

SUSTAINABLE SERVICE DELIVERY: Solutions to Complex Problems Require Deep Knowledge

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This 3-part essay builds on one published in the Fall 2023 edition of the AMBC Newsletter. Titled **Context and History Do Matter**, the takeaway message was that "the asset management community has lost sight of Sustainable Service Delivery strategies because it is lost in the details of Asset Management." The solution is to actively work to transfer knowledge through mentoring.

PART ONE – Knowledge transfer is a broken process in local government.

Organizational and intergenerational amnesia is real and has a downside. It results in unintended consequences. Superficial understandings do not yield solutions to complex problems. One needs deep knowledge.



The ramifications of amnesia are cause for concern in an era when systems of all kinds are being subjected to repeated shocks that test their resiliency. At the same time, councils and boards are grappling with top-down decisions or directives by senior governments.

2024 is their "year for decisions" in their 4-term of office.

With a year of experience under their belts, newly elected municipal councillors and regional district directors should now be increasingly effective in tackling the issues.

But how effective can they be when knowledge transfer in local government is broken?

Can their staffs produce practical and achievable plans that lead to affordable and climate-ready housing?

Can local government elected representatives throughout BC meet the moment in Year Two of their mandate?

Will they grasp the full implications of why the decisions they make today ripple through time, for better or worse?

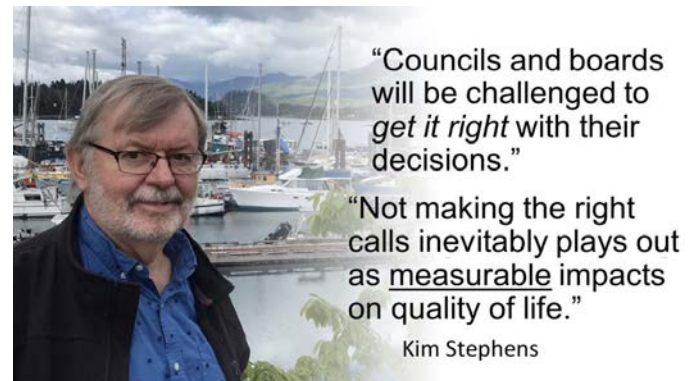
So what, now what, then what: With these four questions in mind, we introduce two big ideas. One is systems thinking and the other is the perspective captured by this soundbite: *What are the numbers telling you?*

When understanding is superficial, practitioners lose their feel for what numbers mean in practice. This loss plays out as failure to grasp the implications of assumptions they make, and failure to know intuitively when a number does not make sense.

These ideas set the scene for our reflections on why knowledge transfer is broken in local government, and then, how one could fix or remedy the situation.

Why 2024 is a year for decisions.

The stakes for communities are high in 2024 because of pressures caused by inflation, population growth and unaffordable housing. Yet councils and boards will need to give equal weight to what those issues mean for the future resiliency of infrastructure and environment.



The spectre of unintended consequences elevates the inherent risks. Local governments cannot run a deficit and we are in an era where so many systems are stretched to the breaking point.

The context for this essay is that Year Two of the 4-year term for councils and boards is usually the window of opportunity for local government managers to bring forward big ideas and initiatives that play out over time. But the window will close when many among the current group of elected representatives turn their minds to getting re-elected in 2026.

What systems thinking means

In a system, everything is connected. That is a key message in this essay. Think about what you have experienced vis-

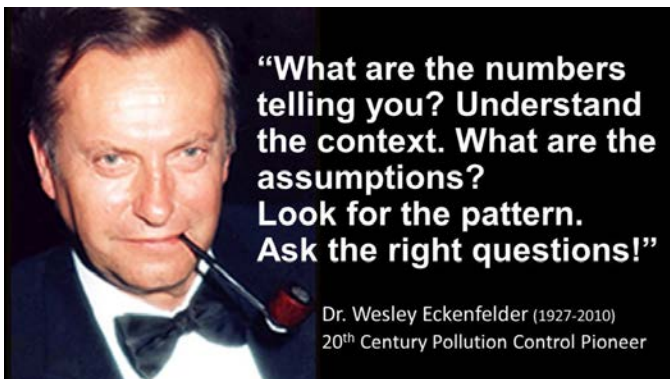
à-vis global supply chains and how problems cascade. And keep in mind that the systems perspective is not a new idea. John Muir, known as the father of the American national parks system, was an exponent of systems thinking in the late 1800s.



Housing supply, affordability, and home ownership. Health care. Crime. Sustainable and affordable funding for municipal infrastructure over generations. Water supply and food security. Agricultural land and food security. Weather extremes, creek system integrity, and risk management in the urban landscape. All are connected. All are at the forefront in this year for decisions.

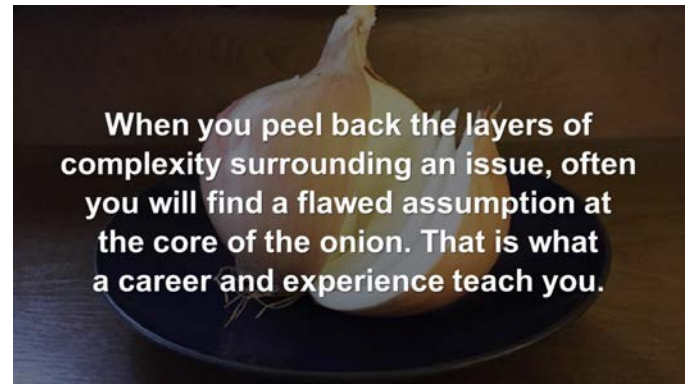
What are the numbers telling you?

As we reflect on the planning and operational implications of these interconnected issues, we are reminded of what the late Dr. Wesley Eckenfelder, a legendary professor from Vanderbilt University, told an engineering class when he was a guest lecturer for a week-long course at UBC.



Wesley Eckenfelder's words of wisdom provide perspective on the implications for decision-making. When a new generation of advisors lacks the deep background and experience to comprehend what numbers really mean, how can we expect elected representatives to make informed decisions?

This question got us thinking about how numbers are bandied about as gospel. And drive policy. Does anyone question the underlying assumptions and ask, what is wrong with this picture?

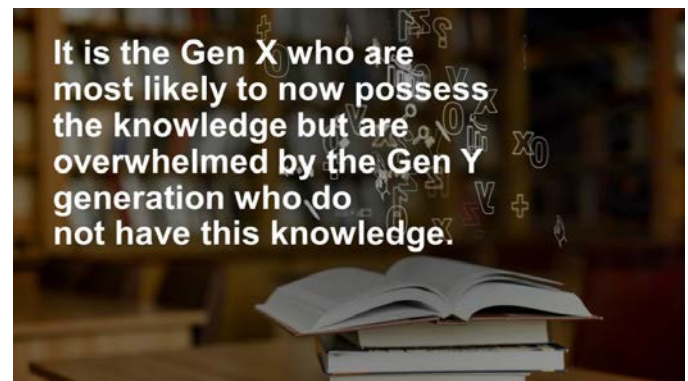


PART TWO – Solutions to Complex Problems Require Deep Knowledge

An existential issue for local government is knowledge-transfer. The baby boomers have more or less retired and now you are left with Gen X, born between 1965 and 1980. But many Boomers continued in senior positions late into their careers, interrupting the chain of succession and knowledge transfer.

What we are really saying is that, in the work force, a huge amount of experience has just gone out the door and very quickly. It is unbelievable. And the few people remaining with experience are not necessarily in a position where they can use that experience effectively.

And those coming in, the Gen Y born between 1981 and 1996, may not have access to past experience. Is there someone to show them how the pieces fit together? Or since they do not own the past, maybe they just feel they can do better with a fresh start? Do they care?



The elephant in the room is organizational and intergenerational amnesia.

Without deep knowledge and an understanding of history, proposed courses of action may be ineffective or unimplementable. Loss of big picture thinking is reflected in the way larger organizations are siloed.

This way of functioning focusses attention on immediate, narrower mandates and on managing program budgets and staffing.

When you talk to the right people, they do see the big picture and how everything connects. And yet, when it comes into the actual realm of application, it is so much easier for them to apply something when it is chopped up and put into silos. And in the process, they lose the ability to address big picture.

The challenge facing local governments is the breakdown in the transfer of knowledge. And so there is a lack of understanding of why we do the things we do, whether those things be plans, policies or regulations.



Lack of exposure to foundational research.

To illustrate the foregoing observation with a relevant example, the 2000s stand out as a transformational and consequential period for rainwater management and green infrastructure in the Metro Vancouver region. But changes in policies, procedures, or design approaches in the 2000s were the culmination of foundational research in the 1990s.

Fast forward to the present. In general, what we are gleaning is that most post-2000 engineering graduates with an interest in green infrastructure would not have been exposed to that foundational research. Without that deep knowledge, would they understand what the real objectives are or why we are pursuing these solutions?

Superficial understanding has unintended consequences.

It is not just green infrastructure. We are seeing other examples in local government that illustrate losing track of the purpose and not knowing what is realistic. This goes back to BIG PICTURE THINKING. If you just look at things in isolation, you might say it is no big deal. But when you look at things in context, it becomes a big deal because the question is, now how do you fit all the pieces together?

How can you come up with a good holistic or integrated solution if you are just skimming the surface on high-level information?



In today's world, we must increasingly consider solutions in a whole-system context. That means you need broader perspectives. But at the same time, you need the depth behind it.

The honeymoon is over.

Local governments are dealing with complex problems needing complex solutions. Superficial understandings do not get you to the solutions for complex problems. To get to that complexity, you have to know the background, you have to know the history, you must have DEEP KNOWLEDGE.

We are a stage where we have stretched systems to the point where we no longer have those big margins or safety factors that we had in the past. We are bumping up against an infrastructure shortage. We have hit the wall with our existing infrastructure investments. Systems are maxed out to the breaking point.

When we look at system capacities, there are two approaches at play. One is optimization and the second is future sizing. Ideally, we would be doing some sort of risk analysis and calculating net present values. However, it seems that optimization has probably been more focussed on the near-term because of lower capital cost commitments and the political desire to fund a broader suite of investments.

Asset management for sustainable service delivery has an interesting link to this. On one hand, asset management can be about protecting those future sized investments; on the other hand, it can be about optimizing existing investments in the present.

The problem with optimizing the present, is that urban systems and the economy are based on a growth model. Therefore, optimization means demand management and belt tightening to stretch existing infrastructure and assets to do more. The honeymoon of abundant infrastructure is over.

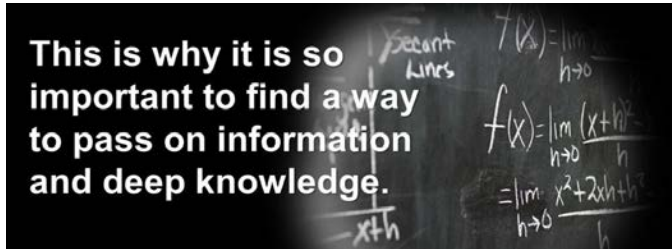
PART THREE - The solution is to actively work to transfer knowledge through mentoring.

The notion of a superficial understanding explains the challenge that we are seeing. There are post-2000 graduate engineers coming out of university who are familiar with infrastructure ideas and concepts, but they do not know the details behind them: details that they did not have to know at university or in their previous jobs.

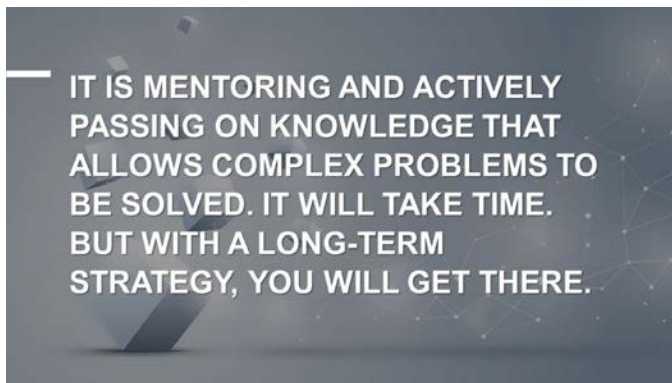
Sure, they understand the ideas and concepts at a high level. But without the background and history, can they really appreciate the complexity of interactions in a

whole-systems approach and why certain targets and approaches were selected while others were not?

With the exodus of baby-boomers, there are few left in the work force that know the history and drivers behind many plans, policies and regulations.



Mentoring is necessary to pass on foundational knowledge and information. You do not necessarily have to be active in the workforce to be a mentor. But local governments must work at actively transferring that DEEP KNOWLEDGE.



The Best Time for Natural Asset Management is Now

Emily Sharma, Natural Assets Initiative

It's an asset manager's role to keep their finger on the pulse of existing infrastructure, determining the state of those assets, and ultimately implementing a responsible budget and plan so that those assets can be maintained or replaced.

However, as many in the profession are surely aware, planning for tomorrow with what we have available today is easier said than done. The majority of Canada's public infrastructure is aging and in poor condition. Combined with the 1 in 100-year climate events that were experienced by BC communities in 2023, there's often little budget left to both address emergency repairs and other upgrades or replacements.

Thankfully, a growing number of local governments are now working towards a solution: natural asset management (NAM).

Developed by the Natural Assets Initiative (NAI) and based on traditional AM methodologies, NAM ensures that natural assets — such as wetlands, forests, and riparian areas — can be effectively integrated and considered as a part of financial and service delivery planning.

Think of it this way: nature is infrastructure that is already built, providing services you already use. And unlike a levee or pipe, natural assets can be self-sustaining, lessening replacement or repair costs on communities. With effective monitoring, maintenance, and rehabilitation now, nature can add value for decades in ways that many engineered assets cannot match.



Natural asset management cycle, adapted from AMBC's asset management framework. NAI (2017).

Local governments already working in NAM — including the BC towns of Gibsons, Courtenay, and Rossland — are also able to maximize on the added benefits from working with nature. In addition to outdoor recreation and education opportunities that come with preserving or restoring natural areas, building out inventories and plans with natural asset data offers them an edge when securing grant funding, especially those with climate consideration requirements.

Where to get started in NAM

While it is still a growing field, NAI and other natural infrastructure practitioners have built a foundation of resources and opportunities to learn and apply NAM, including: