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Internet Forestry: A Principles Approach to Governance

Essay by Pierre de Vries, May 14, 2008 in response to Tacit Governance

Are forests governed tacitly or explicitly? In the woodland near my house, only the red alder knows how to make its leaves, and the red huckleberry and skunk cabbage pick their ideal spots without having to be told. The shrews and raccoons decide what to eat and when to breed. All the work of being a forest is done by its denizens, from the nematodes on up. And yet humans have had a hand here: broadening deer tracks into footpaths, clear-cutting old growth a hundred years ago, and deciding what to clear and what to keep after the 2002 windstorm.

There is a plethora of governance here, in the homeostasis of every cell, the competition between resident and invading species, the imposition of human needs and desires on the landscape, and the long cycles of regional climate. Most control decisions are invisible to us; those the human managers make are sometimes intuitive, and sometimes painstakingly public.

It helps to think about Internet governance in terms of forestry: both involve the management of autonomous, mercurial systems. Citizens, entrepreneurs and technologists drive innovation on the web, while policy makers try to keep up and shape the outcomes to meet broader social goals – just as the productive work in a forest is done by the plants and animals, with land managers trying to reconcile natural dynamics with social imperatives. Internet/web regulators are like forest rangers: although they have a crucial role and great responsibilities, their power and knowledge is limited. Web infrastructure comes in many sizes, from home networks to the global Internet – just as ecosystems range from window-sill planters to transnational parks. Borders are blurry; local decisions can have global impact. Pakistan Telecom's attempt to filter local access disrupted YouTube traffic worldwide – just as a backyard gardener introducing an invasive shrub can unintentionally disrupt a regional ecosystem.

Traditional telecom and media, by contrast, are more like commercial farming. There are well-defined fields and crops. It's clear who is responsible for what, and success is clearly defined. Today's Internet/web is more like a chaotic patchwork of gardens, forests and national park systems. Control and creativity are decentralized. There are many competing uses and users, and endless arguments about problem definition and success criteria.

How does one govern such systems? By using unchanging principles that remain applicable in the face of unpredictable change. Detailed rules don't help much, because they are constantly being overtaken by events. Both the internet and forests are complex, adaptive, managed systems. Since the underlying dynamics are the same, insights from one domain can teach us about the other. We can extract principles from the regularities that all adaptive systems share, and learn how to apply them to the internet from related fields like ecosystem management.

All these systems have tangled, nested structures; it's complicated all the way down. Delegation of authority and trust to those closest to the action is unavoidable. Top-level managers have little knowledge of, and influence over, the crucial details. Further, adaptive systems produce endless surprises, and it is hard (often impossible) to trace effect back to cause. We cannot really explain why we are in our current situation, and we cannot predict the consequences of our actions. Policy flexibility, leavened with a good dose of humility, is the only way to cope with such change. Finally, complexity brings fragility. Resilience can be improved by ensuring diversity of participants, big and small (although the occasional collapse, just like a major forest

fire, is necessary for renewal and reinvention).

Such principles can guide policy-making. Applied to the regulation of video services, for example, the delegation principle suggests that regulators look to web participants to generate content in local languages before imposing national production quotas. The flexibility principle implies that they should give content providers a chance to invent web-appropriate solutions to public-interest mandates, such as accessibility for the disabled, and only regulate to the extent that the community does not solve the problem. Finally, the diversity principle suggests that a multiplicity of creators is more likely to generate sustainable social value than a small number of heavily regulated producers; market entry and competition are key.

The governance choice here is between principles and rules – that is, between general guidelines for action and detailed if-then instructions. Principles are not tacit: they are an expression of our shared insights about managing a resource. However, principles are silent about how they should be implemented in a specific situation. This delegates power to a local decision-maker to respond appropriately to conditions that a high-level policy maker could not foresee (or, indeed, cannot see). General principles can become more specific when they guide short-term actions. For example, someone setting high-level policy would implement the flexibility principle by focusing on broadly defined ends and not specifying means, while a regulator would devise specific, but still technology- and business-model-neutral, rules.

Why principles and not rules? Regulators have no choice but to make it up as they go along when coping with rapidly changing systems. Principles guide decisions without relying on rules that will be obsolete before their ink has dried. We should not expect perfection from principles – just better results than could be achieved with either fleetingly relevant rules, or giving regulators complete discretion.

Governance via principles applies not only to the internet, but to everything that it transforms. The Internet/web, in contrast to traditional media, is characterized by modularity rather than vertical integration; self-organization rather than rigid structures; and unpredictable metamorphosis rather than gradual evolution. It has transformed predictable, coordinated industries into highly fragmented, unpredictable ecosystems. A principles approach is therefore needed not only for the Internet/web, but for all parts of society that it transforms. The creative wildness of the Internet is spreading to many previously staid fields of policy making; soon the forest management metaphor will be helpful beyond the narrow confines of the web.

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Note: This post is based on a recently published paper, Internet Governance as Forestry: Deriving Policy Principles from Managed Complex Adaptive Systems, by Pierre de Vries.

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