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Executive Summary

• To be credible, measurement and reporting systems of any kind must be grounded in clearly articulated accounting principles appropriate to their scope.

• None of the leading integrated and/or non-financial reporting standards or frameworks, however, are able to meet this requirement, since no such generally accepted principles for either form of accounting have been formally recognized or acknowledged by their makers.

  – Leading standards for integrated and/or non-financial reporting are therefore premature and ad hoc, not to mention inconsistent with one another given the lack of a common foundation.

• We therefore need formal recognition of the equivalent of GAAP or IFRS for integrated accounting!

  – A viable model for this is proposed herein: *Generally Accepted Integrated Accounting (GAIA) Principles*.
Executive Summary (cont.)

- Our initial proposal (Nov. 2020) took the form of GAAP for non-financial accounting, or ‘GAAP-NF’
  - In hindsight, we believe this was in error, since it would only encourage and extend the barrier between financial and non-financial accounting – sustainability accounting, too

- A better move, we now feel, would be to return to the original idea of integrated reporting, first put forward in the early King reports, but ultimately abandoned
  - The result of the abandonment has been the subordination of both integrated and non-financial accounting to financial accounting and shareholder primacy, thereby resulting in little more than enhanced financial accounting (e.g., ESG)
  - What we are now proposing, then, are principles for more robust and authentic integrated accounting that address not only non-financial performance, but financial performance too

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How credible are leading reporting standards for integrated and/or non-financial performance?

- Global Reporting Initiative (GRI)
- IFRS/ISSB (forthcoming as ‘ISSB’ in mid-2023)
- CSRD/ESRS (forthcoming as ‘ESRS’ in mid-2023)

One test of a standard’s credibility is its consistency with underlying generally accepted accounting principles (e.g., financial reporting and GAAP or IFRS).

**Question:** What, then, are/were the pre-existing generally accepted accounting principles upon which today’s leading integrated and/or non-financial reporting standards were based at the time of their creation?

**Answer:** No such principles were recognized, then or now. Existing and forthcoming standards (ESG, too), therefore, were and are ad hoc/premature and largely fail to deliver!
For example, GRI, ISSB and ESRS all fail to assess or report sustainability performance in authentic terms. How could they? They make no attempt to acknowledge, much less build on, generally accepted accounting principles for sustainability or integrated accounting as a first step. Thus, even the three leading standards themselves have taken inconsistent approaches to the subject, thereby begging the question of what the underlying principles are or should be.

And if their intellectual grounding in such accounting is so dubious, how can they possibly be trusted as indicators of organizational performance? Answer: They can’t! Even ostensibly positive performance per the leading standards can be driven by activities & impacts that are unsustainable and which put stakeholder well-being at risk.
We Need Integrated Accounting Principles!

• In order to obtain meaningful measures of integrated performance, we need the functional equivalent of GAAP or IFRS for financial accounting, but for integrated accounting instead.

• In other words, we need *Generally Accepted Integrated Accounting (GAIA) Principles*!
  - GAIA Principles would provide a rigorous basis for integrated performance measurement and reporting (to which GRI, ISSB, ESRS and others could conform).
  - This would make meaningful integrated accounting and reporting possible (i.e., for both financial and non-financial performance), including sustainability.
  - GAIA Principles, in fact, already exist!
We Need Integrated Accounting Principles (cont.)

- Context-based accounting principles are already used for financial reporting and are also now explicitly called for in GRI, ESRS and the UN
  - GRI: the Sustainability Context Principle
  - ESRS: thresholds & allocations in environmental metrics
  - UN: Sustainable Development Performance Indicators

- Context-based principles have long been applied to financial accounting (i.e., fiduciary duties owed to shareholders for impacts on equity capital)

- The stage is now clearly set to operationalize integrated accounting using context-based principles

*https://en.wikipedia.org/wiki/Context-Based_Sustainability
Reference Model for Generally Accepted Integrated Accounting (GAIA) Principles
**Reference Model for Generally Accepted Integrated Accounting (GAIA) Principles**

<table>
<thead>
<tr>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regulative Ideals (Intrinsically Valued Goal States)</strong></td>
</tr>
<tr>
<td>Shareholder Well-Being</td>
</tr>
<tr>
<td><strong>Core Underlying Theories of Performance</strong></td>
</tr>
<tr>
<td><strong>Resources (capital stocks and flows)</strong></td>
</tr>
<tr>
<td><strong>Transactions (impacts on stocks and flows)</strong></td>
</tr>
</tbody>
</table>

**Some Historical Principles in GAAP and IFRS & Whether They Are Extensible to GAIA Principles (Yes/No)**

<table>
<thead>
<tr>
<th>Principle</th>
<th>Extensible to GAIA Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accounting entity</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Algebraic opposition (dual aspect concept)</td>
<td>No, there is no zero sum enforced here</td>
</tr>
<tr>
<td>3. Single monetary unit</td>
<td>No; uses non-monetary units of measurement instead (i.e., of the carrying capacities of capitals as indicated below)</td>
</tr>
<tr>
<td>4. Proprietors’ equity</td>
<td>No, stakeholder entitlements more broadly construed are prioritized instead (see below)</td>
</tr>
<tr>
<td>5. Profit or loss</td>
<td>No</td>
</tr>
<tr>
<td>6. Accounting period</td>
<td>Yes</td>
</tr>
<tr>
<td>7. Materiality</td>
<td>Yes, but broader in scope (see below)</td>
</tr>
</tbody>
</table>

**Additional Foundational Principles Applicable to GAIA (for a total of twelve)**

<table>
<thead>
<tr>
<th>Principle</th>
<th>Extensible to GAIA Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stakeholders</td>
<td>Individuals or groups to whom duties &amp; obligations are owed to manage one’s impacts on vital capitals in ways that can affect their well-being. 4</td>
</tr>
<tr>
<td>2. Duties and Obligations</td>
<td>Morally binding responsibilities to have, not have, or otherwise manage one’s impacts on vital capitals in ways that recognize and respect the rights of others. 5</td>
</tr>
<tr>
<td>3. Vital Capitals</td>
<td>Stocks and flows of resources that people rely on for their well-being (i.e., human, social, constructed, economic, intellectual, and natural capitals that yield valuable goods and services). 5, 6</td>
</tr>
<tr>
<td>4. Carrying Capacity</td>
<td>The extent of demand for its goods or services a capital can fulfill without degrading or exceeding the limitations of its stocks and/or flows.</td>
</tr>
<tr>
<td>5. Thresholds</td>
<td>Upper and lower limits in the carrying capacities of capitals that must be maintained in order to ensure human well-being. 5, 6</td>
</tr>
<tr>
<td>6. Allocations</td>
<td>Entity-specific fair, just, and proportionate shares of duties or obligations owed to maintain the carrying capacities of vital capitals at levels required to ensure stakeholder well-being, either by preserving or producing them. 5, 6</td>
</tr>
<tr>
<td>7. Materiality</td>
<td>The degree to which actual or possible impacts on vital capitals correspond to any duties or obligations owed to stakeholders. 5, 7</td>
</tr>
<tr>
<td>8. Sustainability</td>
<td>The degree to which human impacts on vital capitals have the effect of maintaining them at levels required to ensure stakeholder well-being (i.e., in accordance with duties and obligations owed to preserve and/or produce them, as the case may be). 3</td>
</tr>
<tr>
<td>9. Substitutability</td>
<td>The extent to which the diminishment or loss of one type of capital can or cannot be compensated for by the excess availability or production of another (e.g., the view that capitals of different kinds are generally not interchangeable with one another and must therefore be separately maintained at required levels). 8</td>
</tr>
<tr>
<td>10. Commensurability</td>
<td>The degree to which measures of impacts on disparate capitals are expressed in terms of a common conceptual framework and on a common scale, such as sustainability performance, so that measurements can be combined in like terms.</td>
</tr>
</tbody>
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1. Calls for maximizing shareholder value with particular emphasis, therefore, on impact valuation and risk management. All impacts are monetized and then integrated in monetary terms.
2. Calls for prioritizing all stakeholders’ well-being in the same sense that all impacts must be assessed relative to sustainability norms or standards for what they would have to be in order to maintain capital resources at levels required to ensure stakeholder well-being. Can also be interpreted as a surrogate for responsibility performance (i.e., sustainability performance is just a proxy).
4. The specific GAAP principles shown here are admittedly incomplete and are limited to only those which are historically foundational and which therefore call for immediate attention as to whether or not they are applicable or extensible to GAIA principles in some way: based in large part on Lee, G. (1972) “Coming age of double entry: The Giovanni Fabbri loaf of 1299–1300”, Accounting Historians Journal: Volume 4 Issue 2, Article C, and Lee, G. (1986) Modern Financial Accounting, 4th Edition, Van Nostrand, Berkshire.
## Generally Accepted Integrated Accounting (GAIA) Principles

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accounting Entity</td>
<td>The concept of a business or accounting entity whose books record its performance, as distinct from its owners or shareholders.</td>
</tr>
<tr>
<td>2. Accounting Period</td>
<td>A defined period of time for which performance is measured.</td>
</tr>
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<td>3. Stakeholders</td>
<td>Individuals or groups to whom duties &amp; obligations are owed to manage one’s impacts on vital capitals in ways that can affect their well-being.</td>
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<tr>
<td>11. Substitutability</td>
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<td>12. Commensurability</td>
<td>The degree to which measures of impacts on disparate capitals are expressed in terms of a common conceptual framework and on a common scale, such as sustainability performance, so that measurements can be combined in like terms.</td>
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\(^1\) As proposed by Mark W. McElroy, PhD, and in accordance with Context-Based Sustainability theory and practice: [https://en.wikipedia.org/wiki/Context-Based_Sustainability](https://en.wikipedia.org/wiki/Context-Based_Sustainability)
Intellectual History and Basis of GAIA Principles*

(See next slide for more complete citations)

Generally Accepted Integrated Accounting (GAIA) Principles

1. Accounting Entity
   - The concept of a business or accounting entity whose books record its performance, as distinct from its owners or shareholders.

2. Accounting Period
   - A defined period of time for which performance is measured.

3. Stakeholders
   - Individuals or groups to whom duties & obligations are owed to manage one's impacts on vital capitals in ways that can affect their well-being.

4. Duties & Obligations
   - Morally binding responsibilities to have, not have, or otherwise manage one's impacts on vital capitals in ways that recognize and respect the rights of others.

5. Vital Capitals
   - Stocks and flows of resources that people rely on for their well-being (i.e., human, social, constructed, economic, intellectual, and natural capitals that yield valuable goods and services).

6. Carrying Capacity
   - The extent of demand for its goods or services a capital can fulfill without degrading or exceeding the limitations of its stocks and flows.

7. Thresholds
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8. Allocations
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*Emblematic only, not intended to be complete

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How the *Value Creation* Doctrine (e.g., GAAP and IFRS) Compares to the GAIA Principles

<table>
<thead>
<tr>
<th>Extent to Which GAAP/IFRS Conforms to GAIA Principles&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accounting Entity</td>
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Summary and Conclusions

• Mainstream integrated, non-financial, and sustainability accounting standards are largely predicated on the Value Creation doctrine or theory of performance endemic to shareholder primacy
  – Leading standards, in particular, either disregard or merely gloss over longstanding sustainability principles in the field and focus instead on reporting only
  – The result is a form of measurement and reporting that is ad hoc, premature, and fails to disclose either sustainability or integrated performance in authentic terms
• The need for GAIA Principles is therefore urgent!
Thank you!

Comments and suggestions most welcome

Contact Mark W. McElroy, PhD
mmcelroy@vermontel.net
Appendix – Intellectual History of Thresholds and Allocations
An Intellectual History of Thresholds & Allocations
(and their underlying foundations in capital theory)

1700
Von Carlowitz publishes *Sylvestrica Oeconomic*, conceptualizes 'Triple Bottom Line' management and coins 'sustainability'

1800
J. S. Mill envisions 'stationary state' in *Principles of Political Economy*

1900
Fisher defines 'capital' in *The Nature of Capital and Income*

1713
e 1798
Malthus publishes *Essay on the Principle of Population*;
predicts population growth will outstrip food supply

e 1848
Hicks defines 'income' in *Value and Capital*

1980
Boulding expands 'capital' to include non-economic types

1960
Meadows et al publish *Limits to Growth*

1996
Wackernagel & Rees introduce 'fair Earthshare' per capita allocation for application at the societal level

1949
Randoes & Tuppen introduce GEVA allocation method for organizational carbon metrics

GRI introduces 'Sustainability Context' principle

2000
McElroy introduces per capita allocation method for application at the organizational level

2002
CEO Stammer at Agri-Mark introduces economic allocation method for organizational water metrics

2014
Science-Based Targets Initiative (SBTI) introduces activity-based allocation method

2020
Thomas & McElroy publish 'The MultiCapital Scorecard'*

See annotations on next slide

*GEVA = GHGs per Economic Value Added
Annotations to the Thresholds and Allocations Timeline

1. **Von Carlowitz (1713):** Introduced thresholds-based sustainability management and also, arguably, triple bottom line thinking; coined ‘sustainability’ in his book; all at a meso level of analysis (forestry).

2. **Malthus (1798):** First to apply thresholds thinking at the macro human scale and to put risks to human survival in light of it on the table.

3. **J. S. Mill (1848):** First to put forward a ‘stationary-state’ economic model grounded in thresholds.

4. **Fisher (1906):** An economist who was first to put forward a theory and definition of ‘capital’ grounded in thresholds and which has shaped the contours of sustainability thinking ever since (i.e., that capitals are stocks of valuable resources/wealth that produce flows of ‘income’).

5. **Hicks (1939):** Another economist who built on Fisher’s contributions by further elaborating on the nature of capital flows (income) and the extent to which they can be consumed without putting the underlying stocks at risk.

6. **Boulding (1949):** Again, an economist, whose writings constitute the earliest evidence of ‘capital’, the construct, being expanded to include multiple, non-economic forms.

7. **Meadows et al (1972):** The first, multi-dimensional, global application of thresholds-based thinking (i.e., not limited to food supplies as Malthus was) to the study of human survival on Earth, all with the aid of system dynamics.

8. **Daly (1973):** Built on Mill’s notion of a ‘stationary-state’ economy by expressing it in terms of impacts on natural resources relative to thresholds; referred to it as a ‘steady state’ model. Included a model for understanding the relationships between ultimate means, intermediate means, and human well-being (‘Daly’s Triangle’), and also the basis for what later became known as ‘Daly’s Rules’.

9. **Ward et al (1974):** Introduced the combination of upper (ecological) and lower (socioeconomic) limits in resources/conditions on Earth – referred to by them as ‘outer’ and ‘inner’ limits, respectively.

10. **Wackernagel (1994):** Introduced the Ecological Footprint Method, the first measurement and reporting system for assessing the sustainability of human impacts on natural capitals vis a vis their thresholds; used a blended measure of ‘bioproductive capacity’ to quantify the carrying capacities (thresholds) of natural capital on Earth.

11. **Wackernagel and Rees (1996):** Introduced the first normative principle (and metric) for determining what humanity’s impacts on natural capital ought to be (i.e., that it should be calibrated in per capita terms). Referred to it as ‘Fair Earthshares’; was applied only to macro, societal levels.

12. **Elkington (1997):** Proposed the idea that the performance of organizations should be assessed in terms of their ‘triple bottom line’ performance and, importantly, that such assessments should be thought of in terms of their impacts on multiple vital capitals.

13. **Meadows (1998):** Puts forward a capitalized interpretation of ‘Daly’s Triangle’, whereby all ‘Ultimate Means’ are represented as natural capitals, and all other resources important for human well-being are represented as capitals of other kinds.

15. **McElroy (2006 [see McElroy 2008 146-9; 183-208]):** Introduced the per capita allocation method at the organizational level of analysis, thereby constituting world’s first systematic approach for making fair, just and proportionate allocations of sustainability norms and thresholds at the organizational level.


17. **McElroy (2008):** Introduced the Social Footprint Method and Context-Based Sustainability at the organizational (micro) level of analysis; would later go on to apply both at the meso and macro levels.

18. **Randers and Tuppen (2008):** Developed and applied first GEVA (Greenhouse Gas Emissions per Unit of Economic Value Added) allocation method used in conjunction with a context-based carbon metric (at BT).

19. **Stammer (2008):** Developed and applied first economic allocation method used in conjunction with a context-based water metric (at Agri-Mark/Cabot).

20. **Rockstrom et al (2009):** Introduced ‘Planetary Boundaries’ model that measures and reports the sustainability of humanity’s impacts on vital ecological resources in the world; provides a new, component-based alternative to the Ecological Footprint Method.

21. **Raworth (2012):** Builds on Ward et al’s work, in particular, to more fully elaborate the ‘inner’ and ‘outer’ limits concept put forward in 1974; provides a reference model in visual form that can inform practice.

22. **SBTi (2014):** First multi-NGO embrace of thresholds-, allocations-, science- and context-based metrics for application at the organizational (micro) level; also introduced an activity-based allocation method as part of their Sectoral Decarbonization Approach (SDA) target-setting tool; signaled start of growing adoption of context-based measurement, management and reporting worldwide; would later inspire similar efforts, such as the Science-Based Targets Network initiative now underway.

23. **Thomas & McElroy (2016):** Introduced world’s first fully integrated and context-based Triple Bottom Line method (the MultiCapital Scorecard, or MCS), in such a way as to combine the application of thresholds and allocations principles in a single performance accounting tool. The MCS, an open-source method, has since been used at the organizational, municipal and national levels to assess the sustainability performance of human social systems and is arguably the most advanced implementation of Context-Based Sustainability. 

*Note:* This book followed an article published in 2015 by the same title, and also the introduction of the authors’ underlying concept of ‘Multicapitalism’ in 2014: [http://www.multicapitalism.com/Multicapitalism.pdf](http://www.multicapitalism.com/Multicapitalism.pdf)

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See references on next slide
Key References in the Thresholds and Allocations Literature
(in chronological order by category)

Important Pre-Twentieth Century Works on Thresholds


Important Twentieth Century Works on Thresholds


Important Twentieth & Twenty-First Century Works on Allocations (and the integrated accounting methods that came with them)