

Expect The Unexpected

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Published in Ontario Planning Journal (18/5, 2003). Reproduced with permission.

Intent is central to planning. It finds expression in goals, objectives, strategies, policies, programs. When evaluating plans we ask: was the intent fulfilled? Were outcomes those anticipated?

But interventions frequently have consequences that were not intended. That's hardly news. Benjamin Disraeli lamented, "What we achieve seldom occurs, what we least expect generally happens." This familiar phenomenon does, however, raise questions seldom addressed: why do unintended consequences happen? why sometimes more than others? Several recent books offer useful insights, the main one being that as systems become more complex, the unexpected is more likely.

"That's Not What We Meant To Do"

John Muir, the renowned 19th century naturalist, declared, "When we try to pick out anything by itself, we find it hitched to everything else in the universe." Among and within the diverse parts of a complex system are many linkages, of varying strength and intensity and at different levels and scales. Such connectivity can result in a change at one point in a system having wide-ranging ripple effects that extend over time – hence the saying, "We can never do only one thing." The five million tonnes of salt spread on Canadian roads create June-in-January driving conditions but also kill roadside trees, pollute groundwater, erode structures and rust vehicles. As

John Winter reported in these pages, pursuing central-area redevelopment by building indoor shopping malls downtown can drive nearby

creation of low-cost housing in the suburbs. Of course, that also birthed Levittown and generated other unexpected impacts including sprawl.

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independent retail stores out of business, without delivering any of the anticipated spinoff benefits. Creating marked crosswalks to protect pedestrians can generate a false sense of security and cause more rather than fewer injuries, especially among older residents. Policies to get people off welfare rolls produce longer lineups at food banks. Computers and email were supposed to bring forth a paperless society; instead, more paper is generated than ever. Singular ends can yield sundry end results.

Unintended consequences can also be positive. Steven Gillon discusses the G.I. Bill aimed at subsidizing schooling and mortgages for returning W.W.II veterans. Seen as minor at the time, this provision yielded results that neither the President nor Congress had in mind. It enabled millions to access higher education and stimulated

Another interconnectivity plus: it can be exploited to achieve more than one result from a single action. Similarly, large effects can often be achieved through small or well-placed interventions. Everything may be connected to everything else but in practice only a relatively few connections really count; most are weak. Locating a relevant nexus is rewarding but can be a difficult, trial-and-error process. High-leverage points tend to lurk in unforeseen places, often far removed in time and place from where the problem appeared, and it can be a lot easier to locate these points than to make persuasive arguments for exploiting them. Then there's the ever-present hazard of triggering further changes, with unpredictable effects.

To produce desired outcomes in complex systems requires multiple reinforcing strategies and diverse lines of attack. Building new highways is unlikely to reduce traffic congestion; the more roads, the more vehicles that use them. Better: combine road improvements with improved public transit and incentives for carpooling. Best: add disincentives such as user charges for cars entering congested zones (the carrot *and* the stick). But be prepared for another feature of complex interconnection: counteractions, surprise and disruption as various agents in the system exploit the diversity of paths open to them. That's what scares residents living near the Gardiner Expressway when there's talk of closing it down.

Complexity Trumps Predictability

Planners are presented with a conundrum: when interconnections are dense or lengthy and causality is reciprocal, change at one place

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generates or constrains change at another. It then becomes quite difficult if not impossible to trace the impact of any action after the fact, let alone predict that effect in advance, and it may render the system impervious to control. Actions inevitably produce compensating feedback and counteractions, in ongoing cycles. Back to the law of intended consequences: sometimes remedied but never repealed.

Another version is "the revenge effect," popularized by Edward Tenner. Push hard and the system pushes back, often with counterintuitive results no one bargained for. Nature gets even. Human ingenuity boomerangs and whacks us in the collective head. Mechanized agriculture enabled farmers to cultivate previously semiarid land but that led to massive drought. DDT, an obvious improvement over the metallic compounds it replaced, was at first deemed "safe" and was soon widely

used; only later did the adverse longer-term and cumulative effects become apparent (traces of it are still found in food). Yet banning DDT in 1972 had its own revenge, in the contamination of aquifers by newer generations of water-soluble pesticides. This further demonstrates that complex systems cannot be understood by considering only the features and intents of certain elements. Robert Jervis explains: "Many crucial effects are delayed and indirect; the relations between two actors often are determined by each other's relations with others; interactions are central and cannot be understood by additive operations; many outcomes are unintended; regulation is difficult."

Because connectivity, nonlinear relationships and feedback are likely to generate surprise, it's prudent to leave room to respond if what's expected

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doesn't happen and something else does. Interconnections can enhance a system's flexibility but they can also enable disruptions within it to be

widely spread. Recall the Love Bug of 2000, one of the most dangerous computer viruses to date (it's still out there). Or consider the North American power grid. Increasing interconnectedness has enabled utilities to ease local shortages by transferring electricity (luckily for Ontario, these days) but enhanced system stability comes at a price: greater vulnerability. Local power shortages cascaded into the New York blackout of 1977, and in 1996 two minor outages affected millions of consumers in the western United States – a continuing hazard, heightened by threats of terrorism. The recent blackout throughout much of the Northeast, including Ontario, stunned millions. System planners struggle to preserve two potentially conflicting features of complex systems: closely linked interdependence; and resilience, the capacity of the system to retain its basic structure in the face of perturbations.

Complicating Things Further ...

A couple of additional forces are to be reckoned with in complex systems. The first, familiar to ecologists, is emergence. New system properties arise that are not present at or predictable from the previous level. Contractors dumped construction rubble at the bottom of Leslie Street in Toronto; years later the Spit emerged as a unique environmental and passive-recreation resource. Management guru Henry Mintzberg has demonstrated how strategy, rather than being a product of a deliberate planning process, can emerge as a pattern in a stream of actions, a consistent behaviour over time. And, as political scientists like to say, "policy accumulates." The system makes it up as it goes along.

This relates to the second force, self-organization. Under far-from-equilibrium conditions, hidden order can emerge from apparent chaos. Witness what happened in New York immediately after 9/11. A system

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transforms spontaneously into new and more complex patterns and structures. We experience this in heavy traffic – sudden congestion that just as abruptly clears up, for no apparent reason.

Emergence and self-organization can combine to make life miserable for planners who need to predict and seek to control. Yet, as always, opportunities abound. To reframe change. To create enabling conditions that will support emergence of desired outcomes. To bound instability, enhance connection and foster relationships. To promote creative adaptability. To embrace complexity and enlarge our practice repertoires accordingly.

Expectations Matter

Back to “unintended.” The word implies something neither envisioned nor anticipated. Organizational-behaviour specialists Karl Weick and Kathleen Sutcliffe identify a simple sequence: “A person or unit has an intention, takes action, misunderstands the world; actual events fail to coincide with the

intended sequence; and there is an unexpected outcome.” It begins with expectations – assumptions about what will happen, presumed results, envisioned consequences.

The problem is that people tend to seek out evidence to confirm these expectations and avoid contrary input. Expectations can make the world seem simpler than it is. Focusing on the expected can draw attention away from the unexpected, setting us up for unpleasant surprises. Responses can make things worse.

Coping with the unexpected, according to these authors, requires the quality of mindfulness. By this they mean “the combination of ongoing scrutiny of existing expectations, continuous refinement and differentiation of expectations based on newer experiences, willingness and capability to invent new expectations that make sense of unprecedented events, a more nuanced appreciation of new dimensions of context and ways to deal with it, and identification of new dimensions of context that improve foresight and current functioning.” The opposite, mindlessness, involves “following recipes, imposing old categories to classify what they saw, acting with some rigidity, operating on automatic pilot, and mislabeling unfamiliar new contexts as familiar old ones.”

Weick and Sutcliffe single out “the zeal for planning” as “a silent contributor to mindlessness.” The presence of a plan, they claim, can cause people to search narrowly for confirmation of its correctness and avoid disconfirming evidence, restrict their spans of attention and action responses, become blinded to the unexpected, and generally make things worse rather than better. Quite an indictment! We can only wonder how

these traps are avoided by their “high-reliability organizations” – especially nuclear power plants which, one can hope, have sound and reliable plans in place. Still, this and other literature from management and the burgeoning field of complexity science tends to take a negative view of planning (using the term broadly), as unduly oriented to predict-command-control when conditions of complexity call for a much more flexible and adaptable approach.

That’s our challenge. If not addressed, planning could be sidelined and marginalized, exactly when it is most needed.

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