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Discussion Paper: A proposed supplementary reporting note to the environmental bottom line

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Discussion Paper: A proposed supplementary reporting note to the environmental bottom line[1]

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Abstract

This discussion paper reviews several criticisms of traditional CSR, and proposes a supplementary report that could address concerns of perceived 'relevance' and 'green washing' commonly associated with many forms of CSR. It suggests that in traditional CSR it is easy to miss the 'woods for the trees' in that the overall environmental impact is lost in the detail. This paper suggests a framework for a report that would focus specifically on stress, discomfort, pain, suffering and death caused by or directly attributable to a specific entities' activities. The paper considers the underlying assumptions, as well as qualitative characteristics of such a reporting framework, and presents a proposed reporting format, which includes three dimensional graphic representations of summated data. Finally, the paper addresses the limitations of this proposed reporting system, and suggests that despite significant initial limitations, that the potential relevance and usefulness of this report warrants further consideration and development.

1. Introduction

Integrated Reporting has now become an accepted norm in the world of accounting, with South Africa leading the way with various initiatives[2]. Many consider the benchmark reporting standard to be the Global Reporting Initiative (GRI), which presents a holistic view

[1] The author has conducted extensive literature searches within the means at his disposal and found no evidence of similar work along the lines suggested in this paper. He apologizes if there is any similarity to any other work that he did not have access to. Acknowledgements are given to Dr. John Messier an Economics Professor at the University of Maine for suggestions and modifications to models and review of the paper.

[2] Refer to SAICA's integrated reporting projects https://www.saica.co.za/TechnicalInformation/SustainabilityandIntegratedReporting/tabid/1590/language/en-ZA/Default.aspx and http://www.sustainabilitysa.org

of an entities economic, social and environmental performance; its triple 'bottom line'. A user of such a report will find when looking for the environmental performance a vast array of environmental related reporting criteria such as energy footprint, recycling, water use, waste disposal, material sourcing to name just a few. These aspects of an entities performance can then be compared to prior reporting period performance to look for improvement, or again industry performance criteria, giving a comprehensive and extensive understanding of its performance. However to a uniformed user, might be left asking what is its environmental bottom line? This paper recognizes such a need for a concise measure of its impact, and investigates one possible reporting format that could convey in simple and understandable terms, what such a bottom line might be.

Early pioneers of Corporate Social Reporting (CSR) recognized the need for a framework to quantify various activities and impacts in a common form. Initial work focused on trying to cost social impacts (Estes 1976, 1977). This task left researchers battling with conceptual implications of financial measures of social and environmental issues. This paper returns to the argument supporting the need for a common form of measurement and reporting, versus the multitude of various indicators and specific output measures currently used. However it proposes a measure that is even more universal and easier to relate to than monetary values. This proposed reporting format is not however without inherent measurement difficulties and the possible negative reactions to disclosure could have far reaching implications and would clearly be contentious. The intention of the author is to propose a system, that if developed further would be relevant to the needs of specific stakeholders groups, including environmentalists, trade unions and human rights organizations (Mitchell 2007).

The arguments of this paper are based on the principles of 'ethical stakeholder theory'[3] (Gray, Owen and Adams 1996), and are concerned with businesses impacts as perceived by society and all relevant stakeholders, including all non-human life forms. The inclusion of the latter group suggests a bio-centric ethical approach (Taylor 1986, see De Villiers 2003), that all life posses inherent worth. This could still be extended further to the premise that no harm should be caused to any living thing, and that humans (Taylor 1986:311) have a moral obligation to set long term goals that are ideal for all life forms. These principles are the basis for the proposal of this paper, and the proposal that business should be accountable for its impacts on other life forms, could be made based on their inherent value to society or having inherent value in themselves. The principles of this paper could still be adopted if non-human life is intentionally ignored, or for pragmatic reasons is omitted to avoid additional measurement and assessment, and the framework used only for human life.

2. The need for a system like this

To understand the significance of the proposed measure for CSR, it is first essential to review the perceived limitations of existing CSR, especially in the context of the voluntary forms currently presented. These limitations include (Mitchell and Quinn 2005):

- Such reports are at the lowest denominator (Krut & Gleckman 1998) that is, companies report the absolute minimum required by such guidelines. Since many of these guidelines consist of lists of suggested disclosure, there are few items that have to be disclosed. Thus, guidelines often do not require specific compliance or external verification as they are just guidelines with no mechanism to enforce compliance or provide external assurance.

[3] Ethical stakeholder theory proposes that business exists with the approval of society, and hence has a moral obligation to comply with the wishes of society

- Intentional omission of data that could be perceived negatively by the public and shareholders (Gray & Bebbington 2001),
- Excessive focus on minor issues or irrelevant data to enhance the corporation's public image, known as 'green washing' (Welford 1997),
- No mechanism for users to identify omitted data i.e. completeness, (Jorgensen 2002)
- No way for users to verify accuracy or reliability of data presented (without independent assurance).
- No way for the users to determine significance of reported data without specific industry knowledge. That is the outputs reported are not readily meaningful to users. The author suggests that even if industry or best practice data were available for comparison, this is still a relative scale and does not necessarily convey the extent of the impacts (effect) on society or the natural environment.

It is specifically the latter point that this paper attempts to address. The implied assumption is that data commonly presented in CSR has little meaning to the average user of CSR, who may not be able to relate such data to their own lives or personal frames of reference. For example the author suggests that reporting tons of greenhouse gas output, or millions of dollars spent on upgrading a smokestack scrubber system might have little meaning to an average ethical investor. The author argues that in financial accounting, the data presented has its greatest value for financial analysis in facilitating an understanding of the relative performance of an entity, compared to other potential investments as well as aspects of that entities relative risk, reporting according to some set of principles (GAAP, IFRS) and in the same units e.g. dollars. With respect to CSR data, such comparisons would facilitate an understanding of risk and relative social performance for investors. It also presents absolute

data for society (refer to ethical stakeholder theory), which however the authors suggest might be difficult to relate to.

Users of financial reports can personally relate to and understand financial amounts as dollar amounts even if very large or little, and further if the user is an investor he or she can assess the impact on their EPS. However as noted earlier in this paper attempts to convert environmental and social data into monetary amounts has met with limited success in CSR, despite environmental economics being a well developed science, thus this uniform mode of reporting is not helpful in CSR.

Huttingh (2002) uses a simple analogy for understanding the implications of complex financial transactions, "from the perspective of an investor, does the outcome of this transaction make you feel happy or sad?" "Happy" would imply a gain, increase in assets or reduction in liability, while sad would imply a loss, a decrease in an assets or increase in a liability as per the definitions in the accounting framework. The author suggests that this simple kind of analogy could be useful in CSR. However, although 'happiness or sadness' are easy to relate to in terms of financial gains or losses, they are nevertheless subjective and difficult to quantify (Chryssides and Kader 1993, De George 1990 ref De Villiers 2003). In the case of CSR the issues will also depend on the user's frame of reference. An investor might for example be sad about money spent on a new scrubber system, whereas an environmental activist would clearly be happier.

Unerman (1996) notes that CSR research studies how an organization might account for its positive or negative impacts on society. However this would need to make assumptions as to what society regards as good or bad / positive or negative, which is a question of ethics and

values, and is thus normative. 'Ethics' is also argued to be relative (as opposed to absolute), that is, relative to specific societies and as Tinker, Lehman and Niemark (1991) notes, relative to the temporal period. This relativism does not limit CSR; it does however explain differences between CSR in different countries (Unerman 1996) and the author suggests provides an argument for the need for a universal framework. This quest for a universal framework would imply normative assumptions and an ethical paradigm that could be widely applied and would result in consistent reporting irrespective of the temporal period or the socio-political or cultural context.

Bentham (De Jarkins 1993) who is credited with formulating the Consequentialism Theory of Utilitarianism, proposed that the pursuit of pleasure and avoidance of pain and suffering, "as desirable unto itself, and the only reliable measure of good" (Goodin 1991: 242). However De Geogre (1990) notes that happiness and suffering cannot be quantified and equated, thus this paper proposes that happiness should be excluded, and that only suffering and possibly the relief of suffering of life forms be considered. Thus, for this paper the author has specifically considered the possible use of pleasure and / or pain. With respect to pleasure, no specific activity reported on in CSR can specifically cause physical pleasure (although emotional or aesthetic pleasure is a different issue), and thus the author disregards this dimension of possible corporate impact in this paper. Physical pain, although relative in interpretation and experience, can be quantified on ordinal scales of perception; both with respect to intensity of level and nature, and such procedures are standard practice in many medical patient examinations. Pain can be further measured in terms of time / duration. The most significant limitation of this approach would be the estimation process, as few companies would want to devote time, energy and hence funds to measuring their impacts on humans, let alone any other life forms. Theoretically such an estimation process is however

possible (Hardcastle 2002). In most developed and many developing countries, businesses are required to consider their impacts on plants, animals and humans in the form of environmental impact assessments (EIA), specifically in the case of new developments.

In this paper, the author propose framework of CSR, specifically considering pain as the basis / unit of reporting. However before considering this estimation or reporting process further, the author suggests it would be useful to consider the elements of a conceptual framework for such reporting.

3. Conceptual framework

3.1. Objective

To report on all disturbance (discomfort[4]), distress (suffering, pain, disease and injury) and deaths (3D CSR), caused by direct business activities of a specific entity (including indirect consequences[5]).

3.2. Underlying assumptions

- All life has intrinsic value and shall be counted (individual users of CSR can assess the relative significance of different levels of life-forms to them. This is a theme common to various forms of CSR, which report on multiple factors, which them individual users assess for significance to themselves)

[4] Although medically pain is measured on a scale of 10, the authors propose three distinct levels. First is disturbance, which incorporates stress, discomfort, and limited pain. The second level is suffering, which is assumed from pain from injury, disease or other. The Third level is death, which although it ends pain, would results in significant pain and terror in this process, as well as in pain and suffering of related and dependant creatures.

[5] The author acknowledges the positional difficulty in tracing such indirect consequences, however suggests that research could provide useful guidelines. For example if a certain amount of radioactive particles are released into the atmosphere, it can be estimated, how this will impact cancer prevalence in neighboring communities.

- The accrual principle shall be applied, reporting on what has been caused in the specific reporting period, even though the full effect has not necessarily reflected or experienced itself during this period[6]. However care will have to be taken to avoid double counting, in all aspects of this report, for example if the same population has been fatally poisoned twice it should not be reflected twice.
- This approach shall not try to quantify (and this is thus a limitation) (a) specific outputs, since not relevant (and this approach is only concerned with their impacts); (b) determine impacts on specific eco-systems; (c) the impacts on specific (key, indicator or endangered) species, (nor attempt to value these species)
- All impacts shall be measured from a human perspective, that is what discomfort we would experience or feel if that impact were happening to us[7].
- Time is relative, and hence should be measured in proportions to the life-spans of the creatures affected.
- It can be argued that since death ends pain, it should be ignored from this report. However the author argues that the terror of perceived impending death is the ultimate pain /discomfort, and many deaths involve significant pain and thus it should be considered, as well as the suffering caused to related creatures as noted previously
- Such a report will consider the point source of pain only, and not upstream[8] or downstream effects, even though these may be significant, as to incorporate these would make the scope of the report unmanageable.

[6] Initial reporting, might need to consider the accumulated effect prior to the first reporting period.
[7] Based on Kant's imperative, as a philosophical basis. It doesn't matter if the creatures feel pain, the question to ask would we want to be treated that way, how would we (as humans) feel.
[8] Upstream effects are those caused by entities that produce materials or other inputs for the reporting entity, and downstream effects are those caused by those persons or entities using or consuming the reporting entities products or services

- Positive and negative impacts should not be offset, but should be reported separately, except to the extent that specific interventions reduced initial pain and suffering caused.

3.3. Qualitative Characteristics

3.3.1. Relevance

- As noted earlier in the paper this report should provide information that is useful / relevant (decision usefulness approach) to assess and entities performance, that is overall how well have they actually done, as opposed to what have they done. Users do not care exactly what marketing strategies a company has adopted, what their product range is, how much they have spent on the research and development, they want to know, how has the company performed and what its present position is. The reporting should help understand the disturbance, distress and death caused by an entity's activities, from a human perspective. Thus a key qualative characteristic is understandability.
- The level of the life-form is significant in possibly explaining the creature's experience of pain, and level of awareness. This level will also help users who may choose to value the creature in terms of its level on the evolutionary scale e.g. from humans, to primates, mammals, reptiles, birds, amphibians, crustaceans, arachnids and insects, multi-cellular animals, plants, single cell organisms, viruses.
- The levels of pain, as perceived from a human viewpoint, should be classified on an ordinal scale, based on observed disturbance to creatures. Such an ordinal scale could range from (0) none, to disturbance including change in behavior from stress, and discomfort, to distress, including obvious significant change in behavior from pain, suffering, disease or injury, or impaired life functioning; and finally (1 or 100) death

of the organism. Alternatively such a scale could just be limited to three rankings, disturbance, distress or death, which would still be ordinal.

- Materiality[9] would be an issue as would comparability[10], when working with a single cellular organism and one human. The author suggests that using a biomass scale would facilitate comparisons between life forms, as would working with life spans to account for the relative perception of time. However, there is no reason why certain creatures could not be allocated a ranking, so show their relative value to humans, thus a human could be ranked as a 1, and a virus at $0.1^{-100000}$ and a panda bear at say 0.99. This would however add another level of subjectivity to the model.

3.3.2. Reliability and completeness

- A reasonable estimate should be made, based on reliable and sufficient evidence, using the opinion of informed experts. The author anticipates that if this model were to be adopted, standards and indices would need to be developed which could be used for this estimation process. For example, using previous research, and estimate could be made on what numbers and type of creatures would be affected by a 10 ton spill of oil, including disturbance of their habitat, to illness and suffering, and deaths. Such a standard could then be adjusted for mitigating circumstances such as speed and effectiveness of cleanup.
- For all outputs (of the entity), all impacts on all possible life forms should be considered.

3.3.3. Understandability

[9] Materiality refers to the accounting concept that the omission or misstatement of an 'amount' either due to its size or nature would affect the judgment of a user of the report.
[10] Comparability refers to the concept that specific disclosure in one report can be easily compared to similar disclosure in another report of a different entity or time period

- The reporting should help understand the disturbance, distress and death caused by an entity's' activities from a human perspective. Thus a key qualitative characteristic is understandability.

3.3.4. Prudence

- If significant doubt exists as to whether a specific agent or process causes stress, pain or death, it should be ignored. If it does however cause disturbance, it should be reported at the lowest level. An example of this would be advertising and whether this causes stress (in the form of potential consumers need for product conflicting with their limited economic resources and the allocation thereof). Since this is unclear this would be ignored. Do jobs cause emotional stress, yes, but they relieve financial stress, so it would be unclear as to what the overall effect is, except to examine this on a case by case basis, which probably would not be feasible. However, in the case on manual jobs, and in job situations where there is exposure to excessive heat, odors and chemicals, it would be evident that overall discomfort has been caused and this would need to be accounted for, including the development of long term medical conditions associated with work activities.

4. What is pain?

Pain is defined as "an unpleasant sensory or emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (The World Health Organization 2005). Another definition describes it as "an unpleasant sensation occurring in varying degrees of severity as a consequence of injury, disease, or emotional disorder" (www:thefreedictionary.com 2012). Definitions of pain may vary, as does humankinds perceptions of what pain is or is not (Hardcastle 2002). It has long been associated with mans

sense of touch (Galen 200AD, referenced Hardcastle 2002), however in the middle ages in the Western World it became intertwined with religion, which only changed (Roslyn Rey 2000) in the 18th century when western medicine became focused on symtymology. Hardcastle (2002) suggests that the common view still perceives pain as a sensation, which is mistaken, as too is the notion that pain is a subjective state of mind. She argues that all pains are physical and localizable, despite a strong contention and popular view of psychopathology i.e. that it is all in the mind, she argues that pain is from real neural signals.

This paper takes an overall viewpoint seeing the mind and brain as one, and hence all pain (including from injury and disease) are caused by specific firing along neural pathways. However psychologists (DSMIV 2002) clearly note that "psychological factors are judged to have an important role in the onset, severity exacerbation or maintenance of pain". Perception of pain can clearly vary together with the notion of pain thresholds. There is well as documented medical evidence of people who feel no physical pain at all (with dire consequences to their health). It should also be noted that people may interpret pain signals as pleasurable or enjoyable from something as simple as a physical workout, to more complex situations in which case such behavior may be judged as perhaps unhealthy, however as noted earlier in this paper, the author has excluded pleasure from the model due to the wide variability and subjective interpretations of experiences.

This paper does not propose to extend this philosophical debate, but rather to focus on identifying activities of business that would impact on humans as well as other life forms, in such a way that they would be perceived (if experienced by humans) from nothing (0) to disturbance (including from stress, and discomfort and mild pain), to distress (suffering, pain

caused by disease, injury or other means, as well fear and terror), and finally death (1 or 100) from fatal injury / disease.

5. Proposed reporting formats

5.1. Absolute reporting

5.1.1. Distinct categories

The author suggests that the objective of such a report (which could be used in addition to or in lieu of traditional CSR), is to convey the effects of pain caused, in a simple but effective manner. Three distinct categories could be indentified, as noted earlier, disturbance, distress and death. For each category of lifeform *g* (which could be grouped scientifically along genera or phylum, however a more familiar grouping such as humans, primates, mammals, reptiles, birds, amphibians, fish, mollusks and crustaceans, insects and arachnidan, plants, bacteria and viruses is suggested)[11], this could be totaled under each D (disturbance, distress or death) for the total biomass * lifespans.[12]

Life forms = $\sum \text{biomass}_g \times D_j \times L_j$

D = disturbance, distress or death ε [0, 1]

L = Lifespan ε [0 → 1]

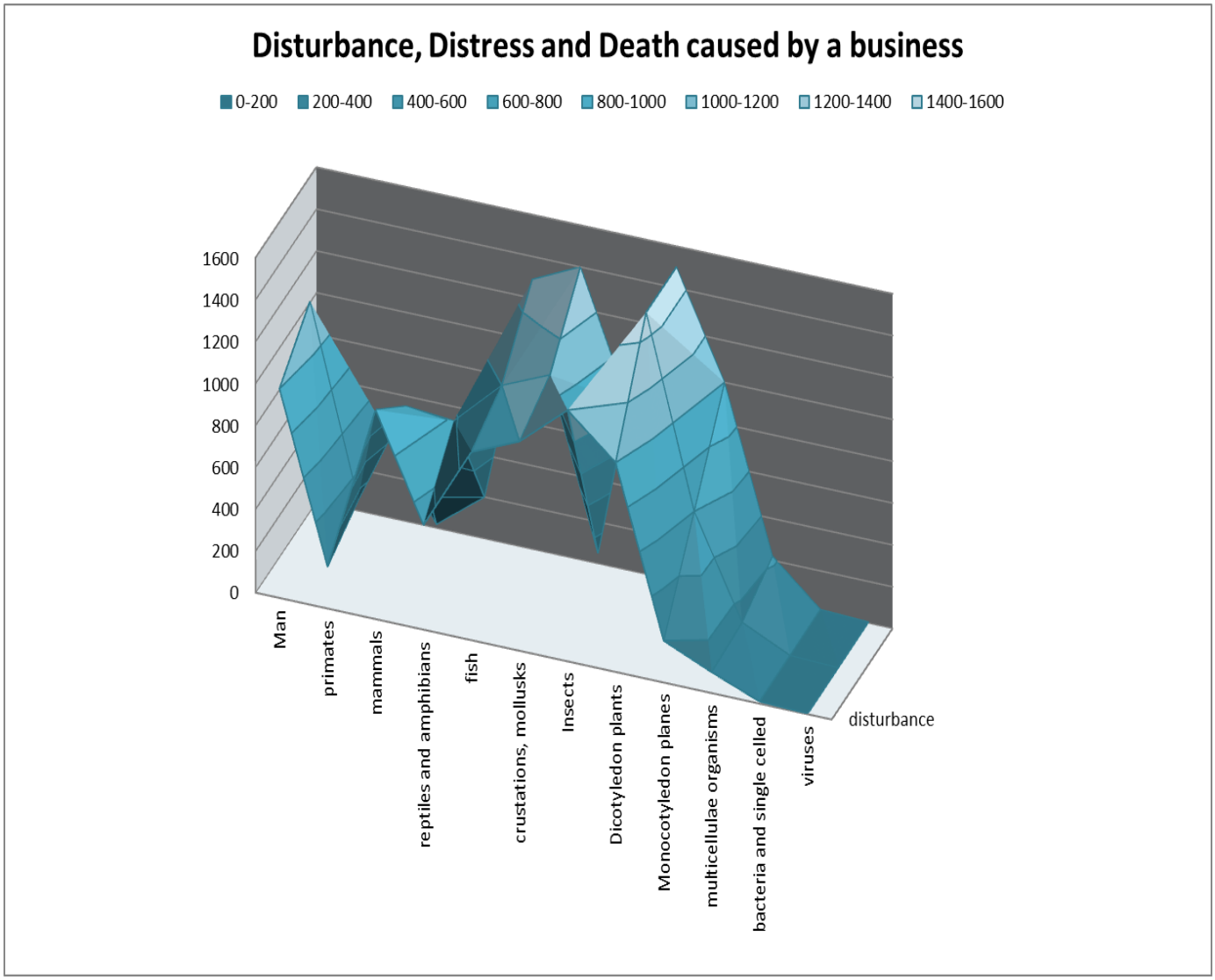
This could be reported in a table, however a three dimensional graph of the pain footprint is suggested. Along the vertical (Y) axis would be the quantities in biomass*life-spans affected.

[11] As noted earlier the author does not propose to value these lifeforms, but a ranking or 0 to 1 (being humans) would allow the reporting of a single result, which would greatly simplify the reporting system.

[12] Acknowledgements are given to Dr. John Messier an Economist at the University of Maine for his assistance in the development of this expression.

Along the (Z) axis the level of pain could be presented from disturbance, suffering to death.

Along the (X) axis the life-forms could be presented from humans down[13] to viruses.



The author suggests that certain specific key indicators would be useful, including the effects of activities and outputs on specific creatures. The table presented below is one possible representation of this

[13] This paper does not presuppose humans are superior to other life forms, but does assume a more advanced development in terms of the evolutionary scale, and hence are rated higher. Subsequent classification, is clearly subjective especially where species / genera / families have developed along different pathways. Time of evolution also cannot be used to precisely classify groups in any form of "more evolved" sequence.

Table 1: Outputs (not removed by paid contractors) and their effects

location	Types	Quantities of product / waste	Creatures effected	Deaths[14]	Distress (Pain and disease)	Disturbance (discomfort and stress)
Water	PCBs		Fish, amphibians, crustaceans, mollusks			
	Oils and polymers		As above			
	Heavy metals		As above			
	Acids		As above			
	Heat		As above			
	Organic oxygen depleting		As above			
Air	Sulfur		Humans, birds, plants, other			
	Particulates		As above			
	Green house gases		As above			
	Noise		As above			
Land	Spills leaks		All except maybe fish			
	Mining		As above			
	Plantations		As above			
	Farming		As above			
Other specific	Research and testing		Mice, rabbits etc			

[14] Biomass times life spans

5.1.1.1. Positives

As noted earlier positives and negatives should not be offset. However it is only appropriate that companies should have the opportunity to present the positive aspects of their performance. This includes the work of pharmaceuticals and medical corporations, various social interventions, charity work, and the protection and restoration of natural environment and key species. Such positives could be disturbance, pain and suffering averted by actions of the company (except where these would have been caused by the company in the first place)

Note it is expected that there would be limited positive effects on all other species than humans.

5.1.1.2. Failures and limitations of this proposed system

The table below considers several of the obvious limitations of the proposed system, and either offers a defense or notes these as clear limitations of the proposed model.

Table 3: Limitations of the proposed model

Limitations of the proposed system	Defense or limitation noted
No quantification in money	Irrelevant
Estimation	This is a significant limitation. For example with many chemical outputs, the general effects on various creatures is unknown, and identifying specific effects is more difficult.
Pleasure, happiness and sadness is not considered	Hardcastle (2002) notes that contentment is considered to be the 'normal' state, and pain detracts from this. This paper does not attempt to move beyond this level, and suggests that introducing multiple reporting criteria would introduce the same limitations to this model that existing CSR systems experience. This is not even considering the difficulties of trying to define happiness, sadness or pleasure taking personal, cultural, religious and various individual differences in perception into consideration
Does not require the reporting of sources, costs, output reconciliation or investments.	This paper argues that such details are largely irrelevant since it is only the impacts / consequences that are of significance
Cross over (that is multiple sources affecting the same creatures)	This should be taken into account, and will require expert considerations. For example multiple water or gaseous pollutants would affect the same populations, causing disturbance, discomfort or death. Where the same organisms are affected in multiple ways by the same business, this should only be reported only once, to the worst extent, to prevent double counting
Cumulative effects	As with double counting this needs careful consideration. If a population was affected in a prior period, only the additional effect (from one level of pain to another) should be reported.

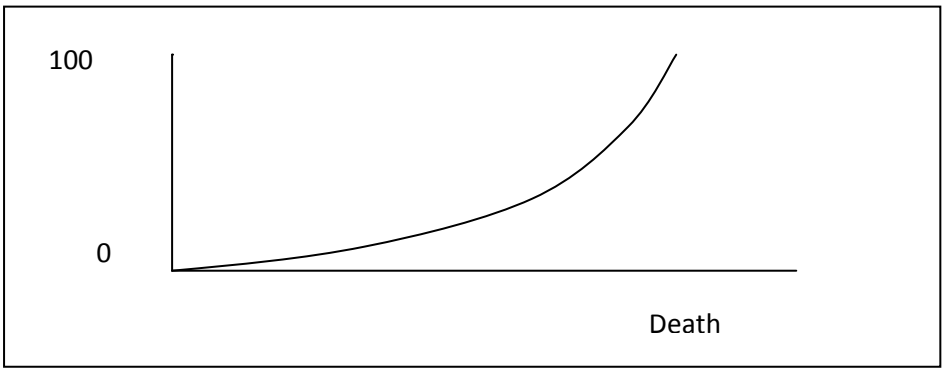
	However when initial thresholds are crossed as the result of cumulative effects, these new levels must be reported (for example from level 1 (disturbance) to level 2 (distress). Potential discounting should be considered to look at the effect of the net change only in these populations (already affected).
Cleanup-costs, fines and penalties	These could be reported in annexures of this report, but cannot be considered to be a quantification of the effects on discomfort, pain and death, and the author suggests these should be omitted.

5.1.2. Scaled disturbance, distress or death

An alternative to three distinct categories, is to scale the impacts from either 0 to 1 or 0 to 100, where no impact would be 0 and death would be 100. The basis of such a scale would again be subjective. How much worse is death than disturbance for example? The introduction would increase the subjectivity of the reporting.

Such a scale could be geometric or exponential (which the authors favor)

Figure 3: Scale of impact



Life forms = $\sum i=_0^{100}$ biomass$_g$ x D_i x L_j

D = disturbance, distress or death ε [0 → 100]

L = Lifespan ε [0 → 1]

5.2. Relative measures

5.2.1. Relative to whole group's population

Another way of measuring the impacts would be to look at the significance for example by comparing the impacts on the plant or animal group relative to the entire population.

$$\text{Relative impact} = \frac{\sum i=_0^{100} \text{biomass}_g \text{ x } D_i \text{ x } L_j}{\text{Biomass}_{total} \text{ x } L_{total}}$$

D = disturbance, distress or death ε [0 → 100]

L = Lifespan ε [0 → 1]

This would give a score out of 100 for the impact, so the non-impact score would be 100-relatve impact score. This could be used to rate the firm positively. One again if lifeforms were valued a total score for impact on all life forms would be possible. This approach would also allow key or indicator species to be valued higher, but as noted previously this would make the score more subjective.

The downside to this approach is that it is unlikely that any company would have a significant impact on the overall population to make the score significant.

5.2.2. Relative to population of area occupied

As noted above, to make a relative impact score meaningful it would need to be calculated relative to the population to it directly / indirectly impacts. The author suggests that this could be calculated based on the area that the company occupies and what the total population of affected plant and animal groups that is located[15] that area. However since the companies affect plants animals outside of the sear that they occupy, this could lead to abnormal results with scores greater than 1 per population group.

6. Conclusion

CSR suffers from multiple deficiencies at present, one of which is that it is difficult to "see the wood from the trees". This is especially so despite the multitudes of data commonly presented in such reports, where it is actually difficult to see how many 'trees' were killed or damaged. This paper suggests a simple but potentially effective supplement to CSR that presents a quantified report on 'how much harm was done', presented in disturbance, distress and death (3D's) caused to humans (essential) and all other life forms (strongly recommended).

Pain[16] cannot be assumed to be felt by all creatures, but an 'how would you feel' approach would easily translate the effects of being boiled alive, shot, electrocuted, poisoned, suffocated or drowned (or the other way around for fish), frozen, starved, having you lips (beak) cut off, given cancer or potential toxins, having your skin or eyes exposed to various

[15] The author suggests that use is made of actual populations of the area that the company occupies, not the theoretical populations for an undisturbed area, as this would lead to an overly favorable result.
[16] For this reason distress has been used in this paper. There are for example scientific studies that show that a lobster when boiled alive, feels no pain, their distress however is clearly apparent.

chemicals, or simply being eaten alive, and finally on the milder end of the spectrum being deprived of social interaction, family, and children, and jailed for life in a cell not big enough to turn around in.

Duration should not be measured in hours, as some creatures lives are at best measured in hours or days, but hence measurement should rather be in terms of life-spans. Although the author acknowledges the argument that all lives are equal, the large numbers associated with micro-organisms would render results meaningless, and hence suggest reporting in bio-mass. This does not mean the one gig of bacteria are equal to a single elephant life or that of 20 cheetahs, but will simply allow for meaningful comparisons[17].

Current CSR focuses on the triple bottom line (GRI) which looks at the economic, social and environmental impacts and with Integrated Reporting has been widely accepted in South Africa[18]. However such reports produce significant detail reporting on a multitude of indicators and criteria. Unlike financial reporting which does literally produce a bottom line figure of the net profit / income, such traditional CSR produces no "bottom line" and leaves the user to decide what the results mean, and if the positive measures taken, adequately offset the "harm done" in terms of current trends and societal expectations. The proposed model would produce a bottom line on how much disturbance, distress and death has been caused. The model could be used just in terms of harm, or harm offset against mitigation efforts. This would be useful to evaluate in terms of the bottom line profits, such as profit per life, or profits per life spans of distress (suffering and pain). This could be done just for humans, for all life or human life separately from non human life, that is the equivalent of social and

[17] The author does suggest that reporting overall result in for example Kailua bears, or Pandas or Bald Eagles (or some other highly valued creature) would allow users to better understand the results.
[18] Refer to SAICA's integrated reporting website for further details, http://www.sustainabilitysa.org/ February 2013

environmental. The authors suggest that this would provide valuable data for users of these reports, especially investors to decide if the company meets their personal ethical criteria, or the criteria they have set for their portfolio. This data could be especially useful for consumers to determine what death, distress and disturbance has been caused per unit / kilogram or produce. Such principles are already used by activist groups when campaigning against diamond and gold companies, as well as fair trade activists. Multiple other ratios could be derived from such data. Banks could also be judged on the impact of their funding, by cumulating the effects of the business they fund. This would enable investors to make ethical decisions on whether to keep money with financial institutions.

The proposed model has many noted limitations, and will no doubt be subject to intense criticism. However the author hopes that several principles would be noted as useful and if adopted would possibly contribute significantly to more understandable and meaningful CSR.

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