Reference Model for Generally Accepted Integrated Accounting (GAIA) Principles

A Working Proposal by the Center for Sustainable Organizations
August 6, 2022
(Update v2.5 – First published as GAAP-NF in November 2020)
# Contents

- **Executive Summary** 1
- **Integrated Performance** 3
- **We Need Integrated Accounting Principles** 5
- **Reference Model for Generally Accepted Integrated Accounting (GAIA) Principles** 7
- **Intellectual History and Basis of GAIA Principles** 10
- **How the Value Creation Doctrine (e.g., GAAP and IFRS)** 12
  Compares to the GAIA Principles
- **Summary and Conclusions** 13
- **Appendix – Intellectual History of Thresholds and Allocations** 15

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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!
  – One such model is proposed herein: *Generally Accepted Integrated Accounting (GAIA) Principles*
• 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 arbitrary 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*
  – What we are proposing now, then, are principles for more robust and authentic integrated accounting that address not only non-financial performance, but financial performance too
Integrated Performance

• How credible are leading reporting standards for integrated and/or non-financial performance?
  - Global Reporting Initiative (GRI)
  - International Integrated Reporting Council (IIRC)
  - Sustainability Accounting Standards Board (SASB)

• 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 standards, and ESG too, therefore, were/are ad hoc and premature and largely fail to deliver!
Integrated Performance (cont.)

• For example, GRI, IIRC, and SASB 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
  - 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 accompanied by activities and impacts that actually 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, IIRC, SASB 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.)

• The inclusion of sustainability performance in integrated accounting necessarily calls for the use of context-based accounting* principles
  – Context-based methods were initially used by early adopters to integrate measures of social and environmental impacts only, using sustainability itself as an integrating construct (i.e., as a conceptual tool for achieving ‘commensurability’ between otherwise disparate and irreconcilable measures)

• More recently, context-based principles have been applied to financial/economic performance as well, using cost of capital and other thresholds to do so
  – The result is a common conceptual framework that can be used to fully operationalize integrated accounting!

*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>
<th>Generally Accepted Accounting Principles (e.g., GAAP and IFRS)</th>
<th>Generally Accepted Integrated Accounting (GAIA) Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Underlying Theories of Performance</strong></td>
<td>Shareholder/Economic Value (aka, Value Creation)</td>
<td>Sustainability</td>
</tr>
<tr>
<td><strong>Resources (capital stocks and flows)</strong></td>
<td>Equity = Assets - Liabilities (balance sheets apply here)</td>
<td>Multi-Capital Sufficiency (multi-capital accounting applies here; and possibly non-financial analogues or enhancements to financial reports)</td>
</tr>
<tr>
<td><strong>Transactions (impacts on stocks and flows)</strong></td>
<td>Profitability Performance = Revenue - Costs (impacts measured in units of money; double-entry bookkeeping and income statements apply here)</td>
<td>Sustainability Performance = Actual Impacts / Normative Impacts (S/A/N); impacts measured in units of carrying capacities of capitals; context-based metrics and TBL scorable apply here</td>
</tr>
</tbody>
</table>

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

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

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

1. **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.
2. **Duties and 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.
3. **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).
4. **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/or flows.
5. **Thresholds**
   - Upper and lower limits in the carrying capacities of capitals that must be maintained in order to ensure human well-being.
6. **Allocations**
   - 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 producing them or by ensuring stakeholder well-being.
7. **Materiality**
   - The degree to which actual or possible impacts on vital capitals correspond to any duties or obligations owed to stakeholders.
8. **Sustainability**
   - 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 produce them and/or produce them, as the case may be).
9. **Substitutability**
   - 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).
10. **Commmensurability**
    - 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.

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1. For the sake of maximizing shareholder value with due consideration, therefore, of impact valuation and risk management. All impacts are monetized and then integrated in monetary terms.
2. For the sake of stakeholder well-being in the sense that all impacts can 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, for which sustainability performance is just a proxy indicator.
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. (1977) "Coming of age of double entry: The Giovanni Fagginiledger of 1299-1300," Accounting Historians Journal / Volume 4 / Issue 2, Article 6, and Lee, G. (1986) Modern Financial Accounting, 4th Edition, Van Nostrand, Berkshire.
8. See, for example, Drenner's treatment of 'strong' versus 'weak' sustainability (Drenner 2001) The Principles of Sustainability, Earthscan, London.
# Generally Accepted Integrated Accounting (GAIA) Principles

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Accounting Entity</strong></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. <strong>Accounting Period</strong></td>
<td>A defined period of time for which performance is measured.</td>
</tr>
<tr>
<td>3. <strong>Stakeholders</strong></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>
</tr>
<tr>
<td>4. <strong>Duties &amp; Obligations</strong></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.</td>
</tr>
<tr>
<td>5. <strong>Vital Capitals</strong></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).</td>
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<td>6. <strong>Carrying Capacity</strong></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 flows.</td>
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<td>7. <strong>Thresholds</strong></td>
<td>Upper and lower limits in the carrying capacities of capitals that must be maintained in order to ensure human well-being.</td>
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<td>8. <strong>Allocations</strong></td>
<td>Entity-specific fair, just, and proportionate shares of duties and obligations owed to maintain the carrying capacities of vital capitals at levels required to ensure stakeholder well-being, either by preserving or producing them.</td>
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<tr>
<td>9. <strong>Materiality</strong></td>
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<td>10. <strong>Sustainability</strong></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).</td>
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<tr>
<td>11. <strong>Substitutability</strong></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).</td>
</tr>
<tr>
<td>12. <strong>Commensurability</strong></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>
</table>

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1As 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*

*Emblematic only, not intended to be complete

(See next slide for more complete citations)

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**Generally Accepted Integrated Accounting (GAIA) Principles**¹

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.

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   - Upper and lower limits in the carrying capacities of capitals that must be maintained in order to ensure human well-being.

8. Allocations
   - Entity-specific fair, just, and proportionate shares of duties and obligations owed to maintain the carrying capacities of vital capitals at levels required to ensure stakeholder well-being, either by preserving or producing them.

9. Materiality
   - The degree to which actual or possible impacts on vital capitals correspond to any duties or obligations owed to stakeholders.

10. Sustainability
    - 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).

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    - 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).

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    - 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.

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Detailed References for Intellectual History
Citations Provided for GAIA Principles

Grady, P. 1965. Inventory of Generally Accepted Accounting Principles. Accounting Research Study No. 7. New York: AICPA
# 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 Principles¹</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Accounting Entity</strong></td>
<td>Yes – fully conforms</td>
</tr>
<tr>
<td><strong>2. Accounting Period</strong></td>
<td>Yes – fully conforms</td>
</tr>
<tr>
<td><strong>3. Stakeholders</strong></td>
<td>No – is concerned only with the well-being of shareholders, very often by law</td>
</tr>
<tr>
<td><strong>4. Duties &amp; Obligations</strong></td>
<td>Yes – but only with respect to shareholders and fiduciary duties owed to them</td>
</tr>
<tr>
<td><strong>5. Vital Capitals</strong></td>
<td>Yes – but only with respect to shareholder value (economic capital)</td>
</tr>
<tr>
<td><strong>6. Carrying Capacity</strong></td>
<td>No – not per se, but does seek to maximize value of economic capital</td>
</tr>
<tr>
<td><strong>7. Thresholds</strong></td>
<td>Yes – variously, including with respect to minimum return on capital goals</td>
</tr>
<tr>
<td><strong>8. Allocations</strong></td>
<td>Yes – organizations are solely responsible for growing economic capital</td>
</tr>
<tr>
<td><strong>9. Materiality</strong></td>
<td>Yes – but only with respect to investor-related needs (i.e., their decisions)</td>
</tr>
<tr>
<td><strong>10. Sustainability</strong></td>
<td>No – externalizing costs in ways that degrade vital capitals is acceptable</td>
</tr>
<tr>
<td><strong>11. Substitutability</strong></td>
<td>No – GAAP/IFRS is concerned with only one type of capital, economic</td>
</tr>
<tr>
<td><strong>12. Commensurability</strong></td>
<td>No – GAAP/IFRS rely exclusively on monetization for all transactions</td>
</tr>
</tbody>
</table>

¹As proposed by Mark W. McElroy, PhD, and in accordance with Context-Based Sustainability theory and practice: https://en.wikipedia.org/wiki/Context-Based_Sustainability

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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
  – Integrated reporting frameworks, in particular, disregard longstanding sustainability principles in the field, especially context-based accounting
  – 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 Oeconomica* 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*

1966
Ward et al publish *Cocoyoc Declaration* and its conception of ‘inner’ and ‘outer’ limits

1994
Daly proposes ‘steady-state economy’

1996
Hicks defines ‘income’ in *Value and Capital*

1997
Boulding expands ‘capital’ to include non-economic types

1972
Wackernagel introduces *Ecological Footprint Method*

1974
Meadows et al publish *Limits to Growth*

1994
Elkington asserts ties between capitals and organizational performance (i.e., in the form of the ‘Triple Bottom Line’)

1996
Rockstrom et al introduce ‘Planetary Boundaries’ work

1997
McElroy et al extend carrying capacity concept to all capitals

2000
Raworth reports ‘Doughnut’ work

2006
GRI introduces ‘Sustainability Context’ principle

2002
McElroy introduces per capita allocation method for application at the organizational level

2008
Randers & Tuppen at BT introduce GEVA* allocation method for organizational carbon metrics

2005
CEO Stammer at Agri-Mark introduces GEVA* allocation method for organizational water metrics

2007
Science-Based Targets initiative (SBTI) introduces activity-based allocation method

2014
*GEVA = Gross Economic Value Added

See annotations on next slide
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. **Ward et al (1974):** Introduced the combination of upper (ecological) and lower (socioeconomic) limits in resources/conditions on Earth and the idea that it is the space in between that humans should inhabit.
9. **Daly (1977):** Built on Mill’s notion of a ‘stationary-state’ economy by expressing it in terms of impacts on natural capital relative to thresholds; referred to it as a ‘steady state’ model. Daly would later go on to specify policies for how to establish and maintain a steady state economy.
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.

(cont.)
Annotations to the Thresholds and Allocations Timeline (cont.)

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.


14. McElroy (2006): 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.

15. McElroy et al (2007): Introduced extended application of the carrying capacity concept to all capitals, and not just natural capital; showed how thresholds and allocations concepts could be applied to all, and to the triple bottom line in full.

16. 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.

17. Randers and Tuppen (2008): Developed and applied first GEVA allocation method used in conjunction with a context-based carbon metric (at BT).


20. 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 measurement model in visual form that can inform practice.

21. 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.