What is Stewardship?
The Imperative for Collaboration

José-Marie Griffiths, Ph.D. • STM Conference • Washington, D.C. • April 30th, 2014
Stewardship – the word defined

• Miriam Webster: "the careful and responsible management of something entrusted to one's care”

• Dictionary.com: "the responsible overseeing and protection of something considered worth caring for and preserving”

• International standard ISO 20121: "responsibility....reflected as both a value and a practice by individuals, organizations. communities, and competent authorities."

• "... an ethic that embodies the responsible planning and management of resources. The concepts of stewardship can be applied to the environment, economics, health, property, information, theology, etc...Stewardship is now generally recognized as the acceptance or assignment of responsibility to shepherd and safeguard the valuables of others.”
A Knowledge Ecosystem
Ecosystem Stewardship –
a model to explore for understanding Knowledge Stewardship

http://www.cometvr.colostate.edu/images/ecosystem.gif
Ecosystems

- Components: abiotic (non-living), biotic (living)
- Study of an ecosystem = the study of processes that link biotic and abiotic elements
- Ecosystem stewardship: try to understand the system as a whole
  - Energy flows
  - Materials cycles
  - Controls on ecosystem functions (bottom-up, top-down)
# Ecosystem Components - Abiotic

<table>
<thead>
<tr>
<th>Ecological Ecosystem</th>
<th>Knowledge Ecosystem</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Substance</strong></td>
<td></td>
</tr>
<tr>
<td>Elements: sun; temperature; precipitation, etc.</td>
<td>Source content: original sources, secondary sources, etc.</td>
</tr>
<tr>
<td><strong>Higher Level Compilations</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Grouped elements</strong>: Radiation levels - e.g., sum of sun penetration, soil minerals, etc.; Climate – e.g., combined impact of temperature levels over time, etc.</td>
<td>Catalogued/edited higher level managed knowledge – e.g., libraries, encyclopedias, metadata libraries, propaganda etc.</td>
</tr>
</tbody>
</table>
## Ecosystem Components – Abiotic 2

<table>
<thead>
<tr>
<th>Ecological Ecosystem</th>
<th>Knowledge Ecosystem</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storage</strong></td>
<td></td>
</tr>
<tr>
<td>Elements stored in the environment (e.g., minerals in the soil, radiation in the sun)</td>
<td>Containers of knowledge: people, cultural heritage, language, art, printed word, etc.</td>
</tr>
<tr>
<td><strong>Distribution</strong></td>
<td></td>
</tr>
<tr>
<td>Storms for bringing moisture; sun’s rays for delivering radiation, etc.</td>
<td>Spoken word - language, storytelling, plays, etc.; visual knowledge – museums, architecture, etc.; printed word— books, journals, etc.</td>
</tr>
<tr>
<td><strong>Level and Availability</strong></td>
<td></td>
</tr>
<tr>
<td>Varies from time to time, area to area</td>
<td>Varies from time to time, area to area</td>
</tr>
</tbody>
</table>
The Bottom Line

- All abiotic components:
  - Substance
  - Higher level collections
  - Storage system
  - Distribution system

MUST still continue to exist some form or the ecosystem will become nonfunctional — species will become extinct, etc.
Ecosystem Components - Biotic
In an ecosystem, functional groups of organisms that perform mostly the same kind of function (focused on FUNCTION not species) or the ROLES that organisms play in the ecosystem
In an ecological ecosystem we identify:

![Ecosystem Components Diagram](http://www.bigelow.org/bacteria/land.jpg)
Knowledge Ecosystem Components - Biotic

- **Producers**
  - **Authors**: Researchers, Scholars
  - **Knowledge organizers**: e.g., catalogers, metadata creators, library collections
  - **Funders**: federal, state, local, foundations – seed producers
  - **Validators**: colleges/university, corporate and federal R&D
  - **Publishers**

- **Consumers**
  - **Readers**
  - **Publishers**
  - **Libraries**
  - **Authors/researchers**

- ** Decomposers**
  - **Validators**
  - **Funders**
  - **Knowledge organizers**
  - **Publishers**
  - **Libraries**
Ecosystem Web

- Illustrates the feeding relationships among species within a community
- Reveals species interactions and community structure
- Way of understanding the dynamics of energy and resource transfer in an ecosystem
The Knowledge Ecosystem

CONSUMERS

PRODUCERS

DECOMPOSERS
The Knowledge Ecosystem

PRODUCERS: Authors
  e.g., researchers, scholars

PRODUCERS: Funders
  e.g., federal, state, local, foundations, etc.

PRODUCERS: Knowledge Organizers
  e.g., library collection makers, metadata creators, etc.

PRODUCERS: Publishers
  e.g., academic publishers, professional societies, etc.

PRODUCERS: Validators
  e.g., colleges/universities, corporate & federal researchers, etc.
The Knowledge Ecosystem

CONSUMERS: Readers

CONSUMERS: Researchers, authors

CONSUMERS: Publishers

PRODUCERS: Authors e.g., researchers, scholars

PRODUCERS: Funders e.g., federal, state, local, foundations, etc.

PRODUCERS: Knowledge Organizers e.g., library collection makers, metadata creators, etc.

PRODUCERS: Publishers e.g., academic publishers, professional societies, etc.

PRODUCERS: Validators e.g., colleges/universities, corporate & federal researchers, etc.
For approximately the past century the functions and roles in the Knowledge Ecosystem have been relatively well defined and clear.
Now biotic roles and functions are very muddy....
Ecosystem Web – element ratios

- What elements a part or the whole of an ecosystem can change and still remain in good health

Ecological ecosystem example: multiple individuals, “organizations” and the entire ecosystem depend on an appropriate ratio of CO2 in the system.
Funding – financial sustainability

Intellectual property ownership – people will choose to continue to participate

Compliance, notification, registration, etc.

Provenance — unbroken chain of content/document history/custody

Access – immediate and long-term, to readers AND researchers

Validation – authentication (peer review)

Knowledge Ecosystem Web – element ratios

These are the elements in the Knowledge Ecosystem that we must steward in such a way that a part or the whole of the ecosystem can change and still remain in good health.
Ecosystem Web – Element Cycling

Where and how fast elements move in a system

**Closed system**: the inputs and outputs are negligible compared to the internal changes (e.g., a terrarium)

**Open system**: there are inputs and outputs as well as the internal cycling

- **What becomes important is how long on average an element remains within the system before leaving the system**
Knowledge Ecosystem Web – element cycling

• What is important is how long on average an element remains within the system before leaving the system, e.g. funding

• Closed versus open systems – knowledge stewardship of the knowledge ecosystem has generally been a closed system

• Many research academic institutions think they can do the entire knowledge system stewardship by themselves – but if they do, they will suddenly have to financially support the cost of the entire system while removing multiple revenue streams from the system!
Authors are only 10% of the readers
What is the Future of Our Knowledge Ecosystem Stewardship?

A Scenario Approach
The Future of the Future

Lawrence Wilkinson: Scenario Model

“Given the impossibility of knowing how the future will play out, a good decision or strategy is one that plays out well across several possible futures.”
Individual vs. Community

Individual

“Will the energy of democratization and the ascendance of the ultimate individualized “I” continue to prevail?”

Community

“Or will our social organization and self-definition be rooted in a group—a nation, a tribe, a collection of users of a particular brand, a more communitarian ‘We’?”

Neither the “I” nor the “We” will ever disappear, but it is a question as to which will become the prevailing influence in our society — or the portion of society which we support or with which we identify.
Knowledge – Market or Common Good?

"Will the energy of democratization and the ascendance of the ultimate individualized "I" continue to prevail?"

"Or will our social organization and self-definition be rooted in a group—a nation, a tribe, a collection of users of a particular brand, a more communitarian 'We'?"

If a focus on the individual defines the future, then knowledge will turn into a market good.
Coherence vs. Fragmentation

Coherence

“Will social and political structures (either new or traditional) provide a society-wide coherence and order? Will there be a state to impose order, level the playing field, and unify a commonwealth?”

Or will society shatter into shards, the jagged edges of which do not mesh into a coherent whole? Will permanent fragmentation, increasing plurality, and unfettered free-marketism bring us to ‘bottom-up’ functioning anarchy?”

“Will society be the center that holds and provides stability, or will it fragment?”

Fragmentation
Knowledge – Individual or Organizational Control

Organizational Knowledge Control (top down)
Coherence

“Will social and political structures (either new or traditional) provide a society-wide coherence and order? Will there be a state to impose order, level the playing field, and unify a commonwealth?”

“Or will society shatter into shards, the jagged edges of which do not mesh into a coherent whole? Will permanent fragmentation, increasing plurality, and unfettered free-marketism bring us to ‘bottom-up’ functioning anarchy?”

Individual Knowledge Control (bottom up)
Fragmentation
### Societal Options

<table>
<thead>
<tr>
<th>Coherence</th>
<th>Fragmentation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual</strong></td>
<td><strong>Community</strong></td>
</tr>
</tbody>
</table>

#### Coherence

| **Consumerland**: where individual desires meet a social & corporate center; everyone is the ultimate consumer; large organizations lay down rules focused on serving consumers. |
| **I Will**: where individualism meets fragmentary or marginal control by large organizations; loyalty is to your own knowledge, skills & tools |

#### Fragmentation

| **New Civics**: values are shared but in many small, competing groups focused around shared disciplinary interests; emphasis on community with no “Big Brother” |
| **Ectopia**: widely shared stewardship values; voluntary individual embracing of cohesion, cooperation; focus on organizational affiliation as a supporter of personal values |
Best scenario is the one that will work across all four quadrants – accommodates the most potential changes in the knowledge ecosystem.

“Consumerland”: where individual desires meet a social & corporate center; everyone is the ultimate consumer; large organizations dominate; rules for development, collaboration, and control by large organizations; loyalty is to your own knowledge, skills & tools.

“New Civics”: values are shared but in many small competing groups focused around shared disciplinary interests; emphasis on community with no “Big Brother”

“Eutopia”: widely shared fragmentary or marginal control by large organizations; loyalty is to your own knowledge, skills & tools; embracing of cohesion, cooperation; focus on organizational affiliation as a supporter of personal values.

“I Will”: individual experience, flow, or meaningfulness; individual self-actualization; personal value system;
Knowledge Ecosystem Stewardship: Characteristics of a Solution

Stewardship that:
- Creates a (crowdsourced?) funding model for funding research review & distribution
- Allows readers to access research easily without funding, location, etc. barriers
- Allows researchers to share their results easily and cheaply
- Rewards researchers for research that is innovative, imaginative – taking risks

Coherence
Fragmentation

Individual Knowledge Control
Organizational Knowledge Control

Individual
Knowledge as a Market Good

Community
Knowledge as a Common Good
A Possible Collaborative Process

1) **Agree** on the ecosystem’s **top-line value/need**
A Possible Collaborative Process

1) **Agree** on the **ecosystem’s top-line value/need**

For the Knowledge Ecosystem – perhaps that this overall process of knowledge creation, sharing and preservation, and all its component elements, continues to function effectively and sustainably?

Based on *The UpCycle: Beyond Sustainability – Designing for Abundance*, by William McDonough and Michael Braungart
A Possible Collaborative Process

1) **Agree** on the ecosystem’s top-line value/need

2) **Identify** each participant’s top-line value and/or need in each of their roles (maintain the abiotic and biotic elements in the ecosystem)

Based on *The UpCycle: Beyond Sustainability – Designing for Abundance*, by William McDonough and Michael Braungart
<table>
<thead>
<tr>
<th>PRODUCERS Participants</th>
<th>TOP-LINE VALUE/NEED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Authors</strong>: Researchers, Scholars</td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge organizers</strong> – e.g., catalogers, metadata creators, library collections</td>
<td></td>
</tr>
<tr>
<td><strong>Funders</strong> – federal, state, local</td>
<td></td>
</tr>
<tr>
<td><strong>Validators</strong>– colleges/university, corporate/federal</td>
<td></td>
</tr>
<tr>
<td><strong>Publishers</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONSUMER Participants</th>
<th>TOP-LINE VALUE/NEED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Readers</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Publishers</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Libraries</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Authors/researchers</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DECOMPOSER Participants</th>
<th>TOP-LINE VALUE/NEED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Validators</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Funders</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge organizers</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Publishers</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Libraries</strong></td>
<td></td>
</tr>
</tbody>
</table>
A Possible Collaborative Process

1) **Agree** on the ecosystem’s top-line value/need

2) **Identify** each participant’s top-line value and/or need in each of their roles (maintain the abiotic and biotic elements in the ecosystem)

3) **Commit to meeting and protecting the ecosystem and each participant’s top-line values and needs** as you reconfigure the ecosystem (create a collaborative environment of trust)

Based on *The UpCycle: Beyond Sustainability – Designing for Abundance*, by William McDonough and Michael Braungart
A Possible Collaborative Process

1) Agree on the ecosystem’s top-line value/need
2) Identify each participant’s top-line value and/or need in each of their roles (maintain the abiotic and biotic elements in the ecosystem)
3) Commit to meeting and protecting the ecosystem and each participant’s top-line values and needs as you reconfigure the ecosystem (create a collaborative environment of trust)

ESTABLISH TRUST

Based on The UpCycle: Beyond Sustainability – Designing for Abundance, by William McDonough and Michael Braungart
A Possible Collaborative Process

1) **Agree** on the **ecosystem’s top-line value/need**

2) **Identify** each **participant’s top-line value and/or need in each of their roles** (maintain the abiotic and biotic elements in the ecosystem)

3) **Commit to meeting and protecting the ecosystem and each participant’s top-line values and needs** as you reconfigure the ecosystem (create a collaborative environment of trust)

4) **For each participant**, find an **approach** that will contribute to the **success of the ecosystem’s top-line value/need AND will meet that participant’s top-line value/need**.

Based on *The UpCycle: Beyond Sustainability – Designing for Abundance*, by William McDonough and Michael Braungart
<table>
<thead>
<tr>
<th>PRODUCERS PARTICIPANTS</th>
<th>TOP-LINE VALUE/NEED</th>
<th>Strategy that meets BOTH participant &amp; ecosystem needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors: Researchers, Scholars</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Knowledge organizers – e.g., catalogers, metadata creators, library collections</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Funders – federal, state, local</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Validators– colleges/university, corporate/federal</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Publishers</td>
<td>???</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONSUMER PARTICIPANTS</th>
<th>TOP-LINE VALUE/NEED</th>
<th>Strategy that meets BOTH participant &amp; ecosystem needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readers</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Publishers</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Libraries</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Authors/researchers</td>
<td>???</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONSUMER PARTICIPANTS</th>
<th>TOP-LINE VALUE/NEED</th>
<th>Strategy that meets BOTH participant &amp; ecosystem needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validators</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Funders</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Knowledge organizers</td>
<td>???</td>
<td></td>
</tr>
<tr>
<td>Publishers</td>
<td>???</td>
<td></td>
</tr>
</tbody>
</table>
An Example: How to Cook and Educate Your Kids Without Killing a Tiger
An Example: How to Cook and Educate Your Kids Without Killing a Tiger - 2
An Example: How to Cook and Educate Your Kids Without Killing a Tiger - 3
An Example: How to Cook and Educate Your Kids Without Killing a Tiger - 4
An Example: How to Cook and Educate Your Kids Without Killing a Tiger - 5
“A boat doesn’t go forward if each one is rowing their own way.”
~ Swahili proverb

“If you want to go fast, go alone. If you want to go far, go with others.”
~ African proverb

“Conflict is inevitable, but combat is optional.”
~ Max Lucado