cuban, i.e., traditional same-age structure has a pervasive effect. What remains unknown, however, are the underpinning mechanisms and processes of power (Frank, 2012; Fullan, 2005; flood and Romm, 2018), the constructs buried deep within the structure of same-age organisation that drive its pervasive, separational behaviour and its resistance to change. This explains why the metaphor of autopoiesis is so helpful for any understanding the secondary school as an organisation.

Neither should it be assumed that the effect focuses solely on the classroom where teachers ply their trade. The same-age structure is far from benign, but its familiarity allows it to pass unquestioned and unrecognised. Left unaddressed, however, the system constructs that emanate from same-age organisation pay little heed to environmental adaptation and prefer stability to innovation. Such schools are unaffected by reformers foolish enough to try and change their ways. The lines of inquiry (pp. 1-7) suggest that **reformers do not change schools; schools change reforms.**

For example, the first McKinsey Report (Husbands, 2013) led schools to believe that "The quality of an education system cannot exceed the quality of its teachers." It is a loaded statement that ignores the frailties of organisation and social complexity, and casts unnecessary aspersions on participant actors. This commentary holds a different view, one learnt from the insights of schools with experience of both same-age and multi-age organisation. This view is unequivocal. It states that the challenges to school improvement are the result of relational behaviours that stem directly from school organisation.

4.4 Wicked problems and the challenge of social design

King and Frick (1999) said,

We lack the abilities required for systemic design; we cannot analyse the existing school model holistically [...] we remain entrenched in our current notions of education and only tinker at the edges of schools.

Whenever designers attempt to create different schools, they invariably end up with the model and the classrooms with which they began. Camillus (2008) said, "Wicked problems arise when organisations have to face constant change or unprecedented challenges. They occur in a social context; the greater the disagreement among stakeholders, the more wicked the problem".

It is this wicked problem set in an organisational and social framework that this commentary of public works explores and attempts to resolve; what exactly is the problem with traditional schooling; what is it that we are missing or not seeing; what is it that is preventing emergence; what practical answers are there? Conklin (2006) said that wicked problems were not understood until a solution had been found. The solution proposed is VT because it explains how same-age structures work. It is not so much for the great teacher to "win-over" the reluctant learner but for the school to secure what the child needs before entering the classroom.

For Cuban (2019), Laloux (2014), Shukla (1996) and others, schools are trapped in a “life-cycle of decline”. Society expects much of schools and places great store on the selfless individuals who walk their corridors and operate within an organisational structure that has remained substantively unchanged for over 175 years. Schools always respond to such demands but not in the ways expected, preferring assimilation to change. Nevis, Lancourt, and Vassallo (1996: 11) provide a useful analogy:

In the world of nature, a caterpillar is transformed into a butterfly; its DNA remains unchanged, but its form and properties are fundamentally different. A butterfly is not a caterpillar with wings strapped on its back.

For schools to be the butterflies we need them to be, requires their form and properties to be ecologically adaptive. Instead, regulation straps on to these organisations more tasks and social requirements that were once in the domain of families and communities. Instead of enabling the development of schools as learning environments, they are isolated and impeded at every turn.

Working in and with schools reveals a *modus operandi* entrenched in a received management mindset, one deeply rationalised over time. Not only have secondary schools not developed into fully functioning ‘socially collaborative systems’ (Barnard, 2018) or, more technically, ‘the social complex evolving systems’ described by Antonacopoulou and Chiva (2005), but they appear to be moving in a contrary direction. Bennis (1996) put the challenge of developing a new organisational model as follows,

The problem facing all leaders in the future will be how to develop their organisational social architecture so that it actually generates intellectual capital.

Bennis is right. This commentary and the public works they reference, provide a solution, a means of developing a school’s social architecture to release intellectual and creative capital.

For Tsoukas (1998), the mechanistic Newtonian model of organisation is giving way to a more complex and chaotic order where prediction is uncertain and any seeming disorder a route to self-organisation⁷, but there is little evidence of this in UK secondary schools. However, this has not stopped authorities and legislations from trying to prod into life a structure of secondary schooling that has changed little in the 175 years since Horace Mann visited Prussia in his search for what Stafford Beer (1981) called ‘a viable system’. It should be no surprise, therefore, that some schools have decided to break cover and develop an alternative model based on a different form of organisation, one they call vertical tutoring or VT (described under Appendix 1) and the author’s public works call ‘a socially collaborative system’.

In conclusion

The grammar of schooling is really a deeply embedded mindset of how schools traditionally operate. Without a viable alternative like VT, the system persists uninterrupted and (re)-produces itself as autopoiesis dictates. VT changes the way schools communicate and how they learn by distributing and sharing leadership. The challenge according to Donella Meadows (2008: 170) is to listen to “the beat of the system” and “expose your mental models to the light of day”. By seeing viewing pedagogy as the much larger experience of schooling, i.e., the holistic and ecological way that individuals and organisations learn, the school as a social system heals itself.

⁷ Self-organisation is described by Meadows (2009: 188) as “The ability of a system to structure itself, to create new structure, to learn, or diversify. A central argument of this commentary is that ‘new structure’ is not on the agenda of secondary schools and understanding why, is important.

This commentary of public works is a record of schools that found a way of discarding the rudiments of their same-age structure. It is a story of pioneering leaders, boat-rockers, and heretics who have helped expose many of the tenets and assumptions of the traditional same-age hypothesis to create a values-led and more authentic alternative. Their journey through transformative learning and critical reflection to the co-construction of a working model, reveals insights into their former iteration that were not realisable in their previous same-age form. This commentary contains the author's interpretation of these realisations and insights, one that seeks to explain why attempts at any paradigmatic change have failed what is needed to bring about change. It explains why our basic organisational conception, our mindset of how a secondary school operates and how school leaders think, is the main barrier to change, one with critical implications for training and the preparation of school leaders.

The problematic of schooling has less to do with classrooms, teacher quality, leadership, or pedagogy alone, and everything to do with the form of organisation needed to release human capacity and capability (see Section 6.3).

Chapter 5. Complexity, capacity, and practice

5.1 Organisational problem solving

The insights from VT schools indicate that while in their same-age iteration, they treated complexity as being merely complicated, the systems error noted by Pflaeging (2014: 8). The effect is to introduce failure demand into the school and curtail an ability to innovate and achieve self-organisation. VT schools are reliant on complexity to operate, accepting the unpredictability of participant actor relationships at the organisational edge where the child, the school, and parents meet. This makes them complex adaptive and better able to embrace individual and organisational learning.

Complexity is a theme throughout the author's books and published papers, and the distinction between complicatedness and complexity is increasingly relevant to an understanding of how schools operate (Fullan 2010; Hannay, 2001; Morrison, 2002; Crow, 2006).

This chapter follows the development of VT schools and explains the differences between complicatedness and complexity and why this is important. While schools are invariably described as organisational complex (see the discussion by Hawkins and James, 2018; Morrison, 2002, 2005, and 2010), the advent of VT schools suggests that this is an error that requires correction. Schools in socially and financially divided societies or serving complex communities face complex challenges. This does not make schools complex.

As Morrison (2010: 374) notes, 'the case for considering complexity theory (CT) in education is already established'. While the case may be strong, for schools, the obstacles are many. The starting point for the public works is to focus on complexity theory and how it applies to schools.

Glouberman and Zimmerman (2002) set out a perceptual challenge (table 2, below).

Table 2. Simple, complicated, and complex systems (Glouberman and Zimmerman, 2002)

Simple, Complicated, and Complex Problems		
Following a Recipe	Sending a Rocket to the Moon	Raising a Child
The recipe is essential	Formulae are critical and essential	Formulae have a limited application
Recipes are tested to assure easy replication	Sending one rocket increases assurance that the next will be OK	Raising one child provides experience but no assurance of success with the next
No expertise is required but cooking expertise increases success	High levels of expertise in a variety of fields are necessary for success	Expertise can contribute but is neither necessary nor sufficient to assure success
Recipes produce standardised products	Rockets are similar in critical ways	Every child is unique and must be understood as an individual
The best recipes give good results every time	There is a high degree of certainty with outcome	Uncertainty of outcome remains
Optimistic approach to problem-solving possible	Optimistic approach to problem-solving possible	Optimistic approach to problem-solving possible

In their paper, they distinguish between *simple, complicated, and complex problems* and their resolution. They argue that the health sector deals with complex issues and, therefore, requires a

complex approach to the kinds of problem it faces, ostensibly the capacity to absorb the value demand on its system.

The same argument applies to schools. The learning needs of participant actors (staff, students, and parents) are invariably complex comprising social, cognitive, and psychological dispositions, and to meet these needs (the value demand on the system) requires an equally complex response. It is a mistake to treat complex demands on a system as being merely complicated, as Pflaeging (2014) says. The question posed by table 1 (above) is where to situate schools.

A liberal interpretation suggests that column one describes the pedagogical search relating to the 'what works' agenda using ingredients drawn from an 'effect list' type menu, a search for teaching laws yet to be discovered and a return by schools to the closed classroom. The idea is to train expert chefs to devise menus suitable for a wide variety of live ingredients. They must produce a standardised product in a pre-determined amount of time at a set cost.

Column two recognises that column one has yet to master the problem posed by cooking different ingredients for the same amount of time in the same oven, and so requires an ever-expanding number of specialists and support staff to deal with the *under-cooked*, the *over-cooked*, and those who might understandably refuse to go back into the oven. This column, with its overload of deliverology, holds the view that the one-size-fits-all approach is viable with enough investment, support, and bolt-on expertise, i.e., with sufficient investment to increase *capacity*. Much of this column comprises *failure demand* caused by an inability to deal with learning demand the first time of asking, a problem that increases organisational costs through re-working. Column two is beset by complicated referral systems, delays, and difficulties in accessing information and the right specialist support (capacity issues). It believes homogeneity is achievable and desirable with enough resources and energy to make the system operationally effective. Its penchant, however, is to *smooth demand*.

Column three stresses personal understanding and accepts unpredictability. The person's needs are scrutinised collaboratively, and the client-side involved in planning the best way forward. This approach accepts that it takes complex people to resolve complex (people) problems as Dougherty (1996: 185) describes. Column three, however, cannot entirely escape the encapsulating bigger system to which it belongs but finds a way to thwart its worst excesses and deliver more authentic and collaborative approaches to problem-solving. Agents act as system guides and can flex the system to draw down from the system what clients need, the opposite of a one-size-fits-all approach (Schon 1993; Nonaka 1994; Powell, 1990).

While columns one and two are guided by the sameness of known and predictable products (cakes and rockets) and adopt formulaic means in their approach, complexity column three judges its success by value-added and matches demand with supply. In column three, all participant actors are engaged in the learning process. The fact that all three columns share an 'optimistic approach to problem-solving', does not mean they see the problem in the same way. Only the complexity column is systemic and triple loop in its approach to problem resolution but lacked (until the VT school) a viable working template.

The question of where to situate schools is easily fudged by schools that lay claim to all three problem-solving strategies; a view clearly expressed during the early stages of transformative learning programmes (chapter five, below). The columns also depict the virtues of *techné* (teacher expertise and practice), *epistémé* (applied transdisciplinary knowledge), and *phronesis* (what is best for people, padvocated by Bent Flyvbjerg (2001).

Schools like to consider themselves as complex but hover between columns one and two seeking law-like pedagogical rules, research-based remedies, and evermore expertise and resources. For columns one and two, there is no systemic change or intervention in processes of power, and they remain either too simple or too complicated in form to be effective. Column three relies on gathering information via multiple feedback loops, building actuating hierarchies as needed, and listening to all voices engaged in the process of sense-making.

As Morrison (2005: 318) said,

Gone are the views of linear causality, the ability to predict, control and manipulate, and in comes uncertainty, networks, connection, interdependence, self-organisation, emergence over time through feedback and the relationships of the internal and external environments, and survival and adaptation through change.

5.2 Ashby's law of requisite variety and the capacity issue

A second evidential distinction comes from Robert Ashby (1958). In simple terms, the school as a public service organisation exists to absorb the *value demand* on its system, i.e. to address the learning needs of participant actors (staff, students, and parents). For the school, its ability to absorb value demand depends on its *capacity* to cope with such complexity, which in turn depends on its organisational form. An interpretation of Ashby's law of requisite variety is as follows: for a school to absorb the learning demand on its system (one that might otherwise threaten to overwhelm it), the school requires an equally complex means of absorption. In short, its capacity to cope must be sufficiently complex to match the complexity of the value demand on its system. Schools in more challenging circumstances face an unprecedented variety of value demand compared with schools less challenged, so must generate higher capacity.

Any failure to meet value demand, (say, the school is consistently unable to muster sufficient staff to cope), leads to *failure demand* (Seddon, 2008: 32), a situation giving rise to repeat work, the need for more technical support, and learning assistants, but exponential costs downstream (a vicious circle). It always pays to meet demand the first time of asking. Ashby's law of requisite variety is often simplified as 'variety absorbs variety' (Hilder, 1995), i.e. complex problems require complex solutions that only people can realistically handle.

Same-age schools operate in columns one and two (table 1) and have a view of capacity as cost-related. Multi-age organisation takes the view that capacity is system-related, and it is this that makes such schools complex.

Stafford Beer's first *principle of organisation* (Beer, 1979), based on Ashby's law, states,

Managerial operational and environmental varieties, diffusing through an institutional system, tend to equate; they should be designed to do so with minimal damage to people and cost (see Hilder, 1995).

For schools, the demand for services and the school's response tend to balance over time. Securing this balance of capacity and demand is of critical importance to system participants (staff, students, and parents). School leaders, therefore, are tasked with providing the means whereby schools have sufficient capacity to cope with the variety of demand on their system at 'minimal damage and cost'. Problems arise when funding is no longer sufficient to address the resource issue, the school cannot get the chefs it needs, and the more experienced ones have left. Such a school no longer has sufficient capacity to absorb the variety of demand on its system. Left unaddressed such a situation leads to failure demand and the vicious circle described earlier.

When the complexity of demand increases and the school's capacity to cope remains the same, there are few viable options open to the school, none of which are safe. The school might,

1. Ask staff to work considerably harder to cope, perhaps asking them to hold down multiple responsibilities in addition to their teaching load.
2. Divert resources to hire more support staff by editing the curriculum and teaching numbers.
3. *Smooth demand* by reducing services to participant actors, e.g. reduce parent partnership, restrict information flow, redefine the rhetoric of learning.
4. Engage in unacceptable practices such as off-rolling, increasing exclusions, and gaming.

The author's work with schools during transformative learning programmes (see Mezirow, 1978; Schein, 1996; Cranton, 2006) suggests that all schools take every option, all of which are single loop learning in form, i.e., the existing processes of power and the organisational form of the school is unaffected.

Because leaders are themselves locked within a rationalised same-age system mindset, they are unable to access the triple loop learning option of systemic change. Most have never seen or experienced a multi-age alternative and so cannot envision any substantive organisational changes to their internal management environment. Such an everyday reality means that their capacity to handle demand has minimal leeway. They must rely on what they know from received wisdom, actions taken before, decisions based on previous decisions, and whatever they might glean from a self-referencing system.

When faced with overwhelming odds, leaders react by influencing the demand profile. *Smoothing* demand is achieved by reducing the flow of information between home and school, limiting agency, and closing the system to conserve energy, the main casualties of which are individual and organisational learning. Tacit knowledge is no longer harvested, sense-making opportunities decline, and the school retreats to the classroom, what it knows. Effectively, the school denies complexity and errs toward the complicatedness it understands and sees as its means of control.

5.3 Autopoiesis and homeostasis:

During school transformative learning programmes, there is a point when it is difficult to distinguish between the extent to which the leadership team controls the school, and the school controls the leadership team. At this point, an understanding of the school requires consideration of living systems or biological systems theory (autopoiesis). Autopoiesis (Maturana and Varela, 1980) provides a valuable biological and metaphorical explanation for shared features of recursive organisational behaviour based on survival and identity; the public works refer to the autopoietic nature of schools throughout.

The idea is to consider schools as living systems that have distinct biological characteristics such as a self-referencing system, one predicated on the idea that the same patterns of behaviour repeat over time. An organism (like a school) will only change its behaviour if it becomes deeply disturbed in some way, such as a perceived threat to its existence (Atkinson 2015: 20). Transformative learning programmes involve perturbations and work by encouraging the kind of critical reflection most likely to expose deeply-held assumptions (discussed in chapter 5). Their revelation can spark an unpredictable emotional reaction. Like phronetic organisational research, fissures are widened and crack open any underpinning organisational assumptions.

Autopoiesis explains how self-referencing and closed systems like schools (Betts, 1992; Banathy, 1991) reproduce the same organisational patterning over time (Luhmann, 1986) and retain long-

standing and rationalised processes of power (Vanderstraeten, 2002). Living systems (like schools) do not like disturbance and respond to change in predictable ways.

Homeostasis describes a system able to maintain identity while (seemingly) adapting to external change (Bider *et al.*, 2020). Again, the capacity issue arises. If schools are closed, autonomous, self-referencing, and self-constructing systems – the biological default culture suggested by autopoiesis – they are reliant on simple (single-loop learning) strategies for handling environmentally challenging capacity issues (the *theory-in-use* described by Argyris, 1999). Organisational change (triple loop learning) is not on their biological agenda.

Luhmann (1986) identifies two autopoietic sub-systems, communication, and organisation. The first produces communication based on already existing communications, while the second ‘constantly produces new decisions based on already made ones’ (see Bider *et al.* 2020). This is a roundabout way of saying that same-age self-referencing schools are historically path-dependent and reliant on single loop strategies often unsuccessfully used in the past to solve current problems. NPM falls into this category! Luhmann (1986) suggests that autopoietic recursivity, (an explanation as to why schools seem unwilling or unable to change their same age grammar), rests on the sensemaking narrative of the organisation rather than external adaptation. For example, a school invariably extols the virtues of collaboration with parents (discussed in the previous chapter); however, closer examination (Barnard, 2020d) reveals little in the way of such activity. The school not only controls time, place, content, and rules of any such interaction (structure limits agency) but continually redefines (smooths) collaboration to maintain stasis.

Although Luhmann's trans-disciplinary concept of autopoiesis does not apply biology directly to social systems, it does abstract key ideas from autopoiesis. Luhmann shows how the rhetoric of social organisations like schools operates, including the school's propensity for routine, rules, and prediction in what might be termed a socio-biological collective. For Luhmann (1986: 174),

Social systems use communications as their particular mode of autopoietic reproduction. Their elements are communications which are recursively produced and reproduced by a network of communications and which cannot exist outside of such a network.

Any change from a same-age structure to a multi-age system, therefore, is fraught with the difficulty of overcoming institutional stasis, and in particular the re-churning of educational rhetoric. While reflection on lost values and long-held assumptions allows the school to open itself to new learning and to invite the intrepid researcher to share part of the school's journey, the real challenge is to connect the school to more of itself and its community, to create a more open system. This helps the school rewrite the grammar of communications using a narrative which accords with its values and identity.

Using the descriptors of Atkinson (2015: 18), autopoiesis suggests:

1. Everything that schools do is about preserving identity.
2. The school decides how far it can push itself and cope according to what it decides is safe.
3. The school relies on experience and internal knowledge. It understands the ‘now’ by what has happened before, i.e., it is self-referencing.
4. The school's over-riding concern is self-preservation, maintaining its system and its identity.
5. The school operates within closed borders and has all it requires to survive.

5.4 Learning in loops

Organisations comprise systems of feedback loops (Argyris, 1999). The public works distinguish between feedback systems that are organisationally complex and those that are organisationally complicated. Table 3 (below) is adapted from the work of Snell and Chak (1998). Throughout this commentary, reference is made to single, double, and triple loop learning as approaches to problem-solving. The suggestion is that schools in their same-age form maintain sameness over time by ensuring that their internal processes of power are undisturbed. Systemic and organisational change is not on their self-referencing agenda. Their only recourse is to single loop solutions to manage the complexity of system demand. Table 3 is adapted to reflect the organisational and individual characteristics of schools as they move from unlearning to a revised way of knowing. Arguably, schools have moved to data production purposes rather than people development values, setting in motion what Flood and Romm (2018: 265) call a ‘task-orientated means of procuring ends’ (Collien, 2017.)

Table 3 (adapted from Snell and Chak, 1988) identifies the link between problem-solving and individual and organisational learning, describing the challenges that each approach presents, and why it is so easy to become stuck in time. The table forms the basis for the explanation that follows.

Table 3. Individual and organisational learning based on Snell and Chak (1998)

Level of Learning	Manifestation (Individual)	Manifestation (Organisation) - School
Not learning- School stasis	Isolation: Personnel failure to receive feedback and take in information (systemic)	Fragmentation: Loss of collaborative inquiry. Self-referencing. Silos form, pastoral and academic systems clash. Structure prevents learning. Parent-student-staff partnership assumed and unattended.
Single loop learning- Applies to same-age school model	Adapting: Realising an inability to achieve ends. Staff work on pedagogical skills to increase possibility of achieving goals.	Consolidating: Improving competency at task/target level, leaving structuration and mental maps unchanged. Push managers apply targets, rewards, and punishments via appraisal and supervision.
Double loop learning- Reflexive, transformative learning phase Triple-loop learning- Describes multi-age co-construction	Developing and Understanding: Realising why prior meaning-making was inadequate. Reframing approaches Inventing: Becoming aware of limitations in the same-age hypothesis. Creating new structures of thought and action.	Transforming: Collective reframing of knowledge and competency. Collaboratively changing policies, practices, and mental maps. Improving necessary capacity and increasing complex adaptivity Co-inventing: Building collective mindfulness. Members discover assumptions in previous frames of reference and produce new structures of learning and meaning.

5.5 Summary:

Vertical tutoring does not (yet) try to escape subject or ability grouping by age, but it can lay claim to being complex adaptive. Instead of reducing (smoothing) demand, the VT school has found a way of absorbing value demand, intervening faster, and harnessing the rich information and tacit knowledge of participant actors. It does this by moving from a back-office system to a front-office system, one that ensures an on-going sense-making collaboration among staff, students, and parents, a multiplicity of voices it constantly services (studies demand). Effectively, it intervenes in the power processes of the school (Contu and Wilmott, 2003), liberating management and agency by distributing leadership to the organisational edge. By intervening in this way, it makes possible the development of an emergent patternation that appears orderly (Cilliers 2000; Maguire and Hardy, 2006: 166; Nicolis and Prigogine 1989; Bar-Yam, 2019; Anderson 1999). What the VT school

realises are sophisticated feedback loops (Meadows, 2009: 189) operating interactively beyond any central agential control in a dynamic and often unpredictable way, but one able to recognise patterns.

The VT school moves from being a *complicated* system to one that is *complex adaptive* (*a la* Glouberman and Zimmerman, 2002). In effect, it switches from a closed to an open and softer system, (Vickers, 1965; Checkland and Haynes, Checkland, 1989; 1994; Katz and Kahn, 1978; Betts 1992; and Banathy 1992). The process means abandoning a command and control structure for an enabling and decentralised organisation, one reliant on the sense-making and agential capacity of participant actors, (*a la* and Takeushi, 1988; Hoe, 2006). Such schools intervene in structuration to create a dynamic duality of structure and agency able to uncouple as needed. This ability enables schools to transfer and import energy across borders as needed, harvest tacit knowledge, create networks of learning, and intervene rapidly. Instead of schools designed on the tenets of equilibrium and predictability, A VT school is reliant on the idea that order emerges from instability (Ashby, 1956; Stacey, 1992; Wheatley 1992; Merry; 1995).

In technical terms, this paradigmatic process at an organisational level is a practical demonstration of ideas from complexity theorists. For Gemmill and Smith (1985), Goldstein (1988), and Leifer (1989), new order is created from near chaotic and unpredictable interactions. Hurst and Zimmerman (1994) suggest that new organisation arises from a process of birth, growth, creative destruction, and renewal. Stacey et al., (2000), Cilliers (1998 and 2000), and Snowden (2000) describe knowledge as an emergent form resulting from interactions, shared stories, and experiences. Kurt Lewin describes organisational change as unfreezing (unlearning), new cognition (co-construction), and refreezing (new organisational patterning).

Such a process facilitates individual and organisational learning, and the author's published works and other support papers, chart such development over three decades.

Chapter 6. Hermeneutic virtuous circles, capacity, and schools

6.1 The problem of purpose

This chapter comprises a short recap regarding the concepts raised so far and how they connect. The intention is to show in the chapters that follow how they explain other systemic problems such as the failure to engage parents in the learning process, and the development of learning organisations. If, as suggested, the same-age system is autopoeitic it has no purpose other than to survive and retain its identity by reproducing itself.

From both a systemic and hermeneutic perspective, this poses a problem. Suppose the purpose of a school is to deliver information, separate and sort children by ability using standardised tests, and maintain static levels of social mobility. In that case, the historically path-dependent same-age system along with its original Prussian intentions, should be kept. Unfortunately, to continue with such a model invokes what Stafford Beer terms POSIWID (the purpose of a system is what it does). If the system (same-age) maintains separation, makes no impact on social mobility, induces gaming, causes difficulties with wellbeing, lowers participant morale, then this is what the system does!

If the purpose is to absorb value demand, grow the potential of participant actors, be values-led, and make a difference, then a different system is needed, a niche that VT seems to fill. To achieve this, the revised POSIWID must accept unpredictability, enable the distribution of leadership and power, take a different view of accountability, and having a greater reliance on trust as Niklas Luhmann suggests

6.2 Capacity, change, and the virtuous circle

The hermeneutic and virtuous circle derived from insights emanating from VT schools reveals the following domino effect, part conceptual and part pragmatic. The following are independencies presented in a linear form but best thought of as an interconnected system. All must be present for learning to occur.

For a school:

- 1. The chosen form of organisation adopted determines structuration.**
- 2. Structuration determines the school's capacity for agential collaboration.**
- 3. Collaboration determines the school's capacity for complex adaptivity.**
- 4. Complex adaptability determines the school's capacity for absorbing information.**
- 5. Information determines the school's capacity for organisational learning.**
- 6. Organisational learning determines the school's capacity for innovation.**
- 7. Innovation determines the school's capacity for self-organisation.**
- 8. Self-organisation determines the school's capacity for emergence.**

The same-age school falls at the first hurdle by using structure to regulate and inhibit agency and the effect is to keep school leaders at a low level of organisational consciousness (see Laloux, 2014, above). VT disrupts the stabilising effect of structuration, intervening in processes of power that determine the duality of structure and agency (Giddens (1984). VT does this by enabling tutors,

students, and parents to form mini-self-actuating hierarchies that can form, disband, and reform as needed (described by Wilber 2014: xii).

A school can be called complex if all the feedback loops at its disposal are operating optimally to support learning. Capacity can then be defined as the sum of the school's collaborative capability, the complexity needed to absorb value demand. This means that given the same resources, the VT school allocates human resources in a way that increase its collaborative capability creating a virtuous circle where open collaboration, communication, complexity, and capacity build a learning and support culture (See Trivers, 2011; Goleman, 1985, on self-deception).

6.3 Defining capacity as a means of problem-solving

There are two definitions of capacity, and each relates to a particular organisational form identified by Miller and Droge (1986) as 'mechanical and organic' (see Peters and Waterman, 1982; Curado, 2006). The mechanical model, like System X, is based on 'obedience to authority and rigid delegation of responsibilities' (Gil et al., 2019). An organic model relies more on trust, shared information and responsibility, and interdependence (Belbin, 1969), i.e. ostensibly System Y. For the traditional school, capacity comprises the resources, finances, available expertise, time, and space needed to absorb the variety of demand. The school's traditional view concurs with Slack et al., (1998) who describes capacity as "the maximum level of value-added activity achieved over a set time" (cited by Johnston and Clark, 2001: 176). Although the two models, mechanical and organic, can share the same funding and resources and face the same value demand on their system, they may not have the same capacity.

A difference in organisational performance may be explained by levels of motivation, forms of training, experience, or even heroic and moral leadership, the rationale of the traditional mechanical model. Nevertheless, a telling difference between the two models concerns their operational capacity and the way capacity and system demand are perceived. In her discussion on 'capacity for organisation-wide problem-solving', Dougherty (1996) nominates the use of teams and networks, understanding organisation as a process, and engaging different aggregates of action to solve problems and to innovate. For Dougherty, the enablement required to make situated judgements is critical, allowing people to develop the skills involved in evaluating and resolving 'fuzzy' problems, make assessments, and decide a response, the essence of distributed leadership.

The same-age system is designed for command and control. While this is not absent in a VT school, such an organisation takes the view that situated judgements involving participant actors as agents are of fundamental importance in both the individual and organisational learning processes. Of course, the school is not entirely set free of its management shackles and curriculum thinking. It co-exists within a more extensive system and processes of power that lag behind the curve of environmental change. However, it can have a voice that is less compliant and less easily self-deceived, and if it can listen to and engage with enough voices, paradigmatic change is possible.

There are criteria that when investigated, assess the school's capacity for learning, innovation, and emergence. Set out below (bulleted) are lines of organisational inquiry synergised from Argyris and Schön (1974), Templeton, Lewis, and Snyder (2002), and Watkins et al., (1990), that might be called capacity indicators. Most arise during transformative learning when the need arises to identify assumptions and historical frames of reference.

These lines of school organisational inquiry involve,

- The school's means of identifying and correcting errors (single or triple).

- The extent of leadership distribution and the enablement of power to intervene.
- The capacity to harvest tacit knowledge and information from participant actors.
- The presence and effectiveness of multiple learning networks and feedback loops.
- The presence of a network capacity to store and retrieve knowledge and Information.
- The ease of access to information and flow.
- The degree to which agential actors are involved in the learning process.
- The distance between the system in use and the system espoused.

All inform transformative learning and provide a means of exposing assumptions and determining a school's capacity for learning.

Chapter 7. Transformative learning

7.1 Phronetic inquiry

The author did not set out to engage with what Bent Flyvbjerg calls phronetic organisational inquiry (POI) or to develop a transformative learning programme (TL), but they nevertheless encapsulate a life's work. This section draws together similarities between systems thinking, phronesis, and TL. Throughout this commentary, Flyvbjerg's four questions have acted as a guide to understanding traditional organisational models. They are not only systemic in form but underpin much of the andragogy of TL.

1. Where are we going?
2. Is this development desirable?
3. What if anything, should we do about it?
4. Who gains and who loses, and by which mechanism of power?

Missing from the dimensional-characteristics (Kools and Stoll, 2016) in their attempt to develop schools into learning organisations is question four, the question of power that governs capacity and the relational dualism of structure and agency.

Challenging traditional patterning involves analysing how power is applied in schools and how it manifests in ways that socially reproduce the past (Bourdieu 1990: 10; Dreyfus and Rabinow, 1982; Senge, 2006). Importantly, phronetic inquiry examines the practices of organisational actors and their relationship to organisational structures particularly their capacity to control and/or liberate. Bourdieu (1977: 72) describes this as 'the internalisation of externality and the externalisation of internality' (cited by Flyvbjerg, 2006). The VT form of organisation has the potential to combine structure and agency to effect social change by overcoming what Jenkins (1992) views as "the determinism of habitus".

Phronesis does this through its 'Deliberation about values with reference to praxis' (Flyvbjerg, 2006: 376), embracing the context of the everyday. Power in an organisational context is far from negative, but more a necessary and dynamic force that resides in the relationships between people and structure; what is important is the way power manifests itself, how it is exercised, and who needs to be in possession at any particular time (see Flyvbjerg, 2006: 376, and 2006a).

Phronetic organisational research, like the tradition of transformative learning emanating from Mezirow (1978) and Kurt Lewin's work (see Schein, 1996, for an overview), begins by examining everyday practical activity. The consultant-insider-researcher has no positionality concerning the school (its values, truth, or significance) but merely seeks to discover what happens in the everyday, what the school does (Clark, 2008). Once the leadership team agrees ('this is what happens in our school'), it is possible to explore the management rationale that justifies what is happening.

Flyvbjerg (2006: 378) suggests that such distancing allows the phronetic researcher to "master a subject matter even when it is 'hideous', and there is 'a brutality of fact' involved in such an approach". The 'brutality' arises from exposure when the policy rationale of well-intentioned managers deviates from the reality rationale of the system user's experience during policy reception (effectively, the capacity issue). When the differences between the system in use and the system

espoused are exposed through guided critical reflection (phronetic organisational research in essence), the experience can be both painful and liberating.

As Flyvbjerg says (2006: 383) 'the task of phronetic organisational research is to clarify and deliberate about the problems, possibilities, and risks that organisations face, and to outline how things could be done differently'.

Flora Cornish (2012) said:

Phronetic social researchers engage in detail in the complexities of the phenomena which they study, examining why things are the way they are, often uncovering undesirable workings of power, and asking how things could be improved. In so doing, they develop both practical wisdom and practical tools that provide lenses for problematising and reconstructing practices in other settings.

Such a statement describes my current approach to organisation.

7.2 The process of transformative learning (TL)

According to Albrecht's law (2003: 4), 'Intelligent people, when assembled into an organisation, will tend toward collective stupidity'. Albrecht was referring to the second law of thermodynamics, whereby groups and organisations tend to move towards entropy. Some school leaders (the ones this author meets) become aware of energy decaying into disorder when their energy expenditure is unable to arrest such a process and view *syntropy* as a way forward. Albrecht (2003: 40) describes syntropy as 'the coming together of people, ideas, resources, systems, and leadership', a different form of organisation.

Much of the author's learning and organisational insights emanate from the critical reflexivity of school leadership during transformative learning and their experience of paradigmatic change.

Figure 7.1 (below) sets out the conceptual framework needed to understand the constituent features of the transformative learning (TL) process. Its construction stems from influences, ideas, and academic descriptions harvested from a literature review, particularly Cranton (2006), Henderson (2002), Cranton and Kasl (2012), Calleja (2014), Nerstrom (2014), Boyd (2003), and Taylor (2007). These include further qualifications offered by Mezirow, regarded as the founder of TL (Mezirow 1975, 1986, 1991, 1997, and 2000). However, being mindful of organisational change, the work of Schein (1996) is included because of its pertinent analysis of Kurt Lewin's ideas on change theory (1947).

Mezirow (2003: 58) describes TL as,

Learning that transforms problematic frames of reference—sets of fixed assumptions and expectations (habits of mind, meaning perspectives and mindsets)—to make them more inclusive, discriminating, open, reflective, and emotionally able to change.

The programme devised by this author has grown in sophistication over almost three decades and is conducted in a bespoke way according to the subject school's context, circumstances, and participant reactions and sensitivities.

For school personnel to undergo what amounts to a paradigmatic transition requires changes in how participant actors perceive, think, and behave in the workplace as Cummings and Worley, (1997) advise. While transformative learning is rooted in theories of adult learning, transformational change has its origins in social sciences, organisation studies, complexity theory, and system science. The programme designed for schools is transdisciplinary (see Henderson 2002: 188).

A TL programme enables school leaders to deconstruct and unlearn their inherited form of organisation and expose working assumptions, creating space for new thinking and learning.

In many ways, TL and phronetic organisational research are similar and have roots in the theories of Frieze (1970), Habermas (1984) and others. From these sources, key concepts and signposts are presented (figure 7.1), including the lists of experiences that emanate from TL. The first list shows Mezirow's compilation of ten factors stemming from his original work on transformative learning (Mezirow 1975 and 1991), while the second draws on clinical psychology and an analysis of the experiences of those involved in transformational organisational change (Schein, 1996). Schein describes feelings of 'disconfirmation, guilt, and anxiety', while Mezirow notes 'disorientation, self-examination (recrimination), and alienation'. These are powerful emotions that require considerable skill in 'reading the room'.

The centre of the infogram (figure 7.1) explains how existing frames of reference are cognitively and socially constructed. Dominant 'habits of mind' and 'points of reference' become embedded over time and underpin working assumptions, determining the everyday routines of the workplace, and the duality of structure and agency. Received frames of reference – *the grammar of schooling* – determine the operational practices of the school, of which the central pillar is same-age organisation and the issue of capacity (discussed throughout). The realisation by the school leadership team that their mode of organisation may not be the benign influence it purports to be, but instead constitutes a barrier to learning and learning relationships, provides the initial perturbation that opens the school to new learning.

It is this seeming incompatibility that schools wish to explore and encourages them to accept the risk of assumptive exposure. A school that seeks guidance by opening itself to an external influence, has already initiated a reflective process and embarked on a new narrative journey. Such a perturbation - that the school may be running a system that fails to meet its value needs - makes the school vulnerable and able to see past rationalised self-deception. This receptivity to organisational learning⁸ is a unique event in the life-cycle of a school that few schools encounter. On this rare occasion, the school temporarily sets aside its autopoiesis and self-referencing nature and takes a small conceptual step into agential complexity.

Schools enter this learning journey are convinced that they are in control and are doing everything possible to make their schools the best they can be. Experience of a single model, however, has endowed schools with a low level of received organisational consciousness. Leadership teams are unaware that most of the transformational journal is about mindful change.

7.3 Levels of organisational consciousness

The intention behind TL is to raise the school's level of organisational consciousness. Referring back to the lines of inquiry (p. 3, above), Laloux (2014: 36) describes five such levels interpreted as follows. At the bottom are 'red organisations'. These are represented by the mafia, street gangs, and tribal militia; their guiding metaphor is 'the wolf-pack'. Sadly, schools only make it to 'amber', the next stage up. Amber organisations have highly formal roles within a hierarchical pyramid and exhibit top-down command and control behaviour where stability (the structure-agency dualism) is

⁸ For schools, organisational learning 'can be defined as a learning process through social interactions at the group and organisation level' (Bratianu, 2015). The consequence is an increased level of organisational knowledge that enables the organisation to perform better (see Argyris, 1999: 8).

valued above all else and employs rigorous application of power. Here, the future is repetition of the past, and the guiding metaphor is ‘the army’.

‘Orange’, the next stage, is marked by competition. Orange involves management by objectives, command and control over what to teach but freedom on how. This stage promulgated by UK and US governments in the form of MATs, free schools, and charter schools, is intended to inspire innovation. Instead, the leverage point described in earlier chapters is pushed in the wrong direction and fails to initiate change, introducing fear into the system.

For the next level, Orange, the ‘key breakthroughs’ are innovation, accountability, and meritocracy; the guiding metaphor is the machine. However, if structural accountability, targets, and inspection are overplayed, they stymie the innovation intended by competition, resulting in teaching to the test. They seize structure and agency. This action reduces agency by making parents consumers when they need and wish to be process participants and disrupts the home-school alliance vital to child development (see, Bronfenbrenner, 1990).

Green and Teal follow but must wait for governments to learn.

In ‘*Pedagogy of the Oppressed*’ and ‘*Education for Critical Consciousness*’, Freire explains consciousness as a socio-political and educative tool that engages learners in questioning the nature of their historical and social situation, something Freire calls ‘reading the world’. To enable such a process requires an andragogical framework that guides leaders through their transformative learning journey. An integral and characteristic feature is the perturbational experience discussed earlier, that motivates learning. For Mezirow (1975), it is “a disorientating dilemma”, and for Schein (1996), it is “disconfirmation”. Without such an unsettling experience, the transformative learning needed to execute successful transformational may not occur (Henderson, 2002; Mälkki and Green, 2014; Jacobs, 2019).

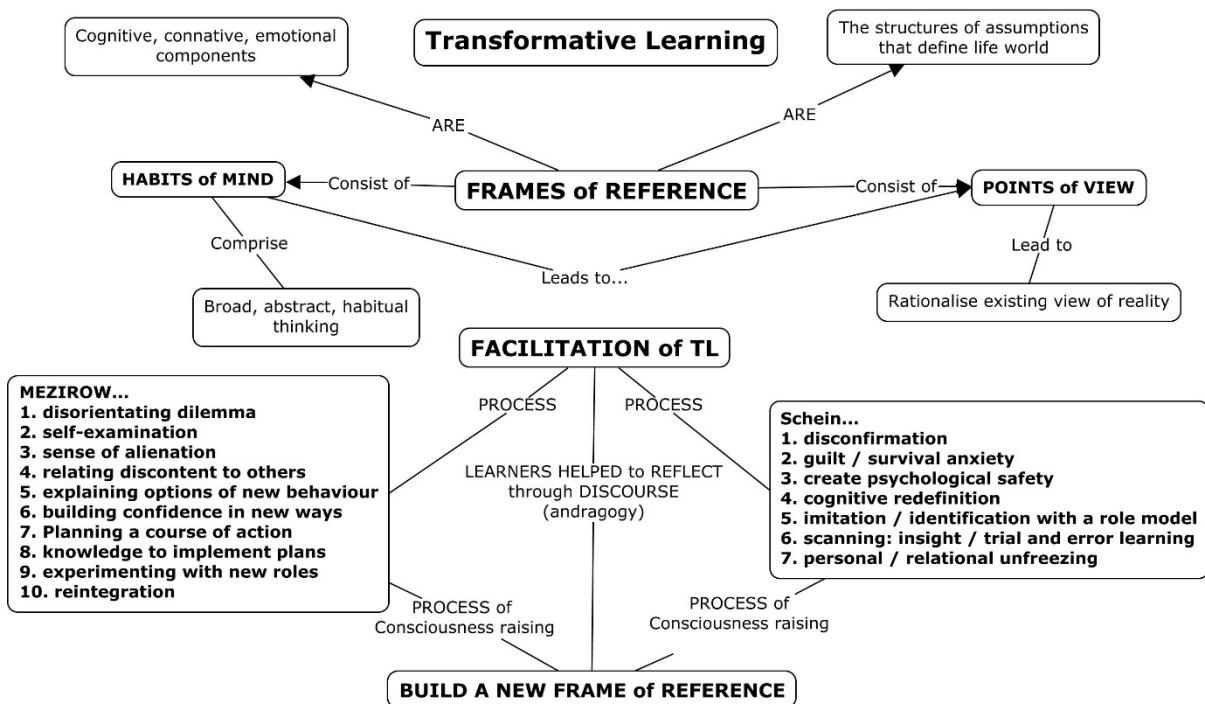


Figure 7.1. A conceptual map of the transformative learning process (Barnard, 2020)

The investigative focus of TL centres on what might be called the 'in-between' or what Mälkki and Green (2014: 8) call 'a journey through liminality'. During TL, the school finds itself hovering between two sets of meaning frameworks. One, the same-age structure, must be dissolved and unlearned to make way for a new framework of meaning to occur. The 'in-between' is the chaotic and messy area or *metanoia* between deconstruction and co-construction where new operational thinking occur and organisational consciousness develops. Only by coming to terms with the reality of the school and its assumptions as an amber organisation can it (the school) be understood. Ironically, for the school, this means leaving a system about which little is known for one where almost nothing is known. There is danger everywhere.

This commentary and the public works not only track the learning journey of schools that transition but the author's journey too. As such, it satisfies the call by Taylor (2007) for the kind of analysis that focuses on the micro-processes involved in TL.

Sergiovanni (2000) identifies two competing forces at work in schools, *Systemworld* and *Lifeworld*. *Systemworld* comprises the rational rules, regulations, and policy implementation involved in rational structuration, one that reflects the grammar of schooling. *Lifeworld* involves culture, values, and the desires of participants, or what might be called the struggle for authenticity. Both worlds proclaim uncertain and differing purposes that interweave and conflict, a situation that can lead to nuances of meaning, stretched definitions and differences in understanding. Just as the excesses of structure limit agency, so *Lifeworld* finds it difficult to reconcile its values in *Systemworld*.

In many ways, the task of resolving the conflict between power and agency, leadership and followership, values and purposes lies at the core of this commentary. Each individual and group tries to make sense of the organisational conflicts they experience. Landman (2012) notes how narrative dwells in past formative experiences and explains why the strong emotions and opinions produced are a healthy source of empirical data.

7.4 TL as phronetic organisational inquiry

Following Kurt Lewin's unfreezing, learning, and refreezing strategy (unlearning, new learning, co-construction), the TL process designed for schools is in three parts, investigation, deconstruction, and co-construction. The investigation reveals how schools work; what happens. Deconstruction employs critical reflection to challenge the assumptions and the existing rationale of leaders and managers. Co-construction is the process of values-led design, building a new relational architecture. Unless the deconstruction is thorough, there is a risk that the deep-seated management and leadership assumptions of the past carry forward and jeopardise the future as autopoiesis predicts.

To investigate how an organisation works requires the insider-trading of stories that start with questions that seem obvious, but when pursued, cut-through received rationales and assumptions. There are three leading and underpinning semi-rhetorical questions which act like Flyvbjerg's *fissures* to reveal what is happening, i.e. the difference between the system espoused and the system in use.

1. Does the school care about the students?
2. Does the school believe in parent partnership?
3. Does the school trust staff?

These questions contain hidden rhetoric and meanings that the school has rationalised over time, but which have rarely been interrogated. It is a reflective journey from a heavily rationalised leadership position. The leadership team is very sure of the answers.

[Of course, we care about our students. How dare you even ask? Of course, we believe in parent partnership! We even have a certificate to prove it! And of course, we trust our staff? And by the way, parents can phone us at any time.]

But if these questions are asked of the leadership during participant role-play situations and referenced to the system they have yet to deconstruct, the response is less confident and often contradictory. As Gadamer indicated, the teacher's 'fusions of horizons' (the totality of all that can be realised) rely on a mix of hermeneutic understanding, preformed ideas (history), and bringing prejudices to the table (see Clark, 2008, on Gadamer and the consultant/client relationship).

Enabling leadership teams to share their stories and prejudices brings a better understanding to the 'policy reception' of participant actors (staff, students, and parents), i.e., seeing the school through the eyes of others. As assumptions fall, one by one, a different response emerges.

[Of course, I can see that now. It did not cross my mind that our student induction day was so awful. We thought the data sheets we sent home showed us to be efficient and on the case. We did not feel we should bother (other) parents too much. It is evident that we have not thought this through].

The wonderful thing about TL is the clarity it can bring to schools as they see the reality of their school, usually for the first time, and discover how their values slipped away, and how they might be returned. However, TL can easily break every rule in the university research handbook and be both a brutal and liberating way to seek the truth, and requires experience and caution.

Condensing three hours of reflection and stories, deconstruction, and co-construction, into this one paragraph can only offer a gist of the complexity involved. The purpose is to evolve praxis through participant discourse and role-playing (through the voices of students, staff, and parents, as receivers of school policy and rhetoric), all during the brief moment in time when the school's window of learning is open. Nevertheless, these conversations about structures and learning relationships are the source of much that is important in the author's public works to which this commentary speaks.

It has taken this author thirty years to understand that the conversations that begin with organisation and system architecture are about human understanding, human capacity, who we are and need to be. Nevertheless, the process returns to Flyvbjerg's questions, elaborated below.

1. Where are we going with our current same-age system? Does it reflect our values?
2. Is this development and all the investment in time, making a difference? If so, where is the evidence?
3. What if anything should we do about our situation. Can we create safer, healthier, learning schools with more authentic purposes?
4. Who gains and who loses, and by which mechanisms of power? Can we shift to a system that shares power, enables agency, one beneficial to all?

It is from many such sessions that a picture emerges of the school's organisational system, one that causes many of the problems that the school then spends five years trying to fix; issues like social relationships, resilience, character, attachment, and confidence. Instead of these important matters

being subsumed into pro-social programmes and reduced to work-sheets taught and boxes ticked, shouldn't they first be grown in the everyday culture of the socially collaborative school?

James Coleman believed (and showed) that parents and community have a more significant influence on achievement and outcomes than schools. It is the purpose of VT schools to build on such a synergy, one that enables tutors to be the other parent in the school and the parent to be the other teacher in the home, and both engaged within a network of collaborative learning.

7.5 Ethical considerations in transformational learning

For some, the andragogical experience of TL is welcome and euphoric, but for others, the autopoietic feeling of lost identity and the threat to survival can be challenging. Being in a safe group of one's peers is essential as is the skill of the friendly-outsider in predicting areas of challenge, valuing contributions, and building a consensus via group narrative to secure ownership and direction.

Only schools that have begun a process of reflection and opened themselves to the idea of change, choose to access TL. Without that initial openness to learning, and to the possibility of a more evolutionary and ecological narrative, the stubborn resistance of autopoiesis remains, and any repair of school authenticity delayed. The insider/researcher/consultant or friendly outsider must be aware that an andragogical process, (like any meeting), will involve disruption, emotional reaction, and the critical reflection that enables sensemaking. In an earlier edition of her book, Cranton (2006: 175) reflected on the questions that haunt the ethnographic traveller as agents of change. She asks:

- What right do I have to encourage you to question what you believe?
- When is it a responsibility and when is it an imposition?
- When is it empowering and when is it destructive?
- At what point do I need to leave aside my ego and thirst for learners to do as I do?

While there is always the possibility of harm, the greater ethical harm is to remain silent and not listen to agents, the group, and share stories in the search for meaning in the everyday.

When school leaders are asked if they "care", and if they believe in parent partnership, and if they trust staff, they point to endless examples and situations as proof. When asked the question below, following critical reflection, schools are surprised and have no answer.

Q. Is there a time in a child's school career when the child, their parents, and someone in the school who knows the child well and sees them every day, can sit down with all the assessment information available in an understandable form, and share information without limitations on time, and together construct agreed strategies for improvement?

It is a question I have asked of many hundreds of leadership teams. Not one could supply an organisational solution, and few tried, but this is what it is to show care in school.

Care is a capacity issue and to care is not to just dry the tears but to prevent them from forming. To genuinely care starts with organisation and the release of sufficient agency to form the relationships that secure resilience, enable attachment, and grow confidence and trust. This is the reason why this paragraph comes under the ethics heading. It is a frustration to same-age schools that they must redefine what it is to care in line with the limitations of their capacity to absorb the value demand they so heavily discount.

Chapter 8. The contribution to knowledge of the public works

It is for others to judge whether decades of scribbling and collaboration with schools and institutes have disrupted the status quo, or whether they have intervened in organisational processes of power in secondary schools. If this practitioner has learned anything, it is that changing minds is challenging, and I am grateful to any system converts. The development of a transformative learning programme has helped schools to make the most critical decisions about organisational change they will ever make. By now, the lives made better must approach several hundred thousand. Whenever an email arrives seeking help, there is always someone at the other end who intuitively knows something is systematically wrong and wants to make changes. Today, that person is rarely from the UK.

There can be little doubt that these works have played a leading role in the development of a revised organisational model. It was a privilege to be there at the start as a systems obstetrician and to nurse the development of a new system of school organisation through a turbulent time in school history. VT remains a fragile prototype based on multi-age tutor groups and bio-ecological systems theory, one adopted, trialled, and developed by an unknown number of schools worldwide. Some have adopted the new principles of management and servant leadership in line with their values and are the first to lay legitimate claim to a more equitable distribution of leadership and power.

In many ways, the value of the new model and the journey of the heretics that try and make it work, rests, paradoxically, in furthering an understanding of the traditional same-age system. Without VT schools, the analysis of the same-age model described throughout, may not have been realisable. For the prisoners of the past who chose to flee in Plato's allegory of the cave, their story reveals much about time spent in solitary confinement and the assumptions made about the shadows on the wall that caused them fear. Persuading other schools to leave the cave and liberate themselves, however, is another matter.

At a personal level, I have come to understand the secondary school in an autopoietic sense, as a living system doing all it can to preserve identity and harbour those who walk its corridors from the dangers beyond the school gates. I have learnt that schools are only open to deep learning on rare occasions when they feel less fragile and afraid, but such moments are diminishing, and it may be all too late. The arrival of the MAT has denuded schools of leadership, reduced teachers to delivery operatives, increased bureaucratic costs, and offered sameness in exchange for innovation. Power has again accrued at the top where it is least needed.

The status quo suits the autopoiesis of school leaders too, and the bigger system; it maintains existing processes and avoids too much boat-rocking. It also suits many researchers who accept the same-age structure as benign and in-so-doing help maintain the status quo of which they complain. Sidestepping the research traditionalists has cost time and effort.

Because of the courage of VT schools, the limitation of the same-age hypothesis as a theory of organisation is exposed for all to see. These find expression in assumptions about relationships, learning, and intelligence, a quest for data at the expense of wisdom, and a redefining of what it is to care. Their insights reveal the systemic link between organisation and capacity, the duality of structure and agency that maintains balance and order, underpins social reproduction, and ensures sameness over time. The cost to individual and organisational learning, to innovation, self-organisation, and emergence is the failure demand paid by everyone. Deming said, 'Our prevailing

system of management has destroyed our people', (W. Edwards Deming in the introduction to Senge, 2006).

The heuristic chain used to describe schools remains a work in progress. Nevertheless, the VT school displays the systemic characteristics of a complex adaptive system and a learning organisation. It seems to connect organisation, capacity, collaboration, complexity, organisational learning, and learning organisations in a way that is self-organising and emergent. Unlike the same-age system, it can evolve and remain current. The VT system shows why age grouping is a change lever that when pushed in the right multi-age direction initiates a domino effect across the organisation for those brave enough to follow its lead. Whether this counts as epistemological or organisational knowledge is for others to decide.

The public works reveal how insights from the VT concept are applied to transformational change. They explain the failure of reform and detail more precisely how the grammar of schooling works. Such insights show how capacity theory and practice explains the loss of parental engagement and how to win it back. It explains why schools in their same-age form cannot be developed as learning organisations because they are *complicated* rather than *complex*.

Whether the public work can be expressed as context-based epistémé (a search for universal, organisational truths), techné (better ways of managing organisations), or phronesis (a search for practical value rationality) is for others to judge. The 'works' certainly have transdisciplinary elements that combine, separate, and recombine to hint at spiritual intelligence, "the goal of goodness", the subtitle of my last book.

When asked, what is the purpose of your life's work, the answer is simple and complex. It is to confront reductionist and tribal propensities, to alert others to the siren call of those who peddle snake-oil to schools, and to avoid the descent into Laloux's 'Red Zone' of winner-takes-all. It is to steer back to an ecological holism. Emergence occurs when different elements combine that create possibilities that are far greater than the sum of their parts, a possibility denied to schools in their current form. Today, UK secondary schools have circled their wagons and made themselves impenetrable to those that need them to be more than they are, and to those that seek to rescue them.

It is the same for a child. There is no way of knowing which of the child's contextual experiences or what combination of effects shape their disposition to learning. The great teacher is a blessing but remains serendipitous. The idea that schools cannot exceed the quality of their teachers, the view perpetrated by McKinsey, is patently false. A better truth is that teachers cannot exceed the quality of the system in which they work. What does matter is the child's development, the degree to which the cultural environment of the school can flex to absorb her complexity, connect with her context, and help her grow into the person she was meant to be.

In a VT school, every child is a leader, mentor, and spirit guide, and everyone is known and matters. These are not curriculum issues, but relationships that begin when the child meets her tutor and older students before she even enters the classroom; traits of character formed by the empathy of others, belonging, and all made possible by the organisational culture of the school.

As the VT model develops, the author tracks its progress and researches the many concepts that light its journey, from systems thinking, structuration theory, complexity theory, organisational learning theory, psychology, social theory, and the theory of learning organisations. The implications of this model are considerable but whether it survives will be down to schools themselves and whether they can escape the gravitational pull of powerful vested interest groups.

Many have failed. New headteachers arrive and restore the original power structure, what they know. Some try to implement change without transformative reflection. Others have tried to do it 'our way' and failed to learn from more successful travellers.

The multi-age design is dynamic, reliant on trust and distributed leadership (power), and is authentic in form. For this practitioner/author/researcher, it represents what Oliver Wendell called "the simplicity on the other side of complexity".

Chapter 9. Philosophical reflections

Change is an ethical issue. If systemic thinking is right and the relational form of secondary schools as reflected by the grammar of schooling is not producing the outcomes expected, then doing nothing is not an option. But neither is trying to make such a system spark into life. The way forward for VT is uncertain. It attracts those reflective leaders who question the viability of their existing model and its grammar. There are a number of strategies that may support progress.

1. Changing the name to *vertical integration* may seem less daunting to schools, though the loss of the word *system* might undermine its paradigmatic purpose. The point is to encourage schools to think in systems as Donella Meadows suggests.
2. Raising the issue at a political level. I have contacted my local MP (a Secretary of State) with a view to giving evidence to the education select committee.
3. Completing and publishing academic papers. Two more are currently pending peer review.
4. I am writing a paper on wellbeing and organisation with a behavioural psychologist (who has the allotment next to mine!) to increase the scope of VT (or VI)
5. I shall submit papers to conferences and accept the invitation from my academic tutors to write a joint paper.
6. I shall continue to offer my services without cost to any school anywhere in the world.

In many ways the public works are a critique of the traditional model of secondary schools based on same-age structuration. The arrival of a viable alternative enables second order observation that is not otherwise available, casting light on the assumptive frailties of the same-age hypothesis. However, the VT system (the concept of vertical integration) is also imperfect. It is not only embryonic and incomplete but struggles for survival within the larger system, dependent as it is on multi-age age-grouping and contrarian principles of design. As a viable alternative, it faces huge obstacles and may never reach the kind of *tipping-point* described by Malcom Gladwell.

Because the VT system is complexity-reliant (relies on the collaboration and messiness of all participating players) it bridges the paradigms of modernism and post-modernism; it is a hybrid (see Boisot and McKelvey (2010)). It takes the values and principles of an existing system and reformulates them organisationally into a new paradigmatic structure. There is a story told of Mt. Edgecumbe High School by Langford and Cleary (1995) and the school's "pioneer use of quality theory, processes, and tools" based on Deming's 14-points. Many educational tourists made their way to Sitka, Alaska, to learn about the new approach. When they returned to their schools enthused to bring about change, each introduced what they thought they had seen. According to Langford and Cleary "They were all wrong" and "doomed to failure". What they had failed to focus on was "quality relationships" and how these were built.

It is the same with VT. Despite many hours of training, it is difficult for schools to completely alter an existing mindset and much easier to adapt the parts thought to be change-breakers. Unfortunately, reverse reductionism never works well. Change relies on the trust advised by Tschannen-Moran, and Bryk and Schneider, but establishing trust in a controlling system is fraught with difficulty. To reach such a point requires in-service training, new approaches to leadership, better information, liberating management and more. Too often schools return, asking how they can make VT better, what it is they may have missed, and sometimes schools revert to the safety of

the system they tried to leave. As a system architect, this means dealing with numerous self-criticisms:

1. What right do I have to interfere with practitioner beliefs and question their values?
2. What right do I have to infer that what school leaders say is not what they do?
3. What right do I have to suggest that schools don't care, collaborate, and communicate?
4. What right do I have to impugn levels of organisational consciousness?
5. What right do I have to encourage leaders to take such huge risks with people's lives?
6. What right do I have to deconstruct a mindset schools have somehow made work?
7. What right do I have to suggest to school leaders that they are the cause of the wellbeing issues they spend years trying to fix?
8. What right have I to explain to leaders that far from running the school system, the system runs them?

But that is what my research suggests and the lines of inquiry support. There are many such questions and although it is easy to find moral answers based on the interests of children and practitioners, and the greater good, the challenge is great and the risks remain. My time with schools is never enough and the guilt never leaves. Often schools mix tutor groups but keep all other sub-systems the same. It is a start, but it is not a system.

When schools consider the idea of system change and the possibility of multi-age organisation, they often do so not with an openness to new learning, but with assimilation in mind. The "lines of inquiry" explain how technical rationalism maintains homeostasis. Like "the Borg", the inherited same-age mindset and its rationalised scaffolding cannot be undone without significant perturbation. Schools, after all, have climbed high up what Chris Argyris (1987) called "the ladder of inference", a false reality.

The first step to school organisational change involves repopulating tutor groups with children of all ages, a process demanding considerable care, persuasion, and expertise. It is an easy thinking mistake for schools to see vertical tutoring as a change to the school's pastoral system rather than the start of a paradigmatic shift, and enabling everything to continue as before. Such is the damage done to schools that their autopoiesis to assimilate, to control narrative, to self-reference, and maintain processes of power and identity has grown stronger. Like the prisoners in Plato's cave, they prefer the comfort of their same-age situation to the risk of exposure to what Laloux (2014) calls organisational consciousness.

Sadly, the same-age emperor has no clothes and trying to pretend that he has or trying to find second-hand stuff to tack-on, cannot hide what is evident to system escapees. Weick and Westley (1999: 206) describe learning as "the act of repunctuating continuous experience ... what people learn are intersubjective meanings embedded in culture". For such a process, Weick and Westley advise that "organisation must be reduced, and doubt and curiosity cultivated". Structure must not be allowed to trump agency but should enable it to speak. These public works are such a "repunctuation", they may not fully rewrite the "grammar of schooling", but they are a start.

At the start of this journey (2010-2015) schools requesting help with transformative learning, i.e. changing from a same-age to a multi-age system, were those that struggled academically, and UK based. These schools sought to increase their *academic press* but maintain their *culture of care*.

However, since 2015, schools have found themselves in multi-academy trusts, internment camps for the disaffected, and paradigm change halted. Demand for consultancy on transformational change has seen a sharp and (perhaps) less than desirable shift towards international schools, grammar schools, and private schools, institutions that feel they can do more to develop the leadership and spiritual potential of their clientele.

I now find my own moral compass distorted. In developing an inclusive system designed to support all students, I find myself helping those schools already significantly advantaged (despite offering all my services for free). In the UK, the self-improving school system (Hargreaves, 2012; Ainscow, 2015; Greany, 2018; Salokangas and Ainscow 2018) has driven schools into multi-academy trusts, closed command and control structures high on normative self-referencing and low on agency and innovation. Arguably, the 'culture of care' has been abandoned and collaboration narrowly reinterpreted within these structures, and the need for innovative leadership reduced and compromised. The state, through the new public management (NPM), has produced a system that corals schools into massive trusts, academies, and charters that exclude outsiders and allow power and rewards to once again, accrue at the centre. The autopoietic system always reverts to type.

I am now an active agent of inequality serving fee-paying and grammar schools, operating in contexts far from those intended, and must reflect on how this can be reversed. A way forward is to stop describing VT as a separate system (although this is what it is), but instead to talk of *vertical integration*. The semantic difference may encourage schools to learn more and so provide a more subtle entry point for systemic change.

I once described Peter Senge as Moses, one who delivered the ten commandments but failed to lead the systems thinking tribe into the Promised Land of the learning organisation. In fact, his collaboration with Goleman on schools (Senge and Goleman, 2014) reveals that both had bought into the reductionism and self-deceit they claim to chastise. Instead of the ecology of a learning organisation, they believe that the schools we already have can be altered with the right pedagogical approach. Had Senge drawn the stocks (sources of information) and flows (how information enters or leaves a stock) in a system, he would have noticed how the various elements, interconnections, and functions (Meadows 2011: 11) had become subsumed in secondary schools rather than practised. Goleman too might have noticed that the grammar of schooling flies in the face of the very emotional intelligence he regards as essential. Instead, both Senge and Goleman pursue reductional lines of inquiry based on pedagogical change and the idea that behaviour and character can be taught regardless of the child's context.

Pro-social programmes are not an answer. Instead of organisational reform (triple loop) schools are invited to make minor pedagogical adaptations with a little curriculum editing, leaving their identity intact and structure untouched (single loop). Schools play to their unique strengths, their unconscious autopoietic penchant for survival and identity, camouflaged beneath a confusion of pedagogy and power. With a literal *change of mind*, their potential for creating a better world rather than recreating the one we have, is limitless.

There is a systemic fork in the road that requires a map and compass. Tate (2009) defines systems thinking as a management discipline that helps us understand organisational capacity and limitations by examining the interactions between the components of the system, i.e., a system can constrain just as it can liberate. To understand a system requires the study of feedback processes.

Forrester (1961: 15) said, “Everything we do as individuals, as an industry, or as a society is done in the context of an information-feedback system”. In *The Systems Thinking School*, I set out the circularity of feedback processes, behaviour patterns, relationships, and mental modelling and pointed to learning loops that were disconnected, missing, or assumed present, by schools.

In the USA, there are many groups, such as the Waters Foundation that have taken systems thinking and broken it down into its component parts or reductionist ways of seeing and sensemaking. Ironically, such groups explain how schools should *teach* systems thinking to young people while at the same time retaining the school’s organisational structure. It seems that single loop promoters of pedagogy are determined to ignore the systemic triple loop learning problem. Like aid-workers, they walk past what works, and instead attend to the system fallout and by so-doing make matters worse. Too often researchers (e.g., Dweck, Duckwoth, Tschannen-Morrin) introduce measurement scales to assess grit, trust, leadership, perseverance, resilience, and partnership benefits based on data from the existing system, thus reifying the idea that the same-age system can yet be made to work by attending to personnel issues. Blame is shifted to wherever needed.

Without this realisation, one fork in the road leads back to the schools we already have, the mobius route to a teaching and delivery organisation, while the road less-travelled leads towards collaborative learning and the aspiration of the learning organisation. This fork requires a reflective study of the terrain in a Land where signposts change overnight and existing maps are no longer reliable, a transformative increase in consciousness.

There have always been concerns expressed by 19th Century thinkers about the role that schools and the state play. Tocqueville (1840) wrote about ‘soft despotism’, the ability of the state to bend people to its liking through ‘a network of small, complicated rules’ that prevent individual expression and development, perhaps the routines of Giddens’ structuration theory. Writing ‘*On Liberty*’ John Stuart Mill voiced concerns regarding homogenisation, a kind of ‘enslavement’ that starts with ‘a State Education’, something he described as a “mere contrivance for moulding people to be exactly like one another”. These themes are picked up by Friedrich Nietzsche (1883) in *Zarathustra*. Nietzsche said, ‘we must have chaos to give birth to a dancing star’. For Nietzsche, ‘the time is coming when man will give birth to no more stars’, the time of the ‘Last Man’. Today, people are simply cancelled or de-platformed as a new tribalism based on identity politics forms. In such a world, said Nietzsche, ‘everyone is the same: whoever thinks otherwise goes voluntarily into the madhouse’.

The author claims limited expertise of Heidegger, but a liberal interpretation of *Dasein* suggests that school practitioners fall easily into an everyday mode of organisational existence to which they quickly adapt and rationalise. For the most part, agency surrenders to the current way of knowing defined by the *they* (in part, the assimilation of received frames of reference and organisational assumptions). Sherman, (2009) describes how ‘This everyday mode of being tends towards the average, a levelling down of the truest and best possibilities of *Dasein*, to a common currency of existence’. While this situation brings *Dasein tranquillity* (Heidegger, 1962: 222), it remains inauthentic. Practitioners are *thrown* into such facticity and historicity and for the most part, live out their professional lives within inherited structures, an undeveloped state of organisational consciousness (Laloux, 2014; Freire, 1970). When schools become aware of this detachment—that (for example) their values-led mission ‘to make a difference’ is compromised – low morale, gaming, and loss of moral purpose follow. In Heidegger’s terms, this makes the everyday world in which they operate less relevant; the sense of “*being-in-the-world*” diminishes, inducing anxiety.

The challenge facing school practitioners is to respond to the anxiety that haunts them and shift from lostness in the *they* to a more authentic version of themselves, one that involves a revised way of knowing and acting in the world. The search for authenticity seems to express the rationale for change voiced by schools willing to take the risk of paradigmatic change.

Horace Mann became one of the first educational tourists, settling on the Prussian system of education and importing it to the USA 175 years ago. It has subsequently spread worldwide, and Mann would have no difficulty recognising the landscape that he helped shape. In an interview with Hubert Dreyfus and Paul Rabinow (1983) and cited by Frank (2006), Foucault talked of choices. Foucault would not accept VT as an alternative but as part of a *problématique* in which schools must decide which is the greater danger.

As for my work, I feel I need to find other fissures to crack open the blockage. I shall continue to teach schools across the world at no cost and work with others to effect change. The DProf may help if awarded. As far as influencers are concerned, there are too many to name and few that are alive today, yet they continue to guide my socially conservative thinking and inform the messiness of my writing.

The last word goes to Weick and Westley (1996: 206).

In the final analysis all organisations are the authors and readers of their own near-miss narratives. What distinguishes the learning organisation is its capability to confront the possibility that the story being told is simultaneously a tale of disorder in which the reality of danger masquerades as safety, and a tale of order in which the reality of safety masquerades as danger. To hold on to both possibilities long enough to stir the forgotten is to affirm the oxymoron of organisational learning.

Peter A Barnard

06/06/2021

References

- Ackoff, R. L., & Warfield, J. N. (1977). Redesigning the future, a systems approach to societal problems. *IEEE Transactions on Systems, Man, and Cybernetics*, 7(10), 759-759.
- Ackoff, R. L. (1979). "Resurrecting the future of operational research". *Journal of the operational research society*, 30(3), 189-199.
- Abelaiz and Garospe (2009). "Can the grammar of schooling be changed?" *Computers in Education*. 53(1), pp. 51-56.
- Adams, S. (2018). School mental health for all, *Management in Education*, Vol. 34(1). 28-30.
- Akram, M., Watkins, K. E., & Sajid, S. A. (2013). Comparing the learning culture of high and low performing high schools in Pakistan. *Literacy Information and Computer Education Journal*, 4(2), 2022-2028.
- Anderson, P. (1999). Perspective: Complexity theory and organisation science. *Organisation Science*, 10(3), 216-232.
- Antonacopoulou, E. and Chiva, R. (2007). "The social complexity of organisational learning: the dynamics of learning and organising". *Management Learning*, Vol. 38, No. 3, 277-295.
- Argyris, C. (1999). *On Organisational Learning. 2nd Edition*. Blackwell Business, Oxford.
- Argyris, C., Putman, R., & Smith, D. M. (1985). *Action science* (Vol. 13). Jossey-Bass.
- Argyris, C. and Schön D. (1974). *Theory in Practice: Increasing Professional Effectiveness*, Jossey-Bass, San Francisco, Ca.
- Ashby, W. R. (1958). Requisite variety and its implications for the control of complex systems. *Cybernetica (Namur)*, Vol. 1, No. 2.
- Atkinson, J. (2015). Evolutionary biology. In J. Atkinson, E. Loftus, and J. Jarvis (Eds.) *The Art of Change Making*, The Leadership Centre, London.
- Axelrod, R., and Cohen, M.D. (1999). *Harnessing complexity*; New York: The Free Press.
- Babb, S. (2019). Understanding the middle tier: comparative costs of academy and LA school systems. Available at: <http://www.sarabubb.com/middle-tier>. Accessed 17/11/20.
- Ball, S. J. (1998). Performativity and fragmentation in 'postmodern schooling'. *Postmodernity and the fragmentation of welfare*, 187-203.
- Banathy, B. H. (1992). *A systems view of education: Concepts and principles for effective practice*. Educational Technology.
- Barabási, A. L. (2003). *Linked: The new science of networks*. Basic Books, New York.
- Bardone, E. Bauters, M. and Gazulla, E. (2017). "A phronetic approach to educational design-based research: Issues and aspirations". *Educational design research*, Vol. 1 (1), 03.
- Barnard, P. (2000). *Chaos, culture, and third-millennium schools*. Apocalypse Press, Guildford.
- Barnard, P. A. (2010), *Vertical Tutoring: Notes on School Management, Learning Relationships, and School Improvement*, Grosvenor House Publishing Ltd., Guildford
- Barnard, P. A. (2013), *The Systems Thinking School: Redesigning Schools from the Inside Out*. Rowman & Littlefield Education, Rowman & Littlefield Publishers Inc., New York, Toronto, and Plymouth, UK.
- Barnard, P. A. (2015), *From School Delusion to Design: Mixed-Age Groups and Values-Led Transformation*, Rowman & Littlefield Education, Rowman & Littlefield Publishers, Inc., New York, Toronto, and Plymouth, UK.
- Barnard, P. A. (2018) *Socially Collaborative Schools: The Heretic's Guide to Mixed-Age Tutor Groups, System Design, and the Goal of Goodness*. Rowman and Littlefield, New York, and London
- Barnard, P. (2018). *Socially collaborative schools: the heretics guide to mixed-age tutor groups*, Rowman and Littlefield, New York, and London.

- Barnard, P. (2020a). Why schools fail the complexity test and what they need to do to pass it. Plexus Institute. Available at: <https://plexusinstitute.org/peter-barnard-final-may-2019/> Accessed, 16 July 2020.
- Barnard, P. (2020b). Secondary school structure, organisational learning capacity and learning organisations: a systemic contribution. *International Journal of Education Management*, Emerald Publishing 2020 (details to follow).
- Barnard, P. A. (2018a), "A systems thinking investigation into the rise in mental health and wellbeing issues in UK secondary schools with particular reference to same-age systems: a call for more research". *Mental Health in Schools*, Vol. 2, Leeds Beckett University.
- Barnard, P. A. (2018b), "Mixed-age groups, leverage points, and applied systems thinking: how changing from a same-age system to a mixed-age system leads to social and collaborative professionalism and a happier school". Paper presented at *BELMAS International Conference*, Windsor, 2018.
- Barnard, P. A. (2020c), "Secondary school structure, organisational learning capacity and learning organisations: a systemic contribution", *International Journal of Educational Management*, Vol. 34 No. 8, pp. 1253-1264. <https://doi.org/10.1108/IJEM-01-2020-0037>
- Barnard, P. A. (2021d), Capacity, parental engagement, and home-school partnership: a tale of two systems. *International Journal of Educational Management*. Emerald Publishing. (Final stage of peer review).
- Barnard, P. A. (2020e) "Developing secondary schools as learning organisations: lessons in capacity from multi-age organisation". ResearchGate.
- Bar-Yam, Y. (2019). *Dynamics of complex systems*. Addison-Wesley, Reading.
- Bateson, G. (1972). The logical categories of learning and communication. *Steps to an Ecology of Mind*, 279-308.
- Bateson, G. (2000). *Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology*. University of Chicago Press.
- Baum, J. and Shipilov, A. (2006). Ecological approaches to organisations, in R. Clegg at al., (eds.), *Sage Handbook for Organization Studies*, pp. 55-110, 2006, Available at SSRN: <https://ssrn.com/abstract=1017085>, accessed 27 August 2020.
- Beer, S. (1959). *Cybernetics and Management*, English Universities Press.
- Beer, S. (1981). *Brain of the Firm* (second edition), John Wiley, London, and N.Y.
- Beer, S. (1984). The viable system model: Its provenance, development, methodology and pathology. *Journal of the operational research society*, 35(1), 7-25.
- Beer, S. (2001). "What is cybernetics?" *Kybernetes*, 31(2): 209-219.
- Belbin, R. (1996). *The coming shape of organisation*. Butterworth Heinemann, Oxford.
- Bennis, W., and Slater, P. E. (1998). *The Temporary Society: What Is Happening to Business and Family Life in America under the Impact of Accelerating Change*. Jossey-Bass. NY.
- Bennis, W. (1969). *Organisation Development: Its Nature, Origins, and Prospects*, Addison-Westley, Reading, MA.
- Bess, K. D., Perkins, D. D., & McCown, D. L. (2010). "Testing a measure of organizational learning capacity and readiness for transformational change in human services". *Journal of prevention & intervention in the community*, 39(1), 35-49.
- Betts, F. (1992). How systems thinking applies to education. *Educational Leadership*, 50(3), 38-41.
- Biesta, G. (2019). Should teaching be re(dis)covered? Introduction to a symposium, *Studies in the Philosophy of Education*, 38, 549-553, Springer.
- Blond, P. (2009). Rise of the red Tories. *Prospect Magazine*, 155.
- Boisot, M., and McKelvey, B. (2010). "Integrating modernist and postmodernist perspectives on organizations: A complexity science bridge". *Academy of Management Review*, 35(3), 415-433.

- Bor, W., Dean, A., Najam, J. (2014). Are child and adolescent mental health problems increasing in the 21st Century? A systematic review. *Australian and New Zealand Journal of Psychiatry*, 48(7); 606-616.
- Bowker, J, and Spencer, S. (2010). "Friendship and Adjustment: A focus on mixed-grade friendships", *Journal of Youth Adolescence* 2010/39, pp. 1318-1329.
- Boyd, R. D. (2003). *Personal transformations in small groups: a Jungian perspective*. Routledge.
- Bourdieu, P. and Passeron, J. (1977). *Reproduction in education, society, and culture*, Sage, CA.
- Bourdieu, P., 1986. The Forms of Capital. In Richardson, G. (Ed.) *Handbook of Theory and Research for the Sociology of Education*, 241-258, Greenwood Publishing, New York.
- Bourdieu, P. (1990). *In other words: Essays towards a reflexive sociology*. Stanford University Press.
- Bowen, G. L., Rose, R. A., and Ware, W. B. (2006). The reliability and validity of the school success profile learning organisation measure. *Evaluation and Program Planning*, 29(1), 97-104.
- Bratianu, C. (2015). *Organisational learning and the learning organisation: managing Knowledge Creation, Acquisition and Sharing*, Hershey: IGI Global.
- Bronfenbrenner, U. (1990). Discovering what families do. In *Rebuilding the Nest; A new Commitment to American Families*, Family Service America.
- Bronfenbrenner, U. (1992). *Ecological Systems Theory*. Jessica Kingsley Publishers.
- Bronfenbrenner, U., & Condry Jr, J. C. (1970). Two worlds of childhood: US and USSR.
- Brooks, D. (2012). *The Social Animal*. Random House, New York.
- Brown J. and Duguid, P. (1991). "Organisational learning and communities of practice", *Organisation Science*, 2: 40-47.
- Bryk, A. S., Sebring, P. B., Allensworth, E., Luppescu, S., & Easton, J. (2010). *Organising Schools for Improvement: Lessons from Chicago*. Chicago, IL: University of Chicago Press.
- Bryk, A., and Schneider, B. (2002). *Trust in schools: A core resource for improvement*. Russell Sage Foundation.
- Bubb, S., Crossley-Holland, J., Cordiner, J., Cousin, S., and Earley, P. (2019). Understanding the middle tier: Comparative costs of academy and LA-maintained school systems. Report for Local Government Association published online.
- Bunyard, D. (2010). "Niklas Luhmann: a systems view of education and school improvement". *Educational futures*, Vol 2(3).
- Calleja, C. (2014). Jack Mezirow's conceptualisation of adult transformative learning: A review. *Journal of Adult and Continuing Education*, 20(1), 117-136.
- Camillus, J. C. (2008). Strategy as a wicked problem. *Harvard business review*, 86(5), 98.
- Checkland, P. (1989). Soft systems methodology. *Human Systems Management*, 8(4), 273-289.
- Checkland, P. and Haynes, M. (1994). Varieties of systems thinking: the case of soft systems methodology. *System dynamics review*, 10(2-3), 189-197.
- Cilliers, P. (1998). *Complexity and Post Modernism: Understanding Complex Systems*, Routledge: London.
- Cilliers, P. (2000). Rules and complex systems. *Emergence, A Journal of Complexity Issues in Organisations and Management*, 2(3), 40-50.
- Clark, J. (2008). Philosophy, understanding and the consultation: a fusion of horizons. *British Journal of General Practice*, 58(456): 58-60.
- Clegg, S. and Pitsis, T. (2012). "Phronesis, projects, and power research", in Flyvbjerg, B., Landman, Y. and Schram, S. (eds.), *Real Social Science*, Cambridge University Press.
- Cohen, M. D., March, J. G., and Olsen, J. P. (1972). A garbage can model of organisational choice. *Administrative science quarterly*, 1-25.
- Cole, S. (1983). The hierarchy of the sciences? *American Journal of Sociology*, 89(1), 111-139.
- Collien, I. (2017). "Critical-reflexive-political: dismantling the reproduction of dominance in organisational learning processes", *Management Learning*, Vol. 7, No. 3, pp. 277-295.
- Conklin, J. (2006). *Dialogue mapping: Building shared understanding of wicked problems*. John Wiley & Sons, Inc.

- Contu, A. and Willmott, H. (2003). "Re-embedding situatedness: the importance of power relations in learning theory". *Organization Science*, Vol. 14, No. 3, pp. 283-296.
- Cornish, F. (2012). Social Science as Practical Wisdom: Here Come the Examples, *LSE Review of Books*. Available at <http://blogs.lse.ac.uk/lsereviewofbooks/2012/09/06/real-social-science-applied-phronesis-bent-flyvbjerg/> [accessed Nov 6th, 2020].
- Covey, S. R. (1989). *The 7 habits of highly effective people*. Free Press, NY.
- Cranton, P. (2006). *Understanding and promoting transformative learning: a guide for educators and adults*, Jossey-Bass, San Francisco.
- Cranton, P., & Kasl, E. (2012). A response to Michael Newman's "Calling transformative learning into question: Some mutinous thoughts". *Adult Education Quarterly*, 62(4), 393-398.
- Crosnoe, R. (2011). *Fitting In, Standing Out: Navigating the Social Challenges of High School to Get an Education*. Cambridge: Cambridge University Press.
- Crozier, G., and Davies, J. (2007). Hard to reach parents or hard to reach schools? A discussion of home—school relations, with particular reference to Bangladeshi and Pakistani parents. *British educational research journal*, 33(3), 295-313.
- Cuban, L. (1990). Reforming Again, Again, and Again. *Educational Researcher*, 19, 3-13. <https://doi.org/10.3102/0013189X019001003>
- Cuban, L. (2019). Challenging the grammar of schooling (Part 2). Available at <https://larrycuban.wordpress.com/2019/05/06/challenging-the-grammar-of-schooling-part-2/> Accessed: 16/July 2020.
- Cummings, T. and Worley, C. (1997). *Organisation Development and Change*, South-Western College Publishers.
- Cyert, R. M. and March, J. G. (1963). *A Behavioural Theory of the Firm*. Prentice-Hall, New Jersey.
- D'Ancona, M. (2017). The routes of post-truth. *RSA Journal*, 163(2 (5570)), 16-19.
- Deetz, S. (2003). "Reclaiming the legacy of the linguistic turn", *Organisation*, 10: 421-9.
- Deetz, S., and Mumby, D. (1985). Metaphors, information, and power. *Information and Behaviour*, 1(10).
- Deming, W. (1986). *Out of the crisis*. MIT Press, Cambridge, Ma.
- DES (1985). *White Paper: Better Schools*. HMSO.
- Dick, R., and Dalmau, T. (2005). *Making process accessible: robust processes for learning, change and action research*. Interchange.
- Dooley, K. (1996), A Nominal Definition of Complex Adaptive Systems, *The Chaos Network*, 8(1): 2-3.
- Dooley, K. J., Corman, S.R., McPhee, R.D., and Kuhn, T. (2003). Modelling high-resolution broadband discourse in complex adaptive systems, *Nonlinear Dynamics, Psychology, and Life Sciences*, 7 (1), 61-85.
- Dougherty, D. (1996). Organising for innovation. In S. Clegg, C. Hardy, and W. Nord, (Eds.) *Managing Organisations: Current Issues*, Ch. 10; Sage, London.
- Dreyfus, H. L., and Rabinow, P. (2014). *Michel Foucault: Beyond structuralism and hermeneutics*. University of Chicago Press.
- Drucker, P. (1985). *Innovation and Entrepreneurship: Practice and Principles*. NY: Harper & Row.
- Duffy, S. (2018). Government cannot innovate, in Pell, C., Wilson, R., and Lowe, T. (Eds.), *All Kittens are Evil*, Newcastle University.
- Duckworth, A. Peterson, C., Matthews, M., Kelly, D. (2007). Grit: Perseverance and Passion for Long-Term Goals. *Journal of Personality and Social Psychology*, 92(6), 1087-1101.
- Dweck, C. S. (2007). "The secret to raising smart kids" , *Scientific American Mind*.
- Epstein, J. L. (1995). School/family/community partnerships. *Phi delta kappa*, 76(9), 701.
- Flood, R. and Romm, N. (2017). A systemic approach to processes of power in learning organisations. *The learning Organisation*, Vol. 25, No. 4. PP. 260-272. Emerald Publishing Limited.
- Flyvbjerg, B. (2001). *Making Social Science Matter: Why Social Inquiry Fails and How it Can Succeed Again*. Cambridge University Press.

- Flyvbjerg, B. (2006) Making organisational research matter: power, values, and phronesis. In Clegg, R. Hardy, C., Lawrence, T. and Nord, W. (Eds.) *Organisation Studies*, Sage, London.
- Flyvbjerg, B. (2006a). Five misunderstandings about case-study research. *Qualitative inquiry*, 12(2), 219-245.
- Flyvbjerg, B. (2009). Phronetic planning research; theoretical and methodological reflections. *Journal of Planning Theory and Practice*, Vol. 5, Issue 3.
- Flyvbjerg, B., Schram, S., and Landman, T. (2013). Political political science: a phronetic approach, ResearchGate, available at <https://www.researchgate.net/publication/255802878> [accessed 06/11/2020].
- Forrester, J. (1971). *World Dynamics*, Wright-Allen Press, Cambridge, Ma.
- Frank, A. (2012). The feel for power games: everyday phronesis and social theory. In B. Flyvbjerg, T. Landman, and S. Schram, (eds.,) *Real Social Science: Applied Phronesis*. Cambridge University Press.
- Freire, P. (1970). *Pedagogy of the Oppressed*, Herder and Herder, New York.
- Fullan, M. (1998). Leadership for the 21st century: Breaking the bonds of dependency. *Educational leadership*, 55, 6-11.
- Fullan, M. (2010). *All Systems Go: The Change Imperative for Whole System Reform*. Corwin, Thousand Oaks, CA.
- Fullan, M. (2018). *The principal: Three keys to maximising impact*. John Wiley & Sons.
- Fullan, M. (2020). System change in education, *Ontario Institute for Studies in Education*, University of Toronto, (unpublished paper).
- Fullan, M., and Quinn, J. (2016). *Coherence: The Right Drivers in Action for Schools, Districts, and Systems*. Corwin, Thousand Oaks.
- Gemmill, G., and Smith, C. (1985). A dissipative structure model of organisation transformation. *Human Relations*, 38(8), 751-766.
- Geyer, F. (1992). Autopoiesis and social systems, *International Journal of General Systems*, 21(2), 175-183.
- Giddens, A. (1984). *The Constitution of Society*, Polity Press, Cambridge.
- Gil, A., Carrillo, F., and Fonseca-Pedrero, E. (2019). Assessing a learning organisation model: a teacher's perspective. *Management in Education*, Vol. 33(1) 21-31.
- Glouberman, S., and Zimmerman, B. (2002). Complicated and complex systems: what would successful reform of Medicare look like? *Romanov Papers*, 2, 21-53.
- Goh, S. C. (2003). Improving organisational learning capability: lessons from two case studies. *The learning organisation*, 10(4), 216-227 Emerald Publishing.
- Goldspink, C., & Kay, R. (2003). Organizations as self-organizing and sustaining systems: a complex and autopoietic systems perspective". *International Journal of General Systems*, 32(5), 459-474."
- Goldstein, J. (1988). A far-from-equilibrium systems approach to resistance to change. *Organisational Dynamics*, 17(2), 16-26.
- Goleman, D. (1985). *Vital lies, simple truths: The psychology of self-deception*. Simon and Schuster.
- Goleman, D., and Senge, P. (2014). The Triple Focus. *Reflections*, 14(1).
- Goleman, D., and Senge, P. M. (2014). *The Triple Focus: A New Approach to Education*. More Than Sound.
- Gowlett, C., Keddie, A., Mills, M., Renshaw, P., Christie, P., Geelan, D., and Monk, S. (2015). Using Butler to understand the multiplicity and variability of policy reception, *Journal of education policy*, 30, No. 2, 149-164.
- Greaney and Higham (2018). Hierarchy, markets, and networks: analysing the 'self-improving school-led system' agenda in England and the implications for schools. UCL IOE Press, London.
- Gruening, G. (2001). Origin and theoretical basis of New Public Management. *International Public Management Journal*, 4(1), 1-25.

- Guilfoyle, S. (2016). The performance management emperor has no clothes. In C. Pell, R. Wilson and T. Lowe (Eds.) *Kittens are Evil: Little Heresies in Public Policy*. Triarchy Press, Devon.
- Habermas, J. (1984). *The Theory of Communicative Action*, Beacon Press, Boston.
- Haidt, J. (2006). *The Happiness Hypothesis*, Arrow Books, London.
- Handy, C. (2011). *The Empty Raincoat: Making Sense of the Future*. Random House.
- Hargreaves, D. H. (2012). A self-improving school system: towards maturity. NCSL.
- Hargreaves, A., & O'Connor, M. T. (2017). Cultures of professional collaboration: their origins and opponents. *Journal of Professional Capital and Community*.
- Hawkins, M. and James, C. (2018). "Developing a perspective on schools as complex, evolving, loosely linked systems." *EMAL*, Vol. 46(5), pp.729-748.
- Heidegger, M. (1962). *Being and Time*, In J. MacQuarrie and E. Robinson (Trans.), Harper & Row, N.Y. (Original work published 1927).
- Heifetz, R., and Linsky, M. (2017). *Leadership on the Line, with a New Preface: Staying Alive Through the Dangers of Change*. Harvard Business Press, Boston.
- Henderson, G. (2002). Transformative learning as a condition for transformational change in organisations. *Human Resource Development Review*, Vol. 1.2 (2002): 186-214.
- Hoe, S. L. (2006). Tacit knowledge, Nonaka and Takeuchi SECI model and informal knowledge processes. *International journal of organisation theory and behaviour*, 9(4), 490.
- Hoover-Dempsey, K. V., Walker, J. M., Sandler, H. M., Whetsel, D., Green, C. L., Wilkins, A. S., & Closson, K. (2005). Why do parents become involved? Research findings and implications. *The elementary school journal*, 106(2), 105-130.
- Hurst, D. K., and Zimmerman, B. J. (1994). From life cycle to ecocycle: a new perspective on the growth, maturity, destruction, and renewal of complex systems. *Journal of Management Inquiry*, 3(4), 339-354.
- Husband, C. (2013). Great teacher or great teaching? Why McKinsey got it wrong. IOE Blog, online at <https://ioelondonblog.wordpress.com/2013/10/10/great-teachers-or-great-teaching-why-mckinsey-got-it-wrong/> accessed 24/11/2020.
- Jacobs, M. (2019, June). Applying a systems and complexity framework to transformative learning. In *Proceedings of the 63rd Annual Meeting of the ISSS-2019* Corvallis, OR, USA.
- Jenkins, Richard (1992). *Pierre Bourdieu*. Routledge, London/New York.
- Johnston, R. and Clark, G. (2001). *Service Operations Management*, Prentice-Hall, London.
- Kahneman, D. (2012). *Thinking, Fast and Slow*. Penguin Books, London.
- Kanter, R. (1984). *The change masters: innovation and entrepreneurship in the American corporation*. Simon and Schuster.
- Kanter, R. (1994). Collaborative advantages: the art of alliances. *Harvard Business Review*, August 1994 issue.
- Kanter, R. (1990). *When giants learn to dance*. Simon and Schuster.
- Katz, D., and Kahn, R. L. (1978). *The social psychology of organisations* (Vol. 2, p. 528). New York: Wiley.
- Keiling, C, Baker-Henningham, H, Belfer, M. (2011). Child and adolescent mental health worldwide: evidence for action, *Lancet* 378(9801), 1515-1525.
- Khandwalla, P. (1977). *The Design of Organisations*, Harcourt, Brace Jovanovich, New York.
- King, K. and Frick, T. (1999). Transforming education: Case studies in systems thinking. In *Annual National AERA Meeting, Montreal, Canada*. Available at <https://www.indiana.edu/~tedfric/aera99/transform.html>. Accessed 7th September 20.
- Kools, M., & Stoll, L. (2016). What Makes a School a Learning Organisation? OECD Education Working Papers, No. 137. *OECD Publishing*.
- Kools, M., Stoll, L., George, B., Steijn, B., Bekkers, V., & Gouëdard, P. (2020). The school as a learning organisation: The concept and its measurement. *European Journal of Education*, 55(1), 24-42.
- Kuhn, T. (1970). *The Structure of Scientific Revolution*, University of Chicago Press, Chicago.

- Laloux, F. (2014). *Reinventing organisations: A guide to creating organisations inspired by the next stage in human consciousness*. Nelson Parker.
- Landman, T. (2012). Phronesis and narrative analysis. In B. Flyvbjerg, T. Landman, and S. Schram, (eds.) *Real Social Science: Applied Phronesis*. Cambridge University Press.
- Lagadec
- Langenberg, S. and Wesseling, H. (2016). Making sense of Weick's Organising: A philosophical exploration. *Philosophy of Management*, 15: pp. 221-240.
- Langford, D., and Cleary, B. (1995). *Orchestrating Learning with Quality*. ASQC Quality Press, Wisconsin.
- Leifer, R. (1989). Understanding organisational transformation using a dissipative structure model. *Human Relations*, 42(10), 899-916.
- LeMahieu, P., Grunow, A., Baker, L. et al., (2017). Working to improve: seven approaches to quality improvement in education. *Quality Assurance in Education* 25(1): 5-25.
- Luhmann, N. (1986) The Autopoiesis of Social Systems. In F. Geyer, and J. Van d. Zeuwen (eds.) *Sociocybernetic Paradoxes: Observation, Control and Evolution of Self-Steering Systems*, 172-192 Sage, London.
- Lumby, J. (2019). Distributed leadership and bureaucracy. *Educational Management Administration & Leadership*, 47(1), 5-19.
- Lytras, M. D., & Sicilia, M. A. (2005). The Knowledge Society: a manifesto for knowledge and learning. *International Journal of Knowledge and Learning*, 1(1-2), 1-11.
- Magalhães, R., and Sanchez, R. (2010). Autopoiesis theory and organization: An overview. *Advanced Series in Management*.
- Maguire, S., and Hardy, C. (2006). The emergence of new global institutions: A discursive perspective. *Organisation Studies*, 27(1), 7-29.
- Maguire, S., McKelvey, B., Mirabeau, L., and Oztas, N. (2013). In S. Clegg, C. Hardy, T. Lawrence, and W. Nord (eds.) *Organisation Studies: 2nd Edition*, Sage, London, pp. 165-214.
- Mälkki, K., and Green, L. (2014). Navigational aids: The phenomenology of transformative learning. *Journal of Transformative Education*, 12(1), 5-24.
- Maturana, H., and Varela, F. (1980). *Autopoiesis and Cognition: The Realisation of the Living*, Reidel, Dordrecht.
- McGregor, D, and Cutcher-Gershenfeld, J. (2005). *The Human Side of Enterprise*. Vol. 21. New York: McGraw-Hill, 1960.
- Merry, U. (1995). *Coping with Uncertainty: Insights from the New Sciences of Chaos, Self-organisation, and Complexity*.: Praeger, Westport, CT.
- Mezirow (1978). Perspective Transformation. *Adult Education*, 28, 100-110.
- Mezirow, J. (1975). *Education for perspective transformation: women's re-entry programs in community colleges*. Centre for Adult Education, Teachers College, Columbia University.
- Mezirow, J. (2003). Transformative learning as discourse. *Journal of Transformative Education*, 1(1), 58-63.
- Mifsud, D. (2017). Distribution dilemmas: Exploring the presence of a tension between democracy and autocracy within a distributed leadership scenario. *Educational Management Administration & Leadership*, 45(6), 978-1001.
- Miller, D. and Droge, C. (1986) Psychological and traditional determinants of structure, *Administrative Science Quarterly*, 31(4), 539-560.
- Mingers, J. (2002). Can social systems be autopoietic? Assessing Luhmann's social theory. *The Sociological Review*, 50(2), 278-299.
- Morrison, K (2002). *School Leadership and Complexity Theory*, Routledge, London.
- Morrison, K (2005). Structuration, habitus and complexity theory: elective affinities or old wine in new bottles. *British Journal of Sociology of Education*, 26(3), 311-326.

- Morrison, K. (2010). Complexity theory, school leadership and management: questions of theory and practice. *Education Management Administration and Leadership*, 38(3) 374-393.
- Murphy, J. (2020). The five essential reasons for the failure of school reform. *Journal of Human Resources and Sustainable Studies*, Vol. 8, No. 1. Scientific Research. Available at <https://www.scirp.org/journal/paperinformation.aspx?paperid=98076> Accessed 18 Aug. 2020.
- Nerstrom, N. (2014). An emerging model for transformative learning. Conference Proceedings Adult Education Research Conference, New Prairie Press.
- NEU (2018), Workload Survey, available at <https://neu.org.uk/press-releases/neu-survey-shows-workload-causing-80-teachers-consider-leaving-profession> Accessed 26/11/2020
- Nevis, E. C., Lancourt, J. E., & Vassallo, H. G. (1996). *Intentional revolutions: a seven-point strategy for transforming organisations*. Jossey-Bass Inc.
- NI Education Department (2019), The Education Transformation Programme. Available at <https://www.education-ni.gov.uk/topics/education-transformation-programme#toc-0> accessed 08/11/2020.
- Nicolis, G., and Prigogine, I. (1989). Exploring complexity; an introduction.
- Nonaka, I. (1988). Creating organisational order out of chaos: Self-renewal in Japanese firms. *California Management Review*, 30(3), 57-73.
- Nonaka, I., and Takeuchi, H. (1995). *The knowledge-creating company: how Japanese companies create the dynamics of innovation*. Oxford University Press.
- OECD (2018). Developing Schools as Learning Organisations. Available at <http://www.oecd.org/education/Developing-Schools-as-Learning-Organisations-in-Wales-Highlights.pdf>
- Opengart, R., & Bierema, L. (2015). Emotionally intelligent mentoring: Reconceptualising effective mentoring relationships. *Human Resource Development Review*, 14(3), 234-258.
- Ormerod, P. (2017). Uncertain Futures. *RSA Magazine*, 2017.
- Örtenblad, A. (2001). On differences between organisational learning and learning organisation. *The Learning Organization*, Emerald Publishing, 8(3), 125-133.
- Overijk, J. (2021). "Paradoxes of rationalisation: openness and control in critical theory and Luhmann's systems theory", *Theory, Culture, and Society*, Vol. 38(1), pp. 127-148.
- Petersen, A. and Olsson, J. (2015). "Calling evidence-based practice into question: Acknowledging phronetic knowledge in social work". *British Journal of Social Work*, 45, 1581-1597.
- Peters, T., and Waterman, R. (1982). *In Search of Excellence*, Harper and Row, London.
- Pfeffer, J. (1993). Barriers to the advance of organisational science: Paradigm development as a dependent variable. *Academy of management review*, 18(4), 599-620.
- Pflaeging, N. (2014). *Organise for Complexity*. BetaCodex Publishing, New York.
- Piaget, J. (1952). *The Origins of Intelligence in Children* (M. Cook, Trans.). International University Press, New York, NY.
- Prigogine, I. (1955). *An Introduction to the Thermodynamics of Irreversible Processes*. Thomas, Springfield, Ma.
- Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management, and effectiveness. *Journal of public administration research and theory*, 18(2), 229-252.
- Putnam, L. and Cheney, G. (1985). *Organisational communication: historical development and future directions*, Southern Illinois University Press.
- Putnam, L. Phillips, N., and Chapman, P. (1996). Metaphors of communication, in Clegg, R. et al., (Eds.,) *Managing Organisations*, Sage, London.
- Rabinow, P., & Rose, N. (1954). Foucault today. *The essential Foucault: Selections from the essential works of Foucault, 1984*, 1-30, New Press NY.
- Randeree, E. (2006). Structural barriers: redesigning schools to make learning organisations, *International Journal of Education Management* 20(5): 397-384, Emerald Publishing.

- Rasmussen, A., Gustafsson, J., and Jeffrey, B. (Eds.), (2014). *Performativity in education: An international collection of ethnographic research on learners' experiences* (Vol. 5). E&E Publishing.
- Ross, D. (2017). The five pillars of whole school transformation. Available at <https://www.gettingsmart.com/2017/01/the-5-pillars-of-whole-school-transformation/> accessed 08/11/2020.
- Runnymede Trust (2020). Minority report: race and class in post-Brexit Britain, Runnymede Perspectives, Available at, unnymedetrust.org/uploads/publications/pdf accessed 20/11/20.
- Rutter, M. (1983). School effects on pupil progress: Research findings and policy implications. *Child Development*, 54, No. 1, pp. 1-29, Wiley.
- Rutter, M. (1979). *Fifteen thousand hours: Secondary schools and their effects on children*. Harvard University Press.
- Sahlberg, P. (2016). The global educational reform movement and its impact on schooling. *The handbook of global education policy*, 128-144.
- Salokangas and Ainslow (2018). *Inside the Autonomous School*, Routledge, London.
- Santa, M., & Nurcan, S. (2016). Learning organisation modelling patterns. *Knowledge Management Research & Practice*, 14(1), 106-125.
- Sarason, S. B. (1990). *The Predictable Failure of Educational Reform: Can We Change Course Before It's Too Late?* San Francisco, CA: Jossey-Bass.
- Schein, E. (1996). Kurt Lewin's change theory in the field and in the classroom: Notes towards a model of managed learning. *Systems Practice* 9, 27-47.
- Schleicher, A. (2012). *Preparing teachers and developing school leaders for the 21st century: Lessons from around the world*. OECD Publishing. 2, rue Andre Pascal, F-75775 Paris Cedex 16, France.
- Schön, D., and Argyris, C. (1996). Organisational learning II: Theory, method, and practice. *Massachusetts: Addison-Wesley Publishing Company*.
- Seddon, J. (2008). *Freedom from Command and Control*, Vanguard
- Seidl, D. (2004). Luhmann's theory of autopoietic social systems. *Munich Business Research*, 2, 1-28.
- Senge, P. (2006). *The Fifth Discipline: The Art and Practice of the Learning Organisation*, 2nd Edition, Random House, London.
- Sergiovanni, T. (2000). *The Lifeworld of leadership: Creating Culture, Community, and Personal Meaning in Our Schools*. Jossey-Bass, San Francisco.
- Shaked, H. and Schechter, C. (2020). Systems thinking leadership: new explorations for school improvement, *Management in Education*, Vol. 34(3), 107-114.
- Sherman, G. (2009), "Martin Heidegger's concept of authenticity: a philosophical contribution to student affairs", *Journal of College and Character*, 10:7, Routledge.
- Shukla, M. (1994). Why corporations fail. *Productivity*, 34(4), 629-639.
- Sizer, T. (1992). *Horace's Compromise: The Dilemma of the American High School*, Houghton-Mifflin, Boston.
- Slack, N., Chambers, S., Harland, C., Harrison, A., and Johnston, R. (1998). *Operations Management: Second Edition*, Pitman, London.
- Snell, R. and Chak, M-K. (1998). The learning organisation: Learning and empowerment for whom? *Management Learning*, Vol. 29, No.3, pp. 337-364.
- Snowden, D. J. (2000). New wine in old wineskins: from organic to complex knowledge management through the use of story. *Emergence, A Journal of Complexity Issues in Organisations and Management*, 2(4), 50-64.
- Stacey, R. (1991). *The Chaos Frontier: Creative Strategic Control for Business*, Butterworth-Heinemann, Oxford.
- Stacey, R. (1992). *Managing the unknowable: Strategic boundaries between order and chaos in organisations*. John Wiley & Sons.

- Stacey, R. (2000). The emergence of knowledge in organisation. *Emergence, A Journal of Complexity Issues in Organisations and Management*, 2(4), 23-39.
- Stacey, R. D., Griffin, D., & Shaw, P. (2000). *Complexity and management: Fad or radical challenge to systems thinking?* Psychology Press.
- Taylor, E. W. (1997). Building upon the theoretical debate: A critical review of the empirical studies of Mezirow's transformative learning theory. *Adult education quarterly*, 48(1), 34-59.
- Templeton, G., Lewis, B., and Snyder, C. (202). Development of a measure for the organisational learning construct. *Journal of management information systems*, 19(2), 175-218.
- Trivers, R. (2011). *The Folly of Fools: The Logic of Deceit and Self-Deception in Human Life*. Basic Books, Az.
- Tsang, E. W. (1997). Organisational learning and the learning organisation: a dichotomy between descriptive and prescriptive research. *Human Relations*, 50(1), 73-89.
- Tschannen-Moran and Gareis (2015). "Principals, trust, and cultivating vibrant schools", *Societies*, 2015(5): 256-276.
- Tschannen-Moran, M. (2020). "Organisational trust in schools", available at, <https://doi.org/10.1093/acrefore/9780190264093.013.681> Accessed 04 June 2021.
- Turkheimer, E., Haley, A., Waldron, M., d'Onofrio, B., & Gottesman, I. I. (2003). Socioeconomic status modifies heritability of IQ in young children. *Psychological science*, 14(6), 623-628.
- Tyack, D. and Cuban, L. (1995). *Tinkering Towards Utopia: A Century of Public-School Reform*, Harvard University Press, Cambridge, Ma.
- Tyack, D., and Tobin, R. (1994). The grammar of schooling, *American Education Research Journal*, V.31, No. 3, 453-479.
- Vanderstraeten, R. (2000). Autopoiesis and socialization: on Luhmann's reconceptualization of communication and socialization. *The British journal of sociology*, 51(3), 581-598.
- Vickers, G. (1965). *The art of judgment: A study of policymaking*. Basic Books.
- Vygotsky, L. (1978). *Mind in Society: The Development of Higher Psychological Processes*, Harvard University Press, London.
- Walker, J. M., Wilkins, A. S., Dallaire, J. R., Sandler, H. M., & Hoover-Dempsey, K. V. (2005). Parental involvement: Model revision through scale development. *The elementary school journal*, 106(2), 85-104.
- Watkins, K., Marsick, V., Wofford, M., and Ellinger, A. (2018). The evolving Marsick and Watkins (1990) theory of informal and incidental learning. *New Directions for Adult and Continuing Education*, 2018(159), 21-36.
- Weakland, J. H., Fisch, R., Watzlawick, P., & Bodin, A. M. (1974). Brief therapy: Focused problem resolution. *Family process*, 13(2), 141-168.
- Weber, M. (1947). *The Theory of Economic and Social Organisation*, Oxford University Press, NY.
- Weick, K. (1977). Organisations as self-designing systems, *Organisational Dynamics*, 6(2): 30-46.
- Weick, K. (1995). *Sensemaking in Organisations*, Sage Publications, London.
- Weick, K. (2001). *Making Sense of the Organisation*. Blackwell Publishing, Oxford.
- Weick, K. and Westley, F. (1996). Organisational learning: confirming an oxymoron. In S. Clegg, C. Hardy, and W. Nord (Eds.) *Managing Organisations: Current Issues*, Ch. 10; Sage, London.
- Wheatley, M. and Kellner-Rogers, M. (1996). Self-organisation: the irresistible future of organising, *Strategy and Leadership*, 24(4): 18-24.
- Wheatley, M. J. (1992). *Leadership and the New Science: Learning about Organisation from an Orderly Universe*. Berrett-Koehler, San Francisco California.
- Wheatley, M. J. (1999). Bringing schools back to life: Schools as living systems. Available at, <https://www.margaretwheatley.com/articles/lifetoschools.html> Accessed 17 July 2020.
- Wilber, K. (2014) Foreword, in Laloux, F. (2014), *Reinventing Organisations*, Nelson Parker, Belgium.
- Zhao Y, (2000).

Zohar, D. (2010). Exploring spiritual capital: An interview with Danah Zohar. *Spirituality in Higher Education*, 5(5), 1-8.

Appendices

Appendix 1. The VT system explained

These changes effectively replace the existing pyramidal same-age structures exemplified by,

- A *dominator* hierarchical and bureaucratic command and management structure based on pay and status
- Information locked into multiple layers and connected by endless referral and appeal systems, difficult to navigate and the cause of delays and knowledge loss
- A suboptimised split between academic and pastoral sub-systems
- A system where groups are large and tutoring a means of taking registers rather than mentoring
- Top-down flow of information and procedural formality
- Five-minute meetings between teachers and parents held annually.

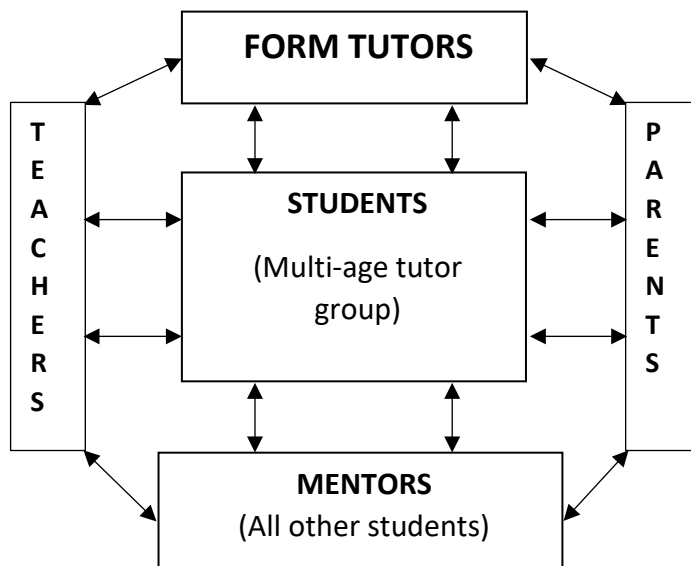


Figure 1. The basic organisation of a multi-age VT system, based on Barnard (2018: 208)

The realisation that the school had stumbled upon a leverage point came after the first deep learning conversation (DLC) between tutor, students, and parents. Tutor, students, and parents duly met and engaged in conversations, one lasting two hours! The intention to build a more effective home-school information-out system worked well except for one issue; inadvertently, the school built a system where the information coming in was significant and just as valuable as the information going out. Each informed the other thus combining summative

and formative assessment.

Information handling system

The tacit knowledge and dispositional information from students and parents inwards far exceeded expectations. Parents and staff valued the opportunity to combine professionalism and informality, form a caring relationship, and share responsibility and ownership for the learning process. The evaluation exceeded expectations. Instead of the school designing a VT system, the school had counterintuitively pushed a previously unrecognised change lever and set in motion a domino effect that continues to run. The VT system started to design the school!

The subsequent mode of operation is reliant on the idea of moving from a back-office bureaucracy to a front-office, client-oriented, service organisation. Such a change alters the *capacity* of the system discussed in later chapters. Organisational structure begins with the creation of multi-age groups and the management idea that all staff are form tutors. This change reduces group size and doubles-up the number of form tutors, a process that releases multiple conversations that in turn enabled the school to harvest tacit knowledge and build learning networks (see Barabási, 2003). If Dooley ever decided to design a complex school, agentially dependent, the VT school meets his criteria.

Hierarchy and power do not go away. The *dominator hierarchy* is supplemented by a multiplicity of actuating hierarchies that form, dissolve, and reform whenever a learning conversation among agents occurs, and especially so at the tutor-student-parent interface. The increase in information and flow creates its own problems requiring a reconsideration of management and leadership, and a rewriting of the grammar of schooling. The positionality of the humble form tutor, too often assumed and neglected in schools, becomes critical. Tutors comprise the information hubs and listening posts of the school, the synaptic junctions that manage the conduits that connect participant actors in a single conversation of learning.

Set out below is a table of systemic differences based on the author's work as both a headteacher and as a teacher of transformative learning.

Table 1 sets out some of the differences between the two approaches to organisation and shows the leveraging capacity of multi-age grouping to bring about social and intellectual gains.

Table 1. Organisational differences: (source: Barnard, 2018: 198)

<i>Complicated (Structures)</i> Command and Control	<i>Complex (Relationships and Structure)</i> Systems Thinking
Same-age organizational base (linear)	Mixed-age organizational base (nonlinear)
Low student leadership opportunities	Every child a leader
Low mentoring opportunities	Every child a mentor and mentee
Learning relationship slow to develop	Learning relationships formed immediately
Disobedient of child psychology	In line with child psychology
Values assumed (logistics driven)	Values-driven (Information driven)
Tutors and tutoring as low status	Tutors and tutoring critically important
Peer group pressure sometimes negative	Groups balanced by mixed-age, supportive
Information-out system	Interconnected communications throughout
Tutor isolated	Tutor as the communications hub
Datasheet reporting	Reports rich in strategies for improvement
Variable emotional/spiritual intelligence	High EQ and SQ: empathy designed-in
Low co-construction and personalization	Co-construction and personalization designed-in
High on rules, referrals, procedures, meetings	High on problem-solving at source (trust)
Nonecological, nonemergent, non-self-organizing	High innovation, self-organizing, emergent
Leading from the top	Leading from the edge; servant/leadership
Weak parent partnership; added-on	Strong parent partnership designed-in
Emphasis—formative assessment for learning	Formative and extended summative assessment
High potential for bullying/poor behaviour	Low potential for negative behaviour
School causal in mental health issues	Child psychology designed-in and supported
High need for add-ons and fixes and programs	PSHE designed-in via networked relationships
High in management inefficiency and cost	Self-organizing and efficient. Lower costs

Chapter 2 sets out the fundamental differences between the traditional same-age organisational structure and that of the VT system and the implications for distributing leadership and liberating management. The dichotomy of these two systems is a recurring theme throughout the public works, and this chapter offers a conceptual grounding of VT around *the complexity turn*, and to highlight some of the fundamental operational differences that separate the two systems.

Critical to chapter 2 is the shift from a model of command and control (same-age) to a systems thinking strategy (multi-age). What should happen in a school (the service sector) is to derive purpose (curriculum delivery and the development of learning skills) from an understanding of client demand (value demand), i.e. the learning needs of participating actors (staff, students, and parents). By studying the value demand on the school's system, it is possible to derive measures of success (the value-added), and from there it is possible to adjust and determine methods, i.e. improve pedagogy and management (Seddon, 2016: 14). Purpose, measures, and method have an order of effect but are also inter-dependent.

For schools, any imposition of pre-defined external targets disrupts such a process. Measures used to judge performance (standardised test results) create a *de facto* purpose (to improve performance data), a process that can lead to gaming. Such a revised *de facto* purpose then constrains method (see Seddon, 2014: 174), e.g. by teaching to the test. VT schools respond by replacing overt targets for students with agreed strategies for improvement by introducing a deep learning conversation

(DLC) and building a collaboration with parents and students. This action mitigates the excesses of command thinking by enabling a more holistic and personalised view of the child and any learning needs. Rather than targets, the learning conversation conspires to develop learning support networks among participant actors. The tutor becomes the second parent in the room. The emphasis is on agreeing to improvement strategies rather than the distorting effects of targets.

Appendix 2. Additional information re books and papers

Book 1: *Chaos Culture and Third Millennium Schools* (2000)

Chaos, Culture and Third Millennium Schools, Barnard (2000), was inspired by the Education Reform Act, one designed to deal with drifting schools, ineffective LAs, and obstructive civil servants. It is a first book about schools as organisations and how they work. In many ways, it started a contrary view of school improvement, one that paid less attention to the curriculum (government-controlled) and pedagogy (the current direction of school improvement) and various forms of leadership and followership. Nobody was talking about schools as organisations because of widespread acceptance of the same-age system. The purpose of this first book was to explain why organisation is the determinant of the behaviour. On reflection, that first book entered the Great Education Debate at the precise point where systems theory, structuration theory and complexity theory merged.

The book begins by describing the incorporation by the UK government of an off-the-shelf style, command and control, target driven system and compares it with the kind of systems thinking approach developing in my school. It contains the prototype form of what was to become the VT school and applies systems thinking to the construction of a model based more on System Y than System X. It provides an analysis of why schools fail to release the creativity of their employees and sets out conceptual models including 'the upside-down-school' and discusses the need for 'leaders of chaos'. It is the first book to interrogate organisational assumptions prevalent to the same-age hypothesis and the organisational form it generates.

The government, advised by consultancies, had arrived at a technical-rationalist model that Michael Barber as Head of the Delivery Unit, later called 'deliverology'. Component pieces could be moved around like pieces on a chessboard, and deliverology was the bureaucracy required to make it all work. As a headteacher, I was acutely aware that in the Land of Era, the role of the management teams was highly bureaucratic, i.e. to manage people rather than enable and trust them. Such a push management approach was a contradiction of Deming's fourteen points and anathema to systemic thinking.

In the same year, Stacey (2000) was developing the idea of organisations as complex responsive processes, rejecting the kind of ERA framework based on predictability, targets, and managerialism. On reflection, perhaps, my belief in leadership was naïve. In a book designed to set schools free, I set too much store on the idea that leaders could be made systemically aware from such a primer. For Stacey (2000: 157), "complex systems often produce unexpected and counterintuitive results" and "the links between cause and effect are distant in time and space". Although I had not read Stacey at that time, we share view that relationships matter, and for participant actors (staff, students, and parents), they are everything. Two decades on, a more critical stance has emerged

that (for me) makes leaders and leadership ideas hugely problematic, and absent from school in any transformational sense. It is not that ideas like the 'seven habits' of Covey (1989) were never understood, more that are organisationally blocked and disallowed. It was not very smart to think that school leaders could be the innovators needed, as recommended in this book, such is the long history of rationalisation.

In this book is the quotation from Bennis (1996) that does much to capture the spirit and intent of these public works.

The problem facing all leaders in the future will be how to develop their organisational social architecture so that it actually generates intellectual capital.

Therein were the challenges and a theme developed by all the books and papers that followed. For Barnard (2000), this first book was an attempt to write a primer on a more systemic way of running a school. Perhaps it was more a way of expressing a point of view and ordering a confusion of thoughts on which later works build. The fact is, I was working with people willing to take risks and a new operating system was emerging, one that created a test-bed for organisational learning beyond the technical-rationalism of inappropriately named neoliberalist ideas.

The book remains a hotch-potch of systemsy ideas but contains the elements needed for a school to engage with organisational change. It was optimistic to believe that this book could bring about change, but it helped stir interest in an alternative model. It is fair to say that the next four books have not strayed far from that first book, each slowly developing ideas on organisation. What later became clear, was the need to focus far more on unlearning an organisation about which little is known and much assumed, and less on the future where everything is assumed, and nothing known.

Book 2: Vertical Tutoring (2010)

While book one (Barnard, 2000) describes the nature of transformational change for schools, *Vertical Tutoring* (Barnard, 2010) show-cases what Stafford Beer called 'a viable systems model'. The organisational concepts of the previous book (Barnard, 2000) coalesce into a new organisational form. It described a first, fully-functioning VT school for the first time, replete with diagrams and explanations, one that contains the social and cognitive architecture described by Stacey (2000) and Bennis (1996). Here was a model that side-stepped the one-size-fits-all analogy by designing its processes of learning around the individual child, one reliant on the synergetic agency of participant actors (staff, students, and parents). The book presented a self-organising model able to escape "the reasons for corporate failure" described by Shukla (1996), i.e. a) being trapped by past success, b) having inappropriate mental models, c) being rigid in response in a crisis, and d) experiencing life-cycle decline. The VT model made it possible to make a direct comparison with traditional same-age schools and found them wanting.

Here was the VT school systemically open, reliant on a cross-border flow of information, able to liberate leadership and management, and stay environmentally current. The primer of 2000 had grown into a fully functioning model one that had made the transition from a bureaucratic back-office system to a front office service system able to discern value demand and intervene. In later papers (below), I describe this as a move from complicatedness to complexity, from a teaching organisation to a learning organisation, and from a one-size-fits-all system to a personalised approach, in-line with social psychology (see, for example, Bronfenbrenner's bio-ecological systems theory (1990), Maslow's motivational theory (1946), Rutter's work on resilience with the Ceausescu

orphans, and his book, *Fifteen Thousand Hours* (Rutter, 1979), Bowlby's attachment theory (2008), and Vygotsky's social learning theory (1978).

Many schools showed interest, and the book sold reasonably well, and some schools made the transition to VT. The demand for training grew significantly, mainly from a new cohort of 'failing' schools, the fall-out from the new rigours of accountability, and from headteachers parachuted in to bring about quick systemic changes. However, the sheer inertia of the more extensive system seemed impenetrable. The author's work with so many schools at that time, grew an awareness of a whole set of problematics that *Vertical Tutoring* had failed to address. The bigger target-driven system was coercive, and as Deming often observed, the new management rationale relied on a mix of fear and extrinsic motivation (see Deming's introduction to Senge, 2001). Headteachers saw themselves as school gatekeepers, maintaining stability while new governmental edicts and regulations arrived daily on their desks. There was no time for any substantive change. For twenty years, the same mantra continues to be issued by schools, "We are inundated with changes, and have no time for training nor a major change of direction." A sense of schools as living autopoietic systems grew, an area in which Margaret Wheatley was writing.

The postscript to *Vertical Tutoring* (Barnard, 2013: 115) remains a powerful indictment of centralism while the "principles" of the VT system outlined remain resolute (pp. 114-116) except for one word. Each of the ten principles offered begins with the word 'enhance'. Today, the author's chosen word would be 'enable'.

Book 3: The Systems Thinking School (2013)

By 2013, I had written several 'systemsy' papers for schools published on the TES website and started to collaborate worldwide with other systems thinkers interested in school paradigmatic change, mainly in the USA. Part of that process included a contribution to the Duffy Papers, an online, systems thinking magazine run by Professor Frank Duffy, a leading authority on schools and system change.

An exchange of papers led to Duffy inviting me to contribute to his series of prestigious books under the banner '*Leading Systemic School Improvement*', published by Rowman and Littlefield. *The Systems thinking School* (Barnard, 2013) is more academic in style and focused on applied systems thinking. The book provides an answer to the leadership need identified in *Chaos, Culture, and Third Millennium Schools*. Much of the tone expressed in *The Systems thinking School* stems from the systems approach described in the Vanguard System developed by John Seddon (2008). Like Seddon, the book adopts a provocative style and is not afraid to differ from the dominant voices of the time by making the connections that linearity seemed to ignore. For example, it followed the idea of the self-improving school system of David Hargreaves to a point but realised that such a system was unable to take *the leap* described by Heidegger. Hargreaves assumed that teachers working in collaboration would be enough to forge a system and turn things around, a view that has led to the institutionalisation of ever more processes of power.

In 2020, the same error is still haunting academics. Shaked and Schechter (2020) offer a view of systems thinking leadership in their 'exploration for school improvement'. Once again there is a reliance on the same systemic assumptions that conflate the idea that leaders deal with complexity and should take on a whole system viewpoint, 'a world view regarding school leadership' (Shaked and Schechter (2020: 107). Like many, the authors talk about systems thinking within the context of an existing system rather than any viable alternative. In the absence of a viable systemic model, the writers have not transformed their own learning and so return to the 'will and skill' of participant

players for solutions to better schools. LeMahieu et al., (2017) believe that leaders should examine system causes whenever problems arise in schools, but history shows that this is rare given that schools have not changed their primary form of operation in 175 years.

Shaked and Schechter (2020) ask, 'How then can principals frame ambiguous problems from a systemic perspective, especially in an atmosphere of top-down and high-stakes standardised reforms?' The answer provided in *The Systems Thinking School* suggests that leaders are part of the problem, i.e. they are dealing with complex issues of failure demand arising from the very system which they run and invariably assume as benign. Leaders then compound system errors by treating problems as single loop learning in form using methods that have failed in the past. Again, the view of personnel 'will and skill' is made problematic rather than the system of organisation that determines behaviour.

The Systems Thinking School contained an initial quote from Seddon (2008) with echoes of Deming and Ackoff prevalent in the rhetoric.

If investment [...] has not been matched by improvement, it is because we have invested in the wrong things. We invest in the wrong things believing them to be the right things. We think inspection drives improvement, we believe in the notion of economies of scale, we think choice and quasi-markets are levers for improvement, we believe people can be motivated by incentives, we think leaders need visions, managers need targets, and IT is a driver of change. These are all wrong-headed ideas. But they have been the foundation of public sector 'reform'.

Here, the VT school is described in systemic terms and contains research (Barnard, 2013: 116) based on transformative learning work with over 100 secondary schools (at that time). During this timeframe, the author worked for training companies who were under pressure to respond to schools demanding information on VT. The transformative learning programme was accredited and acted as a source of points for attendees reading for a higher degree in education. Otherwise, *The Systems Thinking School* builds on books one and two, offering a more secure systemic and organisational rationale for change, one more academic in tone, but always a book for schools. It has 14 known citations and is available in many university libraries.

Each book offers a more nuanced rationale for VT and its continuing development. There are two small sections to which this commentary draws attention. The first (p. 82) concerns the work of Uri Bronfenbrenner (1990), *The five critical processes for positive development*, which sets out five 'propositions. In the propositions, Bronfenbrenner describes the relationships – later encapsulated in his bio-ecological systems theory – that children need for their social development, an approach that embraces the motivational pyramid of Maslow (1943) and the work of Bowlby on attachment theory, and Piaget (1952). Bronfenbrenner's work confirms a systemic incoherence, i.e. the same-age system is at odds with child social psychology, learning theory, cognition, the development of resilience and belonging, through its belief that the division of children by age and stage is compatible to claims of care and wellbeing. When asked how long children needed such support mechanisms, Bronfenbrenner replied, "anytime up to the age of, say, 99!"

The second area involved research into parent partnership. Over the years, the author has worked with thousands of teachers and support staff, not just leadership teams. These opportunities provided access to a large cohort of parents and provided a means of capturing different voices and a unique perspective on policy reception (Gowlett et al., 2015), and the relationship with schools that parents value (Barnard, 2013: Chapter 11). The one-paragraph answer is in *The Socially*

Collaborative School (Barnard, 2018; 98, below), a description of parent partnership that once again suggested an organisational problem rather than a personnel issue.

Book 4: From Delusion to Design (2015)

From School Delusion to Design reflected a growing frustration. If books 1-3 were full of hope, the dream of new beginnings, and growing interest in paradigmatic change, *School Delusion* centred on wider system malaise concerning stasis. Not only were most schools unwilling to change but were seemingly unable to change. If ERA and NPM had failed to alter the basic bureaucratic and hierarchical school model, what chance did a one-person band have? Senge said, he never understood what his books were about until after they were written. Even then, the rationale is not always clear. The writing process often strays far from the original motivation and intention. To encourage movement to a different system, however, required a step-by-step guide to building a VT system, one that exposed current assumptions. While this book may yet be the one that is of most help to schools, it contains sections on psychology and the difference between single and double loop learning.

There were other worrying signs based on the Edgecumbe syndrome. Schools were starting to make adaptations, to stray from VT design principles established in the author's previous books and make assumptions and mistakes. The person that had orchestrated the development of VT schools, written its guiding, systemic principles, and been there for schools as a pathfinder, no longer had control as schools started to experiment, often with devastating consequences. It is difficult to tell whether the 'delusion' pertains to school leadership, the author or both!

Indeed, the fourth book shows a growing interest in organisational self-deception (Trivers, 2011; Goleman, 1985), the way leaders justify their action in ways that unconsciously suppress reality. It manifests itself in the differences between the system espoused and the system in use. It also crops up in the autopoietic idea that schools operate within a mindset rationalised by historical path dependency. The delusion of which the book speaks is to treat same-age organisation as benign, that trying to reconfigure the existing same-age model by acting on those trying to make it work better, fails every time. Later, complexity theory and the issue of capacity provided the answers needed (concepts discussed in the chapters that follow).

The book restated the hard-won principles trialled by VT schools but ends with philosophical melancholia. Like Sisyphus, schools seemed content to roll the same large stone uphill for eternity and believe, as Chazal said, that "The ring always believes the finger lives for it", i.e. that schools cannot change and already have the perfect form for every child. Like Heidegger's *Dasein* and the lifeworld of Habermas (1984: 10) schools are too willing to accept the security of their pre-created world rather than seek authenticity. At a personal level, the writer felt stuck between Machiavelli's Prince, "It must be considered that there is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things," and Cervantes' character, Don Quixote with his predilection to tilt at windmills.

In the book *From School Delusion to Design*, the annoyed teacher (the author) emerged, barking orders that might yet get through to inattentive students deluding into believing their heavily rationalised assumptions. On reflection, this fourth book revealed the inevitable frustrations involved with paradigm change and adding more detail was unlikely to help. It was no surprise on re-reading sections to see references to Lewis Carroll's *Alice in Wonderland*. Like Alice, the writer had arrived at a fork in the road.

"Which road shall I take?" she asked.

“Where do you want to go?” said the Cheshire Cat.

“I don’t know,” Alice answered.

“Then,” said the Cat, “it doesn’t matter.”

Book 5: Socially Collaborative Schools: The Heretic’s Guide

Perhaps the frustration signalled in book four came to fruition in *Socially Collaborative Schools*, (Barnard, 2018), the author’s swansong and in many ways, a two-part diatribe. What began as a series of systems thinking primers back in 2000, became the ‘*Heretic’s Guide*’ in 2018. Leadership had to change, but the changes occurring were the unintended consequences of NPM. Leadership was becoming less important, not more, more push than pull. Besides, the tectonic plates described in *Chaos Culture and Third Millennium Schools* twenty years before were beginning to settle. The formation of large multi-academy trusts under executive headteachers or CEOs (their preferred term) and the adoption of professional collaboration as part of the self-improving school system had one disastrous effect. It stopped organisational innovation in its tracks and with it any thought of a paradigm change. Not only could all training needs be met in-house, but only one training need should be met, pedagogy. The self-improving school system, raising the bar through inter-school professional collaboration, has not only failed to materialise but is unlikely to lead to organisational change in schools.

Schools today are concerned to develop better teachers, not better systems, an incompatibility. Great teachers can mask the inadequacies of an inherently non-systemic and risky organisation by making the school’s organisational methodology seem benign. Neither is there any point in suggesting that school leaders should ‘get on the balcony’ so that they can see the big picture (Heifetz and Linsky, 2017, 51). The bigger picture requires a particular form of seeing, one unimpeded by an overly rationalised mindset and processes of power. After so long together, the autopoiesis of the school and the autopoiesis of school leaders coalesce easily into a self-referencing system.

By 2018, there appeared to be less interest in VT in the UK. Instead, work took this author/trainer to international schools in China, South Africa, Qatar, Colombia, Australia, Canada, and Japan, and more recently, Hungary. It was then that I decided to return to university to attend to matters missed, concepts that required attention, books and papers unread.

In Summary, *The Socially Collaborative School* (Barnard, 2018) shows how schools as same-age organisations are the cause of many of the problems (bullying, unwellness, poor parental engagement, low staff morale, gaming, low resilience, off-rolling, and social inequity) they try collectively to resolve. Today, schools are increasingly persuaded to focus on the idea that all that matters is classroom pedagogy, a direction likely to keep schools organisationally the same in perpetuity. Such a situation required a full-frontal attack on the new ideology. Appendix 1 (Barnard, 2018: 251) lists a dozen heresies arising from the same-age hypothesis generally endorsed as ‘best practice’. The book criticises Barber’s deliverology, the tenets of NPM, effect lists, the increase in PSHE, the use of co-ordinators to solve problems, school approaches to wellbeing, the failure of parent partnership, collective efficacy, and the ‘what works’ agenda. All are single-loop learning in form and inadvertently contrive to prevent organisational and paradigmatic change. For this Don Quixote, the windmills are very real.

At the time, the book was the last throw of the dice and the pent-up frustration show. Two years later an email arrived from Michael Fullan who said it was by far the best book on the subject of school change written by far!

A return to university in 2018 as a septuagenarian, proved to be a saviour. The many hours of reading and writing brought added confidence and direction and inspired abduction. It also provided an answer to the problem of school transformation. The realisation dawned of a hermeneutic circle that connects organisation to capacity, capacity to collaboration, collaboration to complexity, complexity to organisational learning, organisational learning to self-organisation, and self-organisation to emergence. All are connected by feedback loops and networks of learning, where participant actors have agency in a sense-making process. The circle's constituencies can be reordered in any way if all are present. Capacity, however, is the key that I missed, one hidden in plain sight because it is misconstrued as a single loop learning problem rather than triple-loop in form (discussed below).

In turn, the circle links directly to autopoiesis as the mechanism that maintains power, ensures survival, guards identity, and maintains stasis. The mindset of rationalised self-deceit is better understood not as a conscious act of intention but as a metaphor best explained through living systems theory. Practitioners do not intentionally deceive but are, nevertheless, manipulated by their understanding of organisation. Above all, autopoiesis determines organisational rhetoric and communications, "the study of messages, information, meaning and symbolic activity" (Putnam and Cheney, 1985: 131) in part, the rationalised self-deceit from my previous books and described by Trivers (2011).

There is a small section (Barnard, 2018: 98) under the title, 'What parents really, really want' that emanates from the author's research while working with schools. It explains that parents want a relationship with someone at the school who (a) knows their child well, (b) sees their child every day, (c) is aware of their child's circumstances and work, and (4) can be the 'third parent in the room', a perspective often lost in tick-lists and research questionnaires. In many ways, what parents want from secondary schools is the sense of belonging, being valued, being party to the learning process already ebbing away. Bronfenbrenner was right. About age 99 seems right!

Chapter 5. Overview of public works: self-authored papers

5.1 Papers

Listed below are academic papers written mainly during a return to Middlesex University during the DProf programme (2018-2021). While writing books serves many purposes including the possibility of a broad audience of readers (there cannot be a UK secondary school unaware of the VT system), a further significant challenge lay ahead. Given the MAT innovation roadblock, the need to establish the new model within the broader research community became more acute despite a view that the research community is partly culpable for the continuance of the same-age system. The papers,

therefore, are strategic. Without the research community's involvement, whether by support or criticism, the VT project is unlikely to survive and develop its potential.

Autopoiesis and hermeneutics (the virtuous circle mentioned above) suggest that instead of research changing schools, schools change the research (see the chapter on learning organisations below). There is no obvious intentionality to subvert reform, but there are mechanisms and processes of power within the nature of schools as organisations that cause certain behaviours that favour self-protection and the preservation of identity.

Barnard (2018: 236), noted, "While it may not yet be possible to take the school out of the factory, it is possible to take the factory out of the school". This statement holds clues to the organisational process described above. However, until the vertical tutoring system is accepted by academics and systems thinkers as a viable means of organisation, there is unlikely to be any intervention in the existing processes and distributions of power. For example, Mifsud (2017) and Lumby (2019) show how distributed leadership is rationalised and subverted by schools, while Hawkins and James (2018) persist with the idea that schools in their current form can be complexified and made into a self-organising system. Lumby (2019: 14) points out the weakness of self-reported qualitative data and inherent bias concerning distributed leadership; "when researchers or consultants work with schools to support the development of distributed leadership and point to improved outcomes, there is no counterfactual (Levčić, 2005)".

The papers listed below have all encountered a robust defence of the status quo during peer review. Two contradictory messages typically emerge. One reviewer speaks of a valuable contribution to organisational theory and practice and suggests minor amendments. Another says that reorganisation (confusing reorganisation and organisation) has been tried and has failed, that VT is a minor pastoral change and not paradigmatic, that the author is mistaken and fails to build on empirical knowledge. For the second reviewer, a full rewrite is required to ensure the paper is in line with the mainstream research the papers deign to criticise. To challenge such an entrenched position, the alternative organisational model (VT) must gain a foothold in the academic literature both as a new reference point and as a challenge to non-systemic organisational ideas. The papers below tend to sidestep such gatekeepers while the author's erstwhile preference is to barge through.

Set out below is a selection of written works that have been published, presented, or are in the throes of peer review. More papers are posted on the VT website (www.verticaltutoring.org) and others listed on the TES schools website in the authors' section. Together, they represent a body of work that emphasises the importance of a systemic view of organisation, one that promotes a viable and alternative model already practised by schools.

Writing in an academic and linear form does not come easily to a systems thinker, one forever trying to show how different reductionist elements combine into a system and how co-construction leads to different behaviours through its engagement with a multiplicity of voices. In many ways, the academic papers are abductive in form and adopt an ecological position, combining theory with the insights developed from schools that have changed their organisational form and behavioural mindset. The papers represent a more considered approach, connecting previously disconnected parts (individual and organisational learning, complexity theory, organisational studies, capacity, demand, and supply) into the organisational whole that systems thinking demands. They are the culmination of a journey and a baton for others to take-up.

5.2 Papers included in public work

5.3. A review and discussion of papers

Paper 1: Mixed-age groups, leverage points, and applied systems thinking: how changing from a same-age system to a mixed-age system leads to social and collaborative professionalism and a happier school.

This paper was written and presented for an international audience of experts in the field of education. Again, it was an attempt to establish VT as a viable alternative. On reflection, it was overly ambitious, trying to say far too much, a confusion synergised into a 30-minute presentation. This looseness made the paper more like a condensed book and weakened the centrality of the message. The aim, however, was to show that there are two models from which schools can choose. The first is the off-the-shelf, pre-prepared, same-age system and the second, a multi-age variant called a VT system that requires a radical change of mindset and organisational behaviour.

The paper is broadly based on views that capture the predicament that VT schools appear to resolve. For example, Matthew Taylor (RSA Issue 2, 2017) said:

The choice facing organisations, we find, is whether to simplify reality to suit a preferred method of operation or to acknowledge the nature of the world, to challenge assumptions and to work in whatever ways are necessary to be able to make a difference.

Taylor describes the challenge of institutional embeddedness and stasis that prevent evolution, the mechanisms that maintain sameness over time. In the same RSA issue, Paul Ormerod spoke of *optimum illusion*: “At precisely the time when new approaches are needed, the grip of old thinking on the policy process has tightened.” It seems that in this so-called *age of anxiety*, old thinking still tries to run the show. In the very same issue, Matthew D’Ancona (2017) noted how unsuited education is to the “*massive uncertainty and complexity*” our children are about to face. Again, here is an institutional matter, not something that can be cured by curriculum change or pedagogy.

As such, that first paper was more like a summation of learning from the totality of the VT project. A single phrase summarises the paper; “schools are using the wrong form of organisation and need to transition to a form that works relationally”. On my return to university, the author investigated whether there was academic work, social, cognitive, psychological, that supported same-age organisation and could find none of note. Instead, the author discovered a rich trans-disciplinary inter-woven tapestry of work supporting multi-age grouping. The sticking point is to conceive of same-age organisation as a classroom matter, something the VT system avoids. The audience appeared to enjoy the talk, and many stayed behind for further discussion.

Paper 2: A systems thinking investigation into the rise in mental health and wellbeing issues in UK secondary schools

This paper followed an invitation from Leeds Beckett University to help launch a magazine of school-related approaches to improving student health. It remains the author’s view that (a) attempts by schools to deal with increasing numbers of health issues are counterproductive and

misconceived, and (b) that schools in their same-age form are the cause of many of the issues they spend five years trying to fix, bullying being a classic example and reportedly on the increase.

Diagnoses of mental health issues among children have increased (Bor *et al.*, 2014) with between 10% and 20% of young people globally thought to have a mental health difficulty (Kieling *et al.*, 2011). The NEU survey (2018) reports a significant increase in suicide risk. Young people identified tests and exams (82%); pressure from schools to do well (67%); narrowing of the curriculum (50%); and self-imposed pressure to do well academically (48%) as causal concerns. In the past two years, 41% of teachers have considered leaving the profession (Adams, 2018), citing mental health concerns as an issue.

Two systemic concerns arise from the insights of VT schools. The first is a failure to recognise organisational causes of wellbeing issues, and the second is to decide what counts as practical and appropriate action. Again, the issue of single and double (or triple) loop learning arises. An organisational cause requires an organisational remedy, i.e. triple loop in form. For schools, the much-vaunted “whole-school approach” is not what it claims to be because it is reductionist and linear rather than systemic. It comprises curriculum editing (teaching health), a health-aware ethos (whatever that is), health leadership (again, a form of words lacking substance), and attendant support staff to intervene after the event (necessary, but post causal). Schools too often use words that describe a hotch-pot of approaches that lack any coherent strategy but allow schools to tick a list of actions.

In her paper, *School Mental Health for All*, Adams (2020: 29) offers the ‘usual’ remedies, i.e. a more effective response by school leaders, a multi-agency approach, specialist support, more funding. These remedies comprise the standard view of schools and indicate critically, how *capacity* is understood. (NB. Capacity has a vital role in organisational understanding and has become a central explanatory theme in the papers that follow). Otherwise, there is no comment on organisation as causal to the increase in mental health and none concerning the triage of tutors-students-parents and friendships on which young people rely not just for support but to develop resilience and a sense of belonging.

It should be no surprise that organisations affect the wellbeing of participant actors (staff, students, and parents) but there is no measure as to the effect of school organisation on mental health. However, there is an effect; this is apparent from schools that have transitioned to a multi-age system and have experience of both same-age and multi-age organisational approaches. Such schools often report a changed ethos, that their school is happier, that bullying has declined, that inter-age friendships have proved beneficial, that teacher-student-parent relationships are better, that home-school partnership has improved, and that collaborative input from all parties is valued and supported. Such schools support (for example) Bronfenbrenner’s requirements for a bio-ecological systems approach to child development and Bowlby’s attachment theory.

Jonathan Haidt (2006: 239) reflecting on the purpose and meaning of life said, “Just as plants need sun, water, and good soil to thrive, people need love, work, and a connection to something larger”. Being a valued and engaged participant in a learning process and helping to make a difference seems to fulfil such a need. Not only is the same-age structure relationally inadequate for many, but the strategy to repair the damage of such structures using social programmes and support co-ordinators steers attention away from organisational causality. A better strategy is to create a socially collaborative school and an empathetic culture that prevents such problems arising by designing-in relational support. Had the strategies schools used by same-age schools worked, the current post COVID spike in bullying and mental health issues may have been averted in part.

Regrettably, the self-referencing solution (pro-social programmes and support co-ordinators) to the current crisis is to repeat the processes that have failed in the past.

Working with the leadership teams of more than 300 same-age organised secondary schools reveals a startling organisational fact. They all share the same hierarchical structures of status, pay, responsibilities, and line management systems and they are all split organisationally into pastoral and academic (heavily siloed) sub-systems, more disconnected than connected. Any child in difficulty enters an arduous referral system that delays effective action, one unable to guarantee long-term relational support. The situation worsens when governments recommend a fix. In 2019, all schools were required to have a designated support person for mental health; in 2020, all schools should have a mentor. Such single-loop fixes and proclaimed panaceas fail to deal with triple-loop organisational causes and add to the confusion, delays, and costs but form the standard way of increasing the support capacity needed. It is possible to trace many of these bolt-on strategies and 'fads' to enthusiastic researchers promoting their latest ideas. A child in a VT school has designed-in support from older children, two tutors, and direct links with home, a nested system in which empathy and support are de-rigueur. The whole-school response is organisational and preventative and based on having a flexible and complex capacity.

Paper 3: Secondary school structure, organisational learning capacity, and learning organisations: a systemic contribution

Paper 3, published in *The International Journal of School Management*, describes the distinction between organisational *complicatedness* and organisational *complexity* and explains why this issue is so critical. The importance of this paper for the author rests on one factor. It is the first paper to describe VT in an academic journal. This makes it difficult to argue any organisational case without referencing the kind of structure being discussed. It also opens VT for debate on its worthiness as an alternative mode of secondary school organisation besides inspiring more research.

The paper has three purposes: 1) to show how a school's choice of organisational structure determines its *capacity* for individual and organisational learning; 2) to explain how capacity and complexity are connected and why this is critical for participant agency (staff, students, and parents) and by implication, individual and organisational learning; and 3) to show how the revised practices of VT schools expose organisational frailties within the traditional same-age system not previously realised. (N.B. These matters are discussed in the concepts chapters that follow this section.)

The idea behind this paper is to show that a school must be organised in the form of a virtuous if not hermeneutic circle of systemic connectivity. Such an organisation is then able to absorb the complexity of value demand on its system. The paper establishes a simple idea that the purpose of a service organisation like a school is to absorb the value demand on its system, enabling participant actors (staff, students, and parents) to draw from the system what they need to engage in the learning process. From this simple idea, the design of the organisation and its support architecture follows.

Working on this paper made it possible to appreciate that organisational capacity lay at the heart of many of the accompanying concepts related to organisational theory and practice. Capacity makes it possible to absorb demand, and in many ways is a measure of the system's absorption capability (Slack et al., 1998; Johnston and Clark, 2001: 170; Dougherty, 1996). A school operating a same-age system has a restricted tolerance regarding its absorption capacity, while a school operating a VT

system with identical human resources has a variable capacity, and this enables such a school to absorb fluctuations in value demand. These issues are explained in later chapters.

The choice of grouping acts as a leverage point. A multi-age choice sets in motion an organisational form that is open, complex, and agentially liberating. The same-age choice has the opposite effect leading to organisational closure, complicatedness, and control. Again, these concepts are discussed in greater detail in the following chapters.

Paper 4: Why UK secondary schools fail the complexity test and what they need to do to pass it

The ramifications of the previous paper for schools, leadership, training, and resource issues are legion and warranted deeper drilling and a fourth paper. As soon as the issue of capacity is understood, it is possible to explain why same-age organisation initiates a linear and reductionist process, one that is recursive and change-averse. The drawback of the same-age model is that its linear and complicated organisational assumptions limit its capacity to meet human needs, and this causes participant actors complex coping problems. Ironically, the school inadvertently increases the complexity of demand caused by its inflexibility (a capacity problem), i.e. it treats the complexity of demand as if it were merely complicated. The school finds itself ill-equipped to deal with such (capacity) issues; hence, it resorts to solving its relational problems with social programmes and/or counselling at the end of a much-delayed referral process. It tries to fix the problems its system creates. Such schools are obliged to focus on curriculum delivery and pedagogy treating the complexity of demand as complicated and so more easily compartmentalised.

When this fails (demand exceeds service supply) the school responds to its capacity issue by doing something extraordinary, that only autopoiesis can explain. Because it has no means of increasing capacity to absorb service demand, it exercises its only option. The school reduces demand to match supply, i.e. it reduces value demand. The implications are staggering and explain so much about the frailties of same-age organisation. Instead of embracing learning and personalisation, same-age schools (a) reduce and compartmentalise both into a manageable curricular state, and (b) adapt the rhetoric of learning to match their single loop learning solution. It is a process called *smoothing demand* and achieved in such a way as to appear rational and beneficial. It is why the author's writing includes much about organisational self-deception (see Trivers, 2014; Goleman, 1985).

Dougherty (1996: 183) says "The organisation studies literature suggests that a capacity for organisation-wide problem solving will involve teams and networks." School rhetoric readily lays claims to such a description given that the school feels that it does everything possible given its capacity limitations, having no viable alternative model from which to learn. What it cannot readily perceive is its entrapment in a vicious circle that cannot hold for many participant actors. Complexity always escapes organisation unless the organisation is itself complex. In such schools, the networks and teams are limited by processes of power yet to be agentially liberated. Weber (1947: 337) conceived bureaucracy (perhaps the visible form of processes of power), as "the most rational known means of carrying out imperative control over human beings". Furthermore, therein is the problem; human beings are complex!

'Smoothing' as a reaction to the complexity of demand is discussed in greater detail (below) and applied in the parent partnership paper that follows. The effect, however, is to enable the same-age school to retain its existing processes of power, the balance of structuration and agency that reproduces the existing social system (Morrison, 2010), rather than achieve self-organisation.

Effectively, same-age structure stifles paradigmatic change and acts to resist any external reform that does not adapt (or cannot be adapted) to its existing hierarchy of connectivity (processes of power). What began as an analysis of the grammar of schooling, a form of words, becomes a matter of organisational consciousness and human behaviour, the metanoia of Senge one that cannot be fixed by 'a great teacher in every classroom', the heroic leader, or a revamped curriculum alone.

Multi-age organisation (VT) responds to complexity of demand with an equally complex response, i.e. variety absorbs variety (Ashby, 1958; Beer, 1959). Too often, the literature describes same-age schools as complex, or more inaccurately, as complex adaptive systems. Evidence from schools with experience of both systems suggests that the same-age structure has difficulty moving beyond its capacity tolerances, other than asking staff to work harder. A multi-age school allocates its human resources in a way that liberates agency, decoupling itself from too much organisation and traditional processes of power and enabling it to match demand and absorption, hence complexification as the opposite of smoothing.

In summary, for the same-age school, only one route is open if learning or value demand exceeds the school's ability to respond. Instead of absorbing value demand, it changes (smooths) the value demand on its system; it does less while claiming to do more. An explanation of how schools achieve this illusion is explained in the chapters that follow. The effect, however, is to release *failure demand*, creating a vicious circle, one stuck-fast in *the grammar of schooling* (Cuban, 1990; 2019; Tyack and Tobin, 1994; Fullan 2020, and 2018).

Paper 5: Capacity, parental engagement, and home-school partnership: a tale of two systems

This paper provides a further means of illustrating the dynamics of the complexity-capacity relationship. It shows that home-school partnership has little to do with the 'will and skill' of practitioners and parents (the direction of research) but is the product of organisational structure and its effect on agential capacity. This realisation stems from VT schools and has wide-ranging implications. The starting point is to recognise that an essential ingredient of the VT system is its dependence on the school-student-home trinity, in part the learning relationships and learning support networks that gives a school the enabling capacity to respond to demand.

Examination of the home-school literature reveals an increasing distance between home and school, a dysfunctionality if not an abandonment of the home-school feedback loop. In seeking to understand what is happening, the research community must first address a confusion of self-created descriptive terms, i.e. parent partnership (PP), parent involvement (PI) and parent engagement (PE), terms sometimes used interchangeably. The literature has arrived at an array of single-loop learning solutions none of which are workable in a same-age situation because they all hit the capacity blockage.

Examination of the suggested literature remedies to fix the PP problem rarely reference organisational studies as such and never the same-age system (regarded as benign). Too often, the focus is on the 'will and skill' of practitioners and school leaders who need to do more to enable parents to be engaged in the learning process. Here is a wicked problem getting worse over time with uncertain causality dressed-up as a problem of performativity and attitude. The paper suggests that researchers are looking in the wrong place for solutions to the decline in home-school partnership and that the many remedies suggested are not only unhelpful but unreasonable.

For schools, the long history of home-school partnership has already been 'smoothed' to match the school's capacity with parental demand. Schools have actively reduced (smoothed) parental partnership while being asked to increase it! Schools reduce demand on their system in many ways. In simplistic terms, information sheets are sent home regularly (usually three times a year), and the schools offer parents the opportunity of a five-minute discussion with teachers once a year. For the (assumed) parents who need more time, there are other arrangements. Because all schools operate with palpably identical arrangements, this passes any test of reasonableness. Unfortunately, this arrangement falls well short of partnership, a collaboration in sense-making.

Schools hold an ambivalent position which reveals itself during transformative learning. Leadership teams laud the idea of PP but act in ways that effectively reduce (smooth) partnership demand. This activity is less intentional and more an expression of how to use limited resources to deal with managing system demand. They are then able to rationalise their new positionality as a systemic improvement, as an increase in efficiency useful to parents and students (discussed below).

The paper expressing this view did not do well at peer review!

The peer-review process relies on publishers sending papers to self-acknowledged experts in the field. The author's paper contained definitions of partnership synergised from the work of Johnston and Clark (2001) and Kanter (1984), as a coalition of trust and sense-making. Responses to this paper bordered more on the emotional than academic. Reviewers said (again) that organisational change had failed, that the author should go away and work with the system the author was trying to change rather than against it, that the author failed to understand the efforts made by researchers and to build on their knowledge. One reviewer said that schools rightly control the nature of partnership and give sufficient time.

Papers (unlike books) that undermine traditional methodology are challenging to get published, and system transformation invariably intervenes in established processes of power and vested interests. The fact is there has been no substantive organisational change which is why PP has deteriorated and especially so for those social groups in most need as Bourdieu's theories on habitus and cultural capital suggest.

Capacity theory offers a coherent explanation for the failure of same-age organised schools to engage parents in the learning process. From inside the same-age school, time is an inflexible and precious commodity requiring considerable management and control. A VT system liberates agency and so increases the school's capacity to meet demand, including partnership demand. Once capacity is understood along with its organisational determination, it is reasonable to make two remarks. First, schools in demanding situations of low aspiration, cultural deprivation, and shifting communities, require considerably more capacity to cope than homogeneous and stable schools. Second, schools in their same-age form have restricted organisational capacity and so face the constant danger of their system being overwhelmed when challenged.

The knee-jerk reaction to reduce parent partnership and engagement when the school should be increasing it is its single option. Such a compromised situation, however, is detrimental to learning and wellbeing and one that can lead to gaming, curriculum editing, off-rolling, and the false belief that a great teacher in every classroom is possible with the right kind of push management.

In summary, there can be no effective home-school *partnership* in a same-age organisation. There is a degree of liaison, professionalism, and school-to-home communication, but these alone do not build an effective partnership wherein all parties are engaged. The demand by parents for engagement is neither met nor encouraged in real terms. The VT system, however, is partnership

dependent and can only operate effectively when all participant actors play their support roles. Achieving this requires an organisational capacity to handle the exponential increase in information traffic.

Paper 6: Developing secondary schools as learning organisations: lessons in capacity from multi-age organisation

The call for schools to be more environmentally adaptive (e.g. Shaked and Schechter, 2020: 108) is likely to accelerate the idea of developing schools as learning organisations. The author's paper on parental engagement and the paper on the schools as learning organisations are inextricably tied by the same capacity issue. Schools cannot become something they are not by merely wishing it or providing exemplars of practice that enable boxes of applied characteristics to be ticked, a process likely to lead to sub-optimisation.

The author's paper on developing schools as learning organisations asks a question. How can it possibly be that the OECD (2018) and the Welsh government can proclaim that many of their schools have become learning organisations without making any substantive (triple loop) change to the school's organisational structure and processes of power? Such a claim defies the capacity issue, itself tied to school structuration. So, is there deception and if so, how is it achieved?

The answer is simple. For the majority of Welsh secondary schools, their traditional same-age structure restricts agential capacity and prevents them from achieving the complexity needed to construct a learning organisation. This is smoothing. Because the school is unable to change its basic operational form, it treats the characteristics (the *dimensions*) of the LO as an increase in demand. Like all such external demands, the school reacts by easing the assimilation needed into its existing organisational processes to meet the school's finite capacity for absorption. It smoothes the new demand. This approach enables the school as (say) an organism to continue its way with its existing internal systems mostly uninterrupted.

In the absence of a viable alternative (VT), system architects and reformers are left with the idea of adapting the model they have to fit the characteristics of the LO they want, a return to false rationalisation and self-deceit.