Innovation In Forest Inventory: What, How, Why

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• Innovation: What is it?

• Inventory:
  • What is it?
  • For?
  • Using?
  • Construction, Updates, Accessibility?
  • Why?

• Conclusion
  • Many possible routes, innovation is the key.
Innovation: What is it?

- **The adjacent possible**: incubator
- **Liquid networks**
- **The slow hunch**
- **Serendipity**
- **Error**:
- **Exaptation**: Printing press
- **Platforms**: Atoll (coral reef)

### The Fourth Quadrant

<table>
<thead>
<tr>
<th>Non-Market</th>
<th>Market</th>
<th>Individual</th>
<th>Networked</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td></td>
<td>11</td>
<td>35</td>
</tr>
<tr>
<td>11</td>
<td>Mason Jar</td>
<td>1</td>
<td>Airplane</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>Guier and Weiffenbach – Dopler tracking sputnik</td>
<td>56</td>
</tr>
</tbody>
</table>

Guier

Dopler tracking

Sputnik
Inventory is a System

Figure 1. A diagram illustrating the Vegetation Resource Inventory (VRI) and related activities.
Inventory: Desired Characteristics

- **Fit for purpose**: has necessary attributes at appropriate scales.
- **Connected**: ground data; long term monitoring
- **High resolution**: segments, grid cells
- **Detailed**: stand & stock tables
- **Precise**: potential error of estimation quantified
- **Flexible**: scale, selection of attributes
- **Linked**: polygon-level growth, yield, & mortality forecasts
- **Current**: regular updates, slow amortization rate
- **Accessible**: Easy to access, view at multiple scales
Using what?
Linked with:
Growth & yield + disturbance updates
Made available for application
Why: Sustainability Risk Management
Why: Overcoming Cognitive Bias

**Heuristic (a)**
- Availability
- Representativeness
- Confirmation
  - (affect heuristic)

**Overconfidence**
- Overprecision
- Overestimation
- Overplacement

**Framing**

**Bounded awareness**
**Uncertainty (risk)**

**Bias**

**Confirmation bias**
- Anchoring and adjustment
- Hindsight
- Conformity
- Groupthink
- Social loafing

**Illusion of control**
- Fallacy of plan
- Optimistic bias

**Cognitive Bias**
- **(a)** Availability bias
- **(b)**
  - Ignorance of base rate
  - Ignorance of sample size
  - Misunderstanding of probability
  - Regression to mean
  - Conjunction fallacy

**Judgement Decision Behaviour**
- Loss aversion
- Status quo bias
- Endowment effect
- Mental accounting
Why: Purposeful Change
Learning to predict

- **10 Commandments**
- *Triage*: choose your battles.
- *Break problems into sub-problems*
- *Balance*: inside vs outside views
- *Evidence*: avoid under- vs. overreacting
- *Evidence*: recognize argument and counter-argument as possibilities
- *Uncertainty*: Attach measures/degrees
- *Balance*: under/over confidence, prudence vs. decisiveness.
- *Find error*: beware of hindsight bias, review both failures and success.
- *Bring out the best*: in others and let others bring it out in you.
- *Master the error-balancing bicycle.*
- +1
- Don’t treat commandments as commandments.
Conclusion: Innovation in forest inventory
Building & putting the pieces together

- **Inventory system** (measures, processing, production, maintenance, storage, access, applications, interactions): open to change and improvement
- **Innovation**: organized chaos through public & private investment
- **Practicing**: doing it a reasonable scale with the necessary resources
- **Forecasting**: the business of forest inventory - disciplined openness to range of possibilities, quantified outcomes
- **Challenge**: upgrading the system while keeping it afloat
- **Demonstrating the benefits**: capitalizing on the investment through improved decision-making and increased operational efficiencies
- **With a more focused agenda**: model forests, innovative forest practices areas, forest practices pilot study areas, research forests
Thank You
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References

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