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Four priorities for new links between conservation science and accounting research

Engagement with a diversity of social science disciplines is essential to advance the frontiers of conservation research by shedding light on political, social and institutional challenges that are central to address effectively biodiversity conservation issues (Bennett et al. 2017; Teel et al. 2018).

One such challenge that remains insufficiently investigated is frustration with the lack of real-world conservation impact of innovative information tools and systems of accounts aimed at motivating and guiding ecosystem management. The conservation community invests considerable efforts in their creation and experimentation. Species and ecosystem accounts (e.g. ABoS 2015; UNEP-WCMC 2016), tools for ecosystem services quantification and mapping (e.g. Kareiva et al., 2011), general ecological indicators (e.g. Jorgensen et al., 2013) or tools for monitoring particular ecosystems have become a fundamental part of conservation research and practice. However, conservation scientists often complain that such ecosystem-based tools do not lead to the kind of changes in decision, action or policy that they would expect (e.g. Ruckelshaus et al. 2015).

In many cases, the inability of such information systems to generate expected changes is not due to their technical limitations, but rather to the too fragile articulation between their design on the one hand, and the complex realities of developing strategies and organizing the management of ecosystems in a diversity of contexts on the other hand. Investigating such articulation between an information system and the organizational details of its systematic use is precisely what characterizes an important academic field:

26 accounting, which belongs to management as a discipline, and often intersects with social
27 sciences or economics. Accounting has enormous (and yet largely untapped) potential to
28 contribute to conservation science, practice and goals. Accounting is often misconceived
29 as being only the craft of producing quantitative and financially focused reports for
30 companies. However, accounting in its broadest sense can be thought of as so much more
31 (Jollands 2017): the preparation and the framing of information (both qualitative and
32 quantitative) to assist specific organizing and decision-making processes.

33

34 We especially refer here to critical and interpretive accounting research, a field that first
35 emerged in the 1970s through the now well-established *Accounting, Organizations and*
36 *Society* journal and subsequently developed with the support of other key journals, such
37 as *Accounting, Auditing and Accountability Journal* or *Critical Perspectives on Accounting*
38 (for overviews, see Miller & Power 2013; Roslender 2017). Since the 1990s, researchers
39 in this field have revealed and criticized the lack of consideration of sustainability issues
40 in existing accounting systems (e.g. Milne 1996) and advocated the development of new
41 accounting approaches inspired by ecological thinking, at the level of the corporation and
42 beyond (e.g. Birkin, 1996; for overviews, see Bebbington & Larrinaga 2014; Russell et al.
43 2017).

44

45 The work presented here follows a recent publication that puts forward a new line of
46 inquiry that focuses on developing accounting research at the level, not of the firm, but of
47 the collective management of ecosystems (Feger & Mermet 2017). This paper is the result
48 of a subsequent in-depth interdisciplinary dialogue between accounting scholars and
49 conservation researchers and practitioners initiated during a workshop in Cambridge in
50 September 2017. It underlines that new collaboration between conservation and

51 accounting research is essential to improve the ways in which ecosystem-based
52 information systems get to be actually used for accountable conservation decision and
53 action. To this end, it identifies four key areas for future joint research.

54

55 **What can the accounting discipline bring to the conservation table?**

56

57 Our call to establish new links between the accounting discipline and biodiversity
58 conservation is not meant to be a substitute for economics, game theory, organizational
59 psychology, or in fact, any other social science discipline focusing primarily on decision-
60 making. It is an invitation to focus on questions that are instrumental and common to both
61 conservation and accounting research such as: how do we keep records in practice, with
62 what consequences? What kind of languages and representations can one provide to
63 complex forms of organizations? Who is liable to giving and demanding what kind of
64 accounts? How do we negotiate, organize, manage and control responsibilities? How do
65 we debate and institutionalize explicit principles and conventions on which accounts can
66 be developed, values can be defined and upon which past and future actions can be
67 assessed and compared?

68

69 The pervasive confusion in the environmental field between the disciplines of accounting
70 and economics deserves a special comment here. While economics and accounting are
71 somewhat related, they are essentially different disciplines (Shiozawa 1999). Accounting
72 shares with economics its concern for developing and using calculative practices for the
73 purpose of supporting decision-making. The use of economics in conservation science has
74 brought major results if we consider for instance the development of economic valuation
75 of ecosystem services, the analysis of environmental trade-offs or the study of incentive

76 structures (Helm & Hepburn 2012). One of the distinctive characteristics of the
77 accounting discipline however is that it focuses on the detailed analysis of the roles of
78 information systems in the context of the concrete complexities of organizational
79 management, based on the fundamental concepts of 'accounts' and 'accountability'
80 (Burchell et al 1980; Roberts and Scapens 1985; Gray et al. 2014). In terms of methods, a
81 specificity of accounting research is to combine theoretical developments that extensively
82 draw on other social science disciplines (organizational theory, sociology, philosophy,
83 economics, psychology, etc.) with in-depth qualitative field studies of organizations
84 (Ahrens & Chapman 2006). In doing so, it enriches our understanding of the role of
85 information systems and accounts in the operationalization of action and in generating
86 intended or unintended organizational changes and wider governance transformations
87 (Miller 2001; Macintosh & Quattrone 2010).

88

89 The new dialogue we are advocating between conservation scientists and accounting
90 researchers can build especially on a small but growing body of work in accounting
91 research, centred on ecosystems, that aims (1) to study the effects of varying forms of
92 accounting upon relations between human organizations and biodiversity (e.g. Tregidga
93 2013; Dey & Russell 2014; Cuckston 2017); and (2) to develop accounting innovations
94 adapted to the collective management of ecosystems (Feger & Mermet 2017).

95

96 **Four priorities for the development of accounting for the management of**
97 **ecosystems**

98

99 Our interdisciplinary dialogue has identified four priority areas for collaborative
100 research.

101

102 (1) *Studying ecosystem-centred accountabilities* – A first priority is to study in greater
103 depth how, in a diversity of ecosystem management situations, stakeholders actually use
104 (or how they could use) ecological and related social, health, economic and financial
105 information to assign responsibilities to one another and to discuss, negotiate and
106 manage reciprocal commitments (i.e. accountabilities) for improving environmental
107 outcomes. This means exploring questions such as: what commitments have been, are
108 being or should be negotiated among stakeholders? Who is accountable to whom, and
109 who is not, around the management of the quality of a given ecosystem? How should
110 information be framed and exchanged to organize these accountabilities effectively? An
111 accounting lens can illuminate how different ways of structuring, representing and giving
112 and demanding environmental information can lead to the creation of viable forms of
113 ecosystem-centred management to achieve conservation outcomes (Roberts & Scapens
114 1985; Dey & Russell 2014; Feger & Mermet 2017; Cuckston 2017).

115

116 (2) *Working collaboratively on real-world cases* – To take this agenda forward,
117 conservation scientists and accounting researchers need to jointly conduct in-depth
118 studies and comparisons of real-world field cases through an accounting lens. This calls
119 for the development of a portfolio of case studies both reflecting on past cases and
120 observing and documenting active on-going cases, e.g. through action research
121 interventions.

122

123 (3) *Adopting a constructive, practical, critical and reflective approach* – In working
124 collaboratively on concrete cases, conservation scientists, accounting researchers, and
125 decision-makers will engage in constructive discussion to improve the design and use of

126 ecosystem-based information tools. This calls for pragmatic trial and error approaches,
127 relying on the action-oriented agenda and reflexive culture that has from the start been a
128 common trait of both conservation biology (see for instance the literature on adaptive
129 management: Gunderson & Holling 2002; or evidence-based conservation: Sutherland et
130 al. 2004) and accounting research (Gray 2002).

131

132 (4) *Developing a common language* – These four priority goals require intensive
133 interdisciplinary dialogue and the development of a common language. Concepts coming
134 from the field of accounting need to be adapted and enriched to analyse and discuss the
135 organizing of ecosystem management and conservation action (e.g. ‘ecological account’,
136 ‘accounting entities and perimeters’, ‘accountabilities’, etc.) (Russell et al. 2017). There is
137 an urgent need to continue the work of theoretical clarification between the specificities
138 of accounting concepts, as distinct from concepts used in the field of economics or ecology,
139 especially when they seem to overlap, e.g. “valuation” or “capital” for instance (Rambaud
140 & Richard 2015). Finally, the formulation of new concepts and vocabularies (e.g.
141 ‘reciprocal commitments’) has to play a central role in the joint efforts of accountants and
142 conservation scientists to develop an accounting approach for the management of
143 ecosystems.

144

145 **Conclusion**

146

147 These four priorities for the development of accounting approaches that are centered on
148 the management of ecosystems set up an agenda that has the power to reshape both (1)
149 conservation practice and the way ecosystem-based information tools are designed and
150 used in conservation action; (2) and accounting research and the way accounting entities

151 and accountabilities are understood. By collaboration and engagement across these two
152 disciplines, there is scope for contributing to constructive critical reasoning and scope to
153 introduce innovative design that combines insights from accounting and conservation
154 biology. Ultimately, this new interdisciplinary bridge will provide a critical, theoretical
155 and practical addition to the already well-established collaborations of conservation
156 research with other fields in the social sciences such as economics, anthropology, political
157 ecology and sociology.

158

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