Collective Leadership FOR SCOTLAND

DEVELOPING A SYSTEMS THINKING LENS FOR COLLECTIVE LEADERSHIP

Collective Leadership for Scotland

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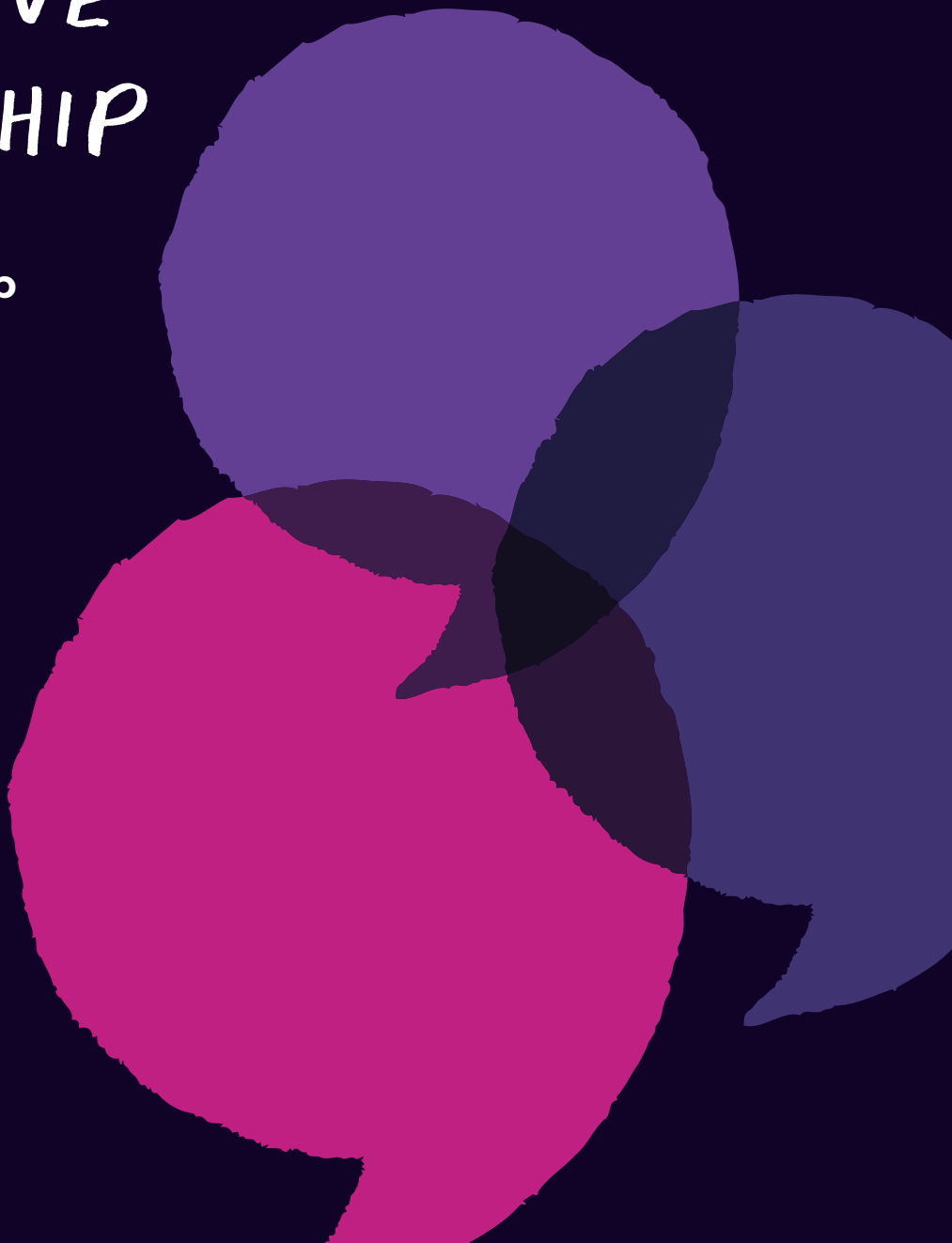

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FOREWORD

The work of Collective Leadership for Scotland has been based upon the five components, illustrated below. One of these components is about understanding complexity and the role of systems thinking as we seek to work on complex societal issues. This resource is offered as a guide to systems thinking and how to adopt a systems thinking approach as part of our wider Collective Leadership and Public Policy work.

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Introduction

Systems thinking approaches are gaining traction as an effective way of understanding and working with increasing complexity. They are being put forward by the Organisation for Economic Co-operation and Development as well as the World Health Organisation as a way to tackle the complex and unpredictable environments we now operate in. As the world has become increasingly interconnected, national or local boundaries cannot isolate and control social problems. The climate emergency, war and political instability have become everyday realities that accompany an ever-widening gap between those who have and control resources, and those who do not have enough to meet basic needs. The usual responses are becoming more and more ineffective; all interventions have unseen consequences or emergent properties that cannot be predicted using an input-output outcomes model. Designing interventions therefore requires a fresh lens to manage our way through turbulence and uncertainty.

Most complex situations benefit from a complementary mix of a systematic (linear) decisive intervention as much as a systemic (whole-view) understanding of a proposed intervention. In this sense, adopting a systems thinking approach requires both framing the situation using a systems lens, as well as a commitment to take action and learn forward in real-time. When utilised in this way, a systems thinking lens complements rather than replaces traditional management tools.

It draws on well-tested concepts and tools and relies on the systems leader to develop their practice, which includes the art of knowing what is needed and when. It is about threading traditional planning methods together with an understanding of the interrelationships, multiple perspectives and boundary judgements that influence the framing of a situation. It is becoming increasingly clear that effective leadership is embedded and invested: objective management science has no place in a world bound by interconnectedness and unintended consequences. Leaders are, as we shall see, an inherent part of both the problem and the proposed intervention.

The purpose of this paper is to share some concepts informed by systems thinking to support you, as leaders in your organisations, to bring a systems-informed lens to your work. It puts you as a practitioner-leader at the centre of your own practice and encourages you to reflect critically on your positionality, as well as the lens you use to understand and intervene in complex issues.

This paper has been developed on foot of training piloted with public service leaders in Scotland in the summer of 2022, and acts as an introduction to developing your systems literacy skills. While we are all born with a systems sensibility, many of us lose that sense of connectedness and interdependence with the world as we grow up. This paper acts as a prompt to bring a complexity informed approach to your work practice. It also contains some pointers for further resources and tools that may support your learning.

CONTEXT FOR INTRODUCING A SYSTEMS THINKING APPROACH TO PUBLIC POLICY

"Given the increased complexity of the challenges faced by governments, enhancing the innovative capacity of governments and public sector systems has become an imperative. For innovative approaches or solutions to create lasting impact, they must be embedded as part of existing systems. In the same way, a public sector's capacity to innovate depends on whether innovation is embedded into the system, across the functions and mechanisms of government."

OECD April 2022

Policy-making in flux

There is a growing realisation that traditional policy-making processes struggle to be effective in a world where issues cannot be contained by national boundaries or different administrations, and where linear cause-and-effect relationships no longer apply. Blueprint planning and log frames might get us from A to B on a long journey: indeed, it served public services well when operating environments were complicated but considered stable. It is less useful for the complexity and uncertainty we are now operating within however, where the speed of change is faster than any generation has experienced before. Increasing exposure to freak weather events, war, and the COVID-19 pandemic act as reminders that change is a constant: no matter how much we might like to assume a degree of stability, we are in constant flux as is the world around us. This presents us with a choice: we can let change just happen or we can be purposeful about creating the changes we seek.

Responding to complexity

There are many different types of problems ranging from simple problems with clear cause and effect and at least one solution, to complicated problems, where there are a number of different variables but cause and effect are still definable. For example, baking a cake requires a recipe with well-documented ratios of wet and dry ingredients, making for predictable outcomes in a familiar kitchen, and cooking multiple dishes for a special occasion might be more complicated, but can also produce predictable outcomes when well-managed. Complex situations, however, are those that have no natural boundaries such as child poverty or climate change. They are characterised by interdependencies, multiple stakeholders and unknown boundaries and while cause and effect are still linked, the consequences of any one intervention cannot be determined in advance. They are characterised by emergence.

In fact, the very definition of a complex problem is likely to be viewed very differently by different stakeholders, and there are always elements of the situation that remain unknown. All complex situations are context-bound, making scaling up and transferring solutions from one context to another a hazardous endeavour as politics and culture in each situation differ. There is no obvious way forward and there will most likely be at least one group of stakeholders contesting or resisting any proposed action.

Added to this, is the reality that no one intervention can tackle all aspects of the situation, and in fact, may have unseen consequences long into the future. Together these five characteristics of complex issues point to a need for a systems thinking lens (see Table 1).

But there is more. Chaotic situations such as those caused by war and extreme weather events defy the cause-and-effect dynamic that rule the emergence of complexity and need an immediate response. In these circumstances, sensemaking comes later.

Snowden and Boone[1] developed the Cynefin Framework which suggests that improvised responses are needed in the immediate term to contain chaos and tame it enough to move it into the realm of complexity. They also caution that complex situations can descend into chaos if not addressed appropriately.

Even though complexity typifies the environment in which most policymaking is taking place, most of the governance structures supporting interventions are based on problem-fixing. In other words, they treat complex issues as though they are simple. Responses must match the complexity of situations however, and cut across the bounds of any one hierarchical structure.

We need a new way to respond that moves beyond the fragmented, target driven and bureaucratic policymaking most common in public policy-making. Developing a systems-informed lens forms a key part of shifting from a hierarchical exercise of traditional siloed management to a systems-informed leadership response. This also means that governments must have enough variety of responses to match the level of variety found in the external environment.

In other words, the tool must fit the job at hand. In order to understand what is required, it is necessary to understand the challenges that complex problems pose and how they manifest in policymaking.

1 Snowdon and Boone

Table 1: Core Challenges of Complex Problems that benefit from Systems Thinking [5-7]

Core Challenges of Complex Problems [5, 6, 8, 9]
1. Real world problems have no natural boundaries. They do not fit neatly into government departments, discrete public policy areas, academic departments or siloed professional disciplinary responsibilities. Issues are interconnected and yet it is impossible to deal with everything at once. When boundaries are drawn too tightly, unintended consequences arise out of sight of an intervention, but if they are drawn too loosely, they may also prompt overwhelm or implosion within the problematic situation.
2. The definition of the problem can be contested by different stakeholders who hold different views. Complex problems look different depending on who is looking at them. There is no whole-world view from which one person can say they understand a complex issue in full. All views are partial but they are important because they inform the response.
3. How a problem is defined and by whom determines the response. Policy makers may consider mandatory quotas, targets etc. necessary for improving public services, but interventions guided by these rules can often prompt work-arounds leading to a perception that others are 'gaming the system'. In this way interventions can sometimes act as fixes-that-fail rather than deal with root causes. It has also been argued that 'targets can kill.'[2] Ultimately, no matter what intervention is decided on, not everyone will agree that it is the best way forward.
4. Every situation exists within a context which determines the effectiveness of the intervention Complex situations may share similarities across contexts, but will invariably have unique defining features that are either unseen from the outside, or from part of the practice landscape in which people work. This means that taking a solution to a problem 'off the shelf' and attempting to implement it in another context is rarely successful. This is because there are as many interpretations of what constitutes the problem as there are actors in the situation, and each problem comes with its own set of interrelationships and local conditions.

2 https://www.theguardian.com/business/2009/mar/22/policy

Core Challenges of Complex Problems [5, 6, 8, 9]
5. The impact of any intervention is dependent on the political and cultural environment in which the situation occurs Political and cultural characteristics of a situation can limit the potential impact of any intervention. Options involve multiple agencies but also may involve changes in the distribution of resources between them. This can result in recommendations being contested and resisted. Most systems include at least some agents who have a vested interest in sustaining the status quo, and in resisting change. Proposed changes to funding or programme structures to allow for greater collaboration may be resisted and misunderstood. This can lead to public opinion holding sway over good decision-making.
6. All interventions are partial and temporary as time and circumstances change Interventions cannot address all aspects of a situation simultaneously; however, they can have consequences (both positive and negative) beyond the time horizon of a given project. Designing responses to complex problems as projects can also result in 'projectified lives', where the stop/start of interventions leads to the loss of institutional and local knowledge and the reinvention of solutions.
7. The purpose of a system is what it does, not what it says it does Systems act in the service of a purpose, but this is not always the stated one. An entity set up to tackle child poverty such as a government unit/organisation/ project/coalition may have a vision, mission statement and project plan, but as it develops over time and generates its own system of interactions, a drift can occur between what it says it does and what it does in reality. This often happens as systems become 'dynamically conservative' and risk-averse, often acting to preserve their survival over their stated purpose. This includes teachers learning more by teaching than students do by being learners, and prisons acting as a site for apprenticeship into crime rather than rehabilitation.
8. Emergence: Emergence is what happens when different entities come together to produce a result that could not have been produced by any one element alone or, in many instances, be anticipated in advance. The interconnectedness of different factors creates feedback loops that are not always evident, but lead to something new emerging. Positive emergence can account for the rapid transformation of societies during the Covid-19 pandemic to online engagement, as much as the less desirable spread of the virus itself through contact between people, for example.

ADOPTING A SYSTEMS THINKING LENS TO COMPLEXITY

Systems thinking is regarded as a **transdisciplinary**[3] approach to working with complexity and uncertainty by virtue of the number of influences it draws on. These include biology, mathematics, physiology, economics, philosophy, psychology, sociology, management studies, family therapy, engineering and computing. It can be traced back as far as the earliest school of Greek philosophy stemming from the 6th century BC and Taoism from the 4th century BC. A systems approach looks at the whole and asks: what is the pattern here? Can we map it? Can we create a qualitative account of it?

By contrast, the Cartesian world view that took hold in the sixteenth and seventeenth centuries forwarded the metaphor of the world as machine. This resulted in the development of the scientific method that favoured a particular kind of knowing through dissecting the parts of the machine, measuring it and quantifying it.

These different metaphors underline our understanding of how the world works and they lead to very different ways of approaching leadership. When the world is understood through a mechanistic lens, we seek to break down the components of a problem, isolate the part not working and fix it. We think we can step outside of the problem and look at it with dispassionate objectivity. If, however, we see the world as an ecological network of relationships and interdependencies between parts, we will seek to explore the patterns that connect different elements together.

A comparison between traditional management and systems leadership points to very different ways of understanding our role in relation to the problems we work with (Table 2), as well as how we position ourselves in relation to those problems, with very different approaches to how we might intervene.

3 This is distinct from multi-disciplinary which refers to bringing people from distinct professional backgrounds together.

Table 2: A comparison between Traditional Leadership and Systems Leadership

Traditional Leadership	Systems Leadership
Breaks issues down into discrete parts and works in silos and vertical accountability systems	Understands issues are part of an integrated 'whole', where properties of the systems arise from relationship between the 'whole'
Directed towards fixes and problem solving	Directed towards learning and identifying leverage points for intervention
Values an objective stance	Acknowledges own history of understanding impacts on perspective
Stands outside situation looking in	Understands themselves to be embedded in situation
Talks of fixes and solutions	Talks of accommodations between different perspectives
Creates definite boundaries	Boundaries are temporary constructs
Isolates variables from context	Contextualises information: looks for feedback loops and interrelationships between issues
Works on the problem	Works with people

What does this mean for you as a leader?

By acknowledging the complexity, you have an opportunity to 'dance with it' rather than becoming overwhelmed or attempting to tame it by reducing it into discrete parts. You may also begin to realise that you are embedded within the situation as there is no objective scientific stance you can cling to for certainty. This means that how you view the problem is critical and will determine the results that you can achieve.

When you shift your focus from solving problems to creating the ground for improving them instead, you may find that there is much to learn about the nature of the problem. The process of learning more about the problem can be described as a **systemic inquiry.** Conducting a systemic inquiry begins with reframing your situation using a systems lens, which will lead to identifying leverage points for changing the trajectory from a downward spiral to a virtuous cycle of improvement.

But first you have the task of deciding what to focus on and what to leave out for now. You cannot focus on the entirety of the problem, and nor are you likely to have control over it, so you need to draw a temporary boundary around a specific part of the problem in order to design an intervention.

What is a ‘system’ in systems thinking terms

A systems thinking approach does invite you to make decisions about what you can feasibly do and what you cannot, but it does this in a consciously framed way. It is often thought that taking a systems approach involves working with the entire 'mess' of a situation, but this is impossible, as we cannot know every part of a problem or its impact. Instead, this approach offers a deliberate way to define a system for the purposes of developing a shared understanding of an issue. This means that there is no objective system out there, that comes pre-packaged in a way that everyone understands the same way. While we might talk generally about changing the system, it is important to note that systems do not actually exist as an undisputed thing.

The ’health system’ for example, will be defined differently depending on who you talk to: a person with a chronic condition, a person who has just been in an accident, a caregiver, bed manager or health minister will view the 'health system' very differently. This means that when you are taking a systems approach you need to create a shared understanding of what it is that you are looking to improve.

You can do this by crafting an understanding of a system as something where different actors come together to achieve a specific purpose. In other words, you can devise a very deliberate and consciously framed system for the purpose of inquiring into a problem. While this helps to avoid the sense of overwhelm that comes with thinking you have to fix everything, or take everything into account, it does not mean that you ignore or carve off really important elements because they are too complex or inconvenient. Nor does it mean that you break the situation down into its component parts, as current management models do. You are instead creating a socially constructed system for the purposes of engaging with the situation of concern.

The key is to start with the situation you have a problem with, rather than the system 'out there', which is likely to be beyond the scope of what any one group or intervention can achieve. By starting with the situation, you can define a system around it, all the while recognising that no matter how big or small your system, it will be nested within a hierarchy of systems, and will have both meta-systems above it and micro-systems nested within it.

You can use the following definition to define the system that you seek to make improvements in:

"A collection of entities
That are perceived by someone
As interacting together
To achieve something" [6].

Example:

For instance, an education system can be conceptualised from several different perspectives from meta- to meso- to micro-level concerns. Each system described is dependent on who is perceiving the system. Within each level there will also be differences (Table 3). If you are concerned about school retention levels for example, you may draw a different boundary around your system based on your scope and remit. As a policymaker, you may take a meta-framing, but as a teacher, you might explore what is going on in the classroom that affects student engagement. From a school management perspective, you may also have financial concerns that affect the viability of the institution should student retention levels remain an issue.

Table 3: Definition of an Education System at different levels

	An Institutional System (Meta-system)	A Classroom system (Micro-system)	A School management system (Meso-system)
A collection of elements or entities	Educational institutions, educational resources, research results	Teacher, students, educational resources and knowledge	School personnel, resources, money, regulations, rules, time and knowledge
Perceived by someone	Seen by government, public and students	Seen by students and teachers	School staff, principal, school board and regulator
As interacting together	As developing a standard curriculum	As participating in conversations and listening	As working together
To do something	To educate the students to a predetermined standard	To create learning for students	To provide framework and space for a viable learning culture

As the education example suggests, different perspectives lead to different framings, and one person's perspective is rarely enough to develop an understanding of a complex issue. In the process of devising your definition, it may become clear that there are many interrelationships and interdependencies between different framings and across the micro, meso and macro levels.

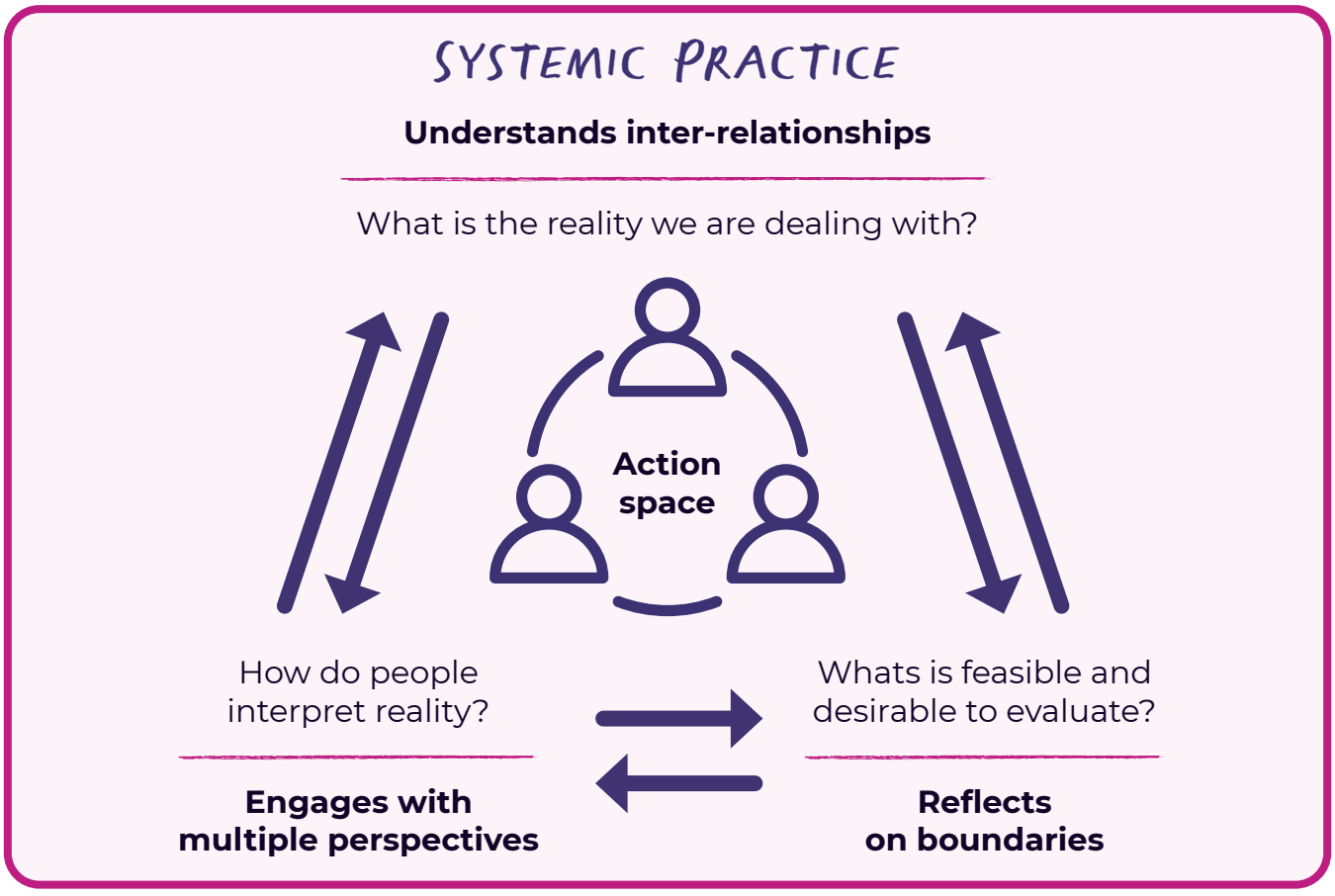
It is important to remember that the framing is temporary and a construct of your own making – which means that there is value in digging deeper into the decisions you are making. This is where your systemic inquiry begins.

Starting your Systemic Inquiry

A systemic inquiry puts you to the fore as a practitioner and is founded on an understanding of three primary characteristics of any situation perceived to be problematic. These include consideration of the interrelationships between issues and agents, multiple perspectives and also the importance of drawing conscious boundaries around the system to be explored. Boundaries are critical for designing a manageable inquiry, but they need to be considered as fluid and open to change (Diagram 1).

This section lays out four considerations in developing your systemic inquiry into your situation, using the initial systems framing you have described.

Diagram 1: Four Dimensions involved in a Systemic Inquiry



1. Leader Purpose and Positionality

Systems always involve people interacting in a shared space. Often people are behaving purposefully, but those purposes are not explicit either to ourselves or others. The best place to start your systemic inquiry therefore, is to explore your own purpose and positionality in relation to the problem you are exploring.

Purpose arises as a result of your values and the meaning that you apportion to your actions and interactions. The world of work offers few opportunities and little encouragement to pause and reflect on the purposes that drive you and how it influences the level of commitment you bring to a situation. Purpose is intertwined with identity and identity is tied up with positionality.

Positionality determines how you view problems: it includes fixed characteristics such as nationality, race, gender but it also includes more fluid positions such as educational background, political allegiances and life experiences [12]. Together these characteristics influence how you react, interact, and respond to complex problems.

Your response is also influenced by many other contextual factors such as culture and politics. Being aware of your own positioning and the level of power and agency that gives you in relation to the others in the situation is as important as reflecting on the assumptions you bring to the situation.

Power is an inevitable characteristic of any situation: where there are two people in a room together, there is a power dynamic. Assumptions may include a sense that the situation is hopeless, impossible, or just takes someone else to change their positioning. Assumptions can also be underlined by a fixed notion of "*this is the way we do things around here*" or a reductionist perspective that prompts you to stick to your part of the issue even though you know that involving others with very different perspectives might be more helpful [7]. You may also feel compelled by your formal role to continue with 'business as usual' even though you know that it no longer works.

A systemic inquiry begins with asking yourself some questions about how you can develop your own agency in the situation you seek to change. Agency is a sense of having a capacity to take action. It is not something that others can bestow upon us: it is an inside-out job and it involves developing your reflexive muscle, that is, your capacity to reflect on your own reflections and use those insights to inform action.

Questions to ask:

What is my primary motivating emotion for leading forward in this situation?

Are my proposed actions going to support a shift in the systems or more of the same?

To what extent are my actions based on history? On new knowledge?

How am I contributing to the current situation?

How can I learn from and with others?

How can we have different types of conversations?

2. Understanding Inter-relationships

Systems are defined by inter-relationships between parts and the consequences of those inter-relationships. From a systems perspective, the focus is on the structure and process *between* different parts of the system and the patterns that then emerge from those processes, rather than on individual parts. This is of course unless their performance relates to the performance of the whole system. Indeed, due to the complexity of inter-relationships, especially **feedback loops**, it is often not possible to predict the consequence of a single part or determine its contribution to the system.

Feedback loops occur when the output of one activity becomes an input to another as a chain of cause and effect. This can result in increasing or decreasing the likelihood of something occurring and leads to the emergence of unexpected outcomes.

Exploring what collaboration partners do or do not do together between meetings, for example, will yield more insight into the inter-relationships between different actions, than the number of meetings and the minutes kept: understanding the pattern of those inter-relationships will yield more useful information about what is important to pursue.

In the education system example above, one student's progression post-education could be considered an individual issue unless viewed as a consequence of the quality of the relationship between them and their educators and peers. When looking for patterns, it might be observed that a number of students in a specific cohort that excelled after graduation, came from a similar background and had excellent relationships both with the faculty and each other. This is a different focus from looking at curriculum or quality of teaching alone.

Questions to ask:

What is the structure of the inter-relationships within the situation (i.e. how are the parts arranged)?

What are the processes between those structures?

What is the nature of the inter-relationships? (Strong, weak, fast, slow, conflicted, collaborative, direct, indirect?)

What patterns emerge from these interrelationships over time and with what consequences and for whom?

What, from your perspective are the key inter-relationships?

3. Engaging with multiple perspectives:

A different view reveals a different system: what constitutes a system is based on the eye of the perceiver. This applies to decisions about what the 'system' is, what is 'in' and 'out of the system (i.e. which parts are important) and which of the inter-relationship are considered important. What one person may consider relevant, another may leave out. This means that there are *multiple perspectives* on a system and all may hold some truths rather than being right or wrong. Whilst a school principal may focus on incentives to increase attendance to be accountable to a regulator, a student's attendance may be driven by a desire to develop and sustain friendships for example. Both perspectives are important for understanding the interrelationships that create feedback loops around attendance levels. Attempts at 'engineering' change from the outside are rarely successful unless coercion is involved. And that too, will have long-term unintended consequences.

Within any system, there are people acting with both collective and individual purposes. These purposes may differ for different actors, and too often we can assume we share a single formal purpose when we don't. Just because people are working together, does not mean they share the same purpose or purposes. Therefore, if you wish to understand how a situation behaves, or are seeking to design an intervention, it is really important to understand different perspectives in order to really understand why a system behaves as it does. For example if people have different expectations of an endeavour, how will success be understood? How will their behaviours be affected if things go wrong?

Questions to ask:

Who or what are the key stakeholder roles?

What are the stakes?

What are the different ways the situation can be framed?

How do these framings affect actions?

4. Reflecting on boundaries:

For the purposes of inquiring into systems, it is important that we draw a boundary around what it is we are looking at and what we are not. We do so with the knowledge that we have an incomplete system and interdependencies do impact beyond this boundary. We also need to be alert to how a situation is being framed and by whom? What does this tell us about the way in which the situation can be managed or investigated? There are inevitable power dynamics in who gets to be included and who is excluded in drawing boundaries. Systems thinking asks you to be alert to relevant boundary judgements and their consequences. It is also worth moving up a level of abstraction by 'sweeping in' as much of the meta-system that you can, and making **critical boundary judgements** about what should be in or out of scope [13] for the purposes of designing a systems intervention. At all times, you need to be alert to the idea that you may need to change these boundary judgements and learn forward as you go.

It is a very common misunderstanding that a system includes 'everything'. We often hear about things happening 'at the system level', meaning at a large scale. But looking at the definition, it is clear that a system could be small (e.g. a cell or indeed an atom) or large (e.g. the cosmos). As already stated, no one person can have a view of the 'whole'. If we take too narrow a view, important **inter-relationships** can be missed. On the other hand, if we take on too large a system, it is difficult to make sense of too many inter-actions. Therefore, choosing the scope, scale or size of a system, choosing what is 'in' and what is 'out' of your system, is an important decision. 'Holism' is not so much about including everything but being very thoughtful and informed about what to leave out. These are all **critical boundary judgements**.

Questions to ask:

Which key inter-relationships are privileged and which are marginalised? With what effect on whom?

What key perspectives (i.e. stakeholder roles, stakes, framings) are privileged and which are marginalised? With what effect on whom?

How can you manage the ethical, political and practical consequences of these decisions, especially those that cause harm or have the potential to cause harm because they exclude an inter-relationship or perspective?

This means that once you have defined your system, and reflected on the questions asked here, you may need to revisit the boundary around your original systems definition. Doing so is the mark of good systems practice, where iterating and revising on the basis of new information is an inevitable part of developing your systems leadership practice.

CONCLUSION

The above steps mark the beginning of developing a systems framing for a complex problem. There are many tools that you can use, but a systems approach begins when you reframe your concerns to look at them through a systems lens. Tools and methodologies come into play once you understand that moving into the action space requires a different approach to business as usual, and as Donella Meadows reminds us: the most useful place to begin to change the system is by changing the paradigm underpinning the current framing.

FURTHER RESOURCES

Websites:

https://www.oecd.org/publications/systemic-thinking-for-policy-making-879c4f7a-en.htm

https://thesystemsthinker.com

https://thecynefin.co/ The Cynefin Company is an action research and development hub working at the limits of applied complexity science.

http://www.dubberly.com/wp-content/uploads/2016/02/systems_literacy.pdf Systems Literacy manifesto:

https://bobwilliams.gumroad.com/l/systemdiagrams

Collective Leadership for Scotland – What does it take to lead in times like these? (collectiveleadershipscotland.com)

Systems Leadership Training:

https://www.open.edu/openlearn/science-maths-technology/engineering-technology/systems-thinking-free-courses Open Learn OU

https://www.instituteforapprenticeships.org/apprenticeship-standards/systems-thinking-practitioner/ Systems Apprenticeship England

www.Systemsbeing.com

Organisations:

https://k4d.ids.ac.uk/resource/systems-thinking-and-practice-a-guide-to-concepts-principles-and-tools-for-fcdo-and-partners/
Systems Thinking and Practice: A guide to concepts, principles and Tools for FCDO and partners by Jim Woodhill and Juliet Millican

https://www.systemspractice.org/
Systems and Complexity in Organisations

https://www.isss.org/home/ International Society for Systems Sciences

Systemic evaluation:

https://research-for-real.co.uk/
Research for Real

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