An Introduction to Handprints and Handprinting

Gregory A. Norris

Citation: Norris, GA, 2013. The New Requirement for Social Leadership: Healing. in S. Groschl (ed.).*Uncertainty, Diversity and the Common Good: Changing Norms and New Leadership Paradigms*. London: Gower Publishing.

Abstract

The future is a place where leadership on corporate social responsibility (CSR) is becoming more about leadership than about responsibility, more about healing than avoiding harm. Several of the world's leading brands are seeking a framework with which they can guide and take *positive* action. We are endowed with increasingly sophisticated and expansive tools for tracking and reporting negative impacts, while we lack a calculus and even a clear concept of how we might measure beneficial impacts. The footprint of a product is the sum total of all the negative impacts of pollution released and resources consumed over the entire supply chain and life cycle of the product. Every product, and therefore also every day in the life of every citizen in industrialized countries, has a "footprint." But in addition to producing and consuming goods and services, companies and individuals can also do positive things that actually reduce pollution. "Handprint" refers to the beneficial environmental and social impacts that we can achieve. People and organizations can have a *net positive impact* if the good that we do, the positive changes we purposefully bring about in relation to an impact category, are greater than our footprints for the same category. This chapter introduces and describes a framework and methodology for Handprinting.

1. Context

1.1. Context 1: The Growing Need to Become an Agent of *Good*

Social responsibility expectations on companies are escalating. Leading companies are now called upon to demonstrate not just "responsibility" but global leadership in relation to the impacts of the company on society and on outcomes that diverse sets of stakeholders are concerned about. It could be said that just being socially responsible is no longer seen as socially responsible. Thought leadership, multi-stakeholder leadership (not just engagement), and most of all performance leadership on societal impacts are becoming imperatives for any company that would be perceived as an ethical corporation with a correspondingly strong brand reputation.

This higher standard for companies may be linked to a higher standard to which we are holding ourselves as individuals. Studies of the millennial generation in particular (people born generally between the early 1980s and 2000) show them desiring to do good at a personal and societal level, and holding themselves accountable to be activists for social justice. A recent study of 7000 youth around the world found that Justice (defined there as "to do what's right, to be an activist") was consistently cited among the top three motivators (pulled from a list of 16) by youth from around the world (McCann Group 2011). The other two motivators consistently among the top 3 were needs for authenticity and for connection/relationship/community.

In a study lead by the organization TakingITGlobal, youth in regions across the world consistently ranked "activist" among the top 6 important roles for youth, from among more than 20 possible roles (Corriero 2004). In Africa and Asia "activist" was ranked second behind "student".

For decades, consumers have chosen to not buy from companies because they disagree with the social or political values of the company; this practice is called boycotting. But among younger consumers in the US, a recent study found a dramatic rise in what is called "buycotting," – choosing to

buy from companies because they agree with the social or political values of the company (Pew Research Center 2010). For the millennial generation, buycotting was as prevalent as boycotting. And the younger the generation, the higher the importance of buycotting.

From this we can infer that the future is a place where leadership on corporate social responsibility (CSR) is becoming more about leadership than about responsibility; more about inspiration than avoiding to offend; more about healing than avoiding harm. Of course, CSR has long been about "beyond compliance", but up to the present time, this still tends to mean going beyond the required levels and metrics in reducing risks or damages or externalities. And this is largely because we are endowed with increasingly sophisticated and expansive tools for tracking and reporting negative impacts, while we lack a calculus and even a clear concept of how we might measure beneficial impacts.

In conversations with the Chairman of one of the world's leading corporate sustainability think tanks, Geoff Lye told me recently of the growing evidence of a shift by the most progressive corporations in how they are framing their sustainability strategies. This involves going beyond minimizing the negative impacts or risks which they impose on society to delivering positive environmental and social value – rooted in a commitment to truly making the world a better place. The challenge that they face is the lack of tools or even a framework from which to do this sort of assessment, especially in a comprehensive way.

1.2. Context 2: A Suppressed Awareness That We Are All Doing *Bad*

We have learned during the past decades that every product, and therefore also every day in the life of every citizen in industrialized countries, has a "footprint." In brief, the footprint of a product is the sum total of all the negative impacts of pollution released and resources consumed over the entire supply chain and life cycle of the product. Footprints can have multiple dimensions. We increasingly speak not only of carbon footprints (WRI/WBCSD 2011) but also water footprints (Hoekstra et al. 2011), toxic footprints (Liroff 2009), biodiversity footprints, (JNCC 2009), poverty footprints (Oxfam 2010), slavery footprints (slaveryfootprint.org), and the list continues to grow.

For any impact category, a person's total annual footprint is the sum of the footprints of all the products which the person buys or uses in the course of a year. A research project at the Norwegian University of Science and Technology uses economic input/output methods of life cycle assessment (LCA) to calculate the carbon footprint of each country, in absolute and per-capita terms (Hertwich and Peters 2009). Organizations such as companies have footprints as well. As reviewed briefly in the next section, standards recently released for calculating the carbon footprints of organizations draw heavily on LCA methods and databases, and indeed even reference the ISO standards for LCA.

The footprint of every person and every organization is, by definition, unavoidably negative – in the sense of being bad news for the planet and its people. For several years in a row, at the end of a semester-long course at Harvard on life cycle assessment (LCA), I ask participants whether they feel the planet would have been better off had they never been born. With only rare exceptions, nearly all of them sheepishly acknowledge that yes, they guess so.

1.3 Context 3: The Need for An Accounting That Guides Achievement of Net Good

But how can this be? What are the implications of this informal finding indicating that many of

today's people believe we are a burden on the planet? Or, more positively, how can we make it *not* the case, how can we empower consumers and companies to become forces for positive net impact? Individuals have the desire, and companies are starting to discover the economic potential, of fulfilling this promise. How do we achieve it?

The quick answer at the individual level is that in addition to consuming goods and services, we can also do positive things that actually reduce pollution. By analogy to the term footprint, I've coined the term "handprint" to refer the beneficial environmental and social impacts that we can achieve. We can, as people and as organizations, have a *net positive impact* within a particular impact category such as climate change, if the good that we do, the positive changes we purposefully bring about in relation to that impact category, are greater than our footprints for the same category.

Most people would like to live in such a way, and most organizations would benefit from operating in such a way, that the net planetary impact of one year of their activity were positive. But we're only recently gaining the ability to understand or measure our footprints, and we've seemed to even lack the *concept* of a handprint. To live net-positive lives, and to operate net-positive companies, we need simple-to-use, meaningful and informative methods for estimating our Footprints and Handprints. The remainder of this chapter makes a first attempt to fill this need. The methods, tools, data, and results of life cycle assessment are a great place to start, for both footprinting and handprinting.

2. Standard Footprinting – A Summary

Life Cycle Assessment (LCA), and more broadly the concept of footprints, provides a standardized way of accounting for some of the impacts we conceptualize that we are *responsible for,* via the interconnections of purchases in product life cycles. It says that:

- The impacts of our purchases include the impacts of all of the activities which our purchases cause to occur, via these activities' *direct requirements* for the outputs of other activities.
- The (only) kind of activity-to-activity causal influence that we pay attention to in mainstream LCA and currently standardized Footprinting is the influence that arises because economic activities require the use of outputs of goods and services from other activities.

Thus, within the conceptual framework of footprints, our purchase of a product is seen as requiring, and thus being responsible for, the activity of producing that product; and so our footprint includes the pollution released and resources consumed by the product's producer in producing the product we purchased. But our responsibility doesn't stop there. By requiring their production activity, we are seen as requiring this activity to obtain the inputs it needed to produce its output. So our footprint includes the impacts of the production of those inputs and so-on, up the supply chain, which ultimately spans the globe.

The set of *direct requirements* of materials, energy, infrastructure and services which we address in Footprinting and mainstream LCA can include those which are physically required by a product system, even if not purchased directly by a process in that system. Thus, for example, the more thorough assessments account for the construction and maintenance of the road on which trucks drive (but for which truck operators to not pay directly or fully), when assessing the full footprint of a life cycle involving truck transport.

In mainstream LCA we explicitly ignore all other sorts of potential influence that our purchases

may have, based partly on the assumption that our purchase decision is small in the scheme of the whole economy. For example, we ignore several potentially important price-related effects. First, we generally ignore any impact of changes in demand upon prices, and the subsequent impacts of any such price changes upon other demand. We also ignore "technological learning": the impact of changes in demand or output upon the technological maturity and thus the costs of production, which can – especially early in the development of a technology – bring down the cost of production, and the selling price.

This practice of ignoring price effects is seen as a safe simplification when we consider the impacts of micro-decisions, such as one consumer's purchase of one product. Consistent with the fixed-price assumption in static input/output economic modeling (and input-output LCA which is based upon it), we estimate the input requirements per unit of output based on data for a process's total inputs and outputs over a given (ideally recent) period.

2.1 Multiple Attribution of Responsibility

As described above, Footprinting *attributes responsibility for a given impact to multiple actors*. For example:

- The steel producer's footprint includes all of the pollution from their factory.
- The footprint of car producer includes that portion of the steel producer's pollution which is attributed to producing the steel purchased by the car producer.
- The footprint of the car buyer includes one car's worth of the steel producer's pollution as well.

Thus, in Footprinting, we routinely say that many actors are *each* responsible for the same impact. Putting this another way, the same unit of pollution – let's say 1 kg of CO2 from operating a truck to carry lettuce to a grocery store – is part of the footprint of many different actors in the

economy. In the trucked lettuce example, the truck transport emissions of CO2 are part of the trucker's footprint, the grocer's footprint, and the salad-eater's footprint. This sort of accounting implicitly takes account of the fact that events can have multiple causes, and that some events cause other events, so that there arise long chains of causal influence.

This sharing and multi-attributing of responsibility has the positive characteristic that Footprinting can motivate every actor whose decisions could improve (reduce) impacts to do so. But if we are trying to understand the Footprint of a group of people, or a group of organizations (e.g., everyone in a family, or every organization in a city), we need to exercise some care in our accounting. This issue rarely comes up in LCA because we tend to use it to support a specific single decision by a single actor. Nor does it generally arise in Footprinting, because we tend to use footprinting to assess the impact and responsibility of a single company, operation, or product.

Because of multiple attribution, when we want to assess the Footprint of a set of actors, we cannot just sum their individual footprints. Instead, we need to calculate the footprint of the *union of their activities*. The difference between a "union" and "sum" is that a union takes account of the unique identity of each event whose impacts we are summing, and counts the impacts of each unique event only once. The purchases made by the steel producer in a year *include* those which are stimulated by the car producer to whom they sell steel. Therefore, the collective Footprint of the steel and car producer as a group would sum the impacts of the steel producer (and its supply chains) plus the impacts of the car producer and of all of its *non-steel* purchases – since the impacts of the steel purchases were already accounted for when addressing the Footprint of the steel producer.

3. Handprint Accounting

Handprinting is analogous to Footprinting, but there are some major differences as well. First, the similarities:

- Handprinting in general addresses the same comprehensive set of sustainability-related impacts, potentially both "environmental" (human health, ecosystem quality, climate change, resource depletion) and "social" (poverty, human rights, working conditions, community impacts).
- Handprinting addresses the full supply chain and life cycle consequences of actions.
- Handprinting can thus draw very heavily on the same LCA-based databases, software and IT systems, calculation methods, and even portions of the relevant international standards.

The two principle differences between handprinting and footprinting are:

- Handprinting is all about changes to the future; and
- Handprinting includes accounting for changes which occur outside of the scope of the footprint of the handprinter.

3.1 Handprinting Includes Changes to the Future

The first major difference between Handprinting and Footprinting is that by its nature, Handprinting focuses on assessing the impacts of efforts to *change* something in the world, individually or collectively, rather than on assessing the impacts of purchases or purchasing scenarios. We might say that Handprinting addresses the impacts of "intentional events", some of which have the nature of projects.

Assessing the impact of an attempted change is different from assessing the impact of a purchase. On the surface they may sound equivalent. We might even say that Handprinting requires

comparing two future purchasing scenarios, and calculating the difference between them. However, when we are trying to change the way the future unfolds, we cannot observe both scenarios as actually occurring ones. One of the scenarios is thus hypothetical, and unobservable. Assessing a change requires a characterization of what *would have happened* without the attempted change – a "business as usual" (BAU) forecast, either implicit or explicit.

If the explicit goal of handprinting is to assess the impact of a change, this begs the question: why not make use of consequential or "change-oriented" LCA? It is a good question, but recent standardization efforts on Footprinting have tended to emphasize the use of attributional rather than consequential methods. We can in fact perform handprint assessments using either attributional or consequential LCA.

3.2 Handprints Include Reductions to Other People's (and other companies') Footprints

A second difference between handprinting and footprinting is that actors influencing product life cycles, both individuals and companies, can exert significant influence on the footprints of other actors, both people and companies. This means that handprint modeling needs to take account of causal pathways *in addition to* those of changing the upstream and downstream direct requirements of their own consumption (in the case of individuals) or their own goods and services (in the case of companies). Let's consider this more concretely, for individuals first, and then for companies.

The scope of footprinting for an individual is the life cycle impacts of the individual's consumption. The scope of handprinting for an individual generally includes changes to their footprint (more on this below), and it can also include:

- Changes they influence in the consumption and impacts of other individuals; and
- Changes they influence in the consumption and impacts of other organizations, such as their employers, the schools they attend, organizations in their community, etc.

The scope of footprinting for a company includes the supply chain impacts of their direct requirements, and it may optionally also include the life cycle impacts of the goods or services which they produce (WRI/WBCSD 2011). The scope of handprinting for the company includes changes to their footprint, and it can also include:

- Changes which they influence in the consumption and impacts of individuals, besides those directly associated with the goods and services they produce; and
- Changes which they influence in the consumption and impacts of other organizations, such as businesses in their supply chains, organizations in their host communities, etc.

3.3 A Simple Handprint Illustration

I have a friend named Denise, who decided that she wanted to reduce, not increase, the risk of climate change, with her own consumption and actions. So, she began by estimating her carbon footprint – the full global warming potential caused by one year of all of her consumption. Next, she did her best to reduce her footprint, by carpooling, insulating her house, and replacing her incandescent lightbulbs with compact florescent lightbulbs (CFLs). The handprint associated with her footprint reductions in that year was still smaller than her remaining footprint. This meant she was still responsible for more global warming emissions than she was able to prevent or reduce, that year. So next she set about enlarging her handprint. She did this by calculating how many additional incandescent bulbs would need to be replaced by CFLs, in order to fully cover her remaining (carbon) footprint. At this point, if she'd had the money, she would have purchased the required number of CFLs and then contacted her neighbors and friends and offered to come to their homes or appartments and install CFLs for free. Since she didn't have the money for the required number of CFLs, she contacted a local business, explained her plan, and persuaded them to sponsor her purchase of the

CFLs. Then she indeed contacted her neighbors and friends and installed the CFLs in their homes for free.

In summary, her handprint in this example consisted of two components:

- The reductions she brought about in her own footprint (relative to the year before); and
- The reductions she brought about in the footprints of her friends and neighbors (relative to what would have happened without her influence and initiative)

Note: In the discussion above, we have neglected the important topic of the "rebound effect", the footprints associated with the economic savings that Denise and her friends and neighbors achieved through increased energy efficiency. We'll return to this later in the chapter.

3.4 Counting Our Own Footprint Reductions as Handprints

The goal of handprinting is to guide actions that make us a net benefit to the world, as people and as organizations. "Net benefit" means that you bring the world more than you take from it; the benefits of a year of your consumption (if an individual) or your operation (if a company) are greater than the cost of the same year's activity.

A key question is: Do we get handprint credit for reductions we make in our own footprint? Do we get credit for cleaning up our own mess? It all depends on whether we consider our lives (as individuals), or our existence (as a company) to be a legitimate part of business-as-usual.

It certainly seems logical to consider our existence as part of the baseline scenario, since we are indeed alive, or if we're doing an organizational assessment, our organization does indeed exist. When we take our existence as a given, we then establish the rules for handprint accounting to help us answer the following question: "How do I make the world better off this year, how to I provide net benefits to the planet, environmentally and/or socially?" The answer is simple: add more than you subtract, give

more than you take, reduce more pollution than you cause. If with conscious action you reduce any pollution, yours or someone else's, relative to what would have happened without your actions, these are real benefits to the planet. From this perspective, it makes perfect sense to count the footprint reductions you achieve as part of your handprints.

However, another perspective is possible. A slightly different motivating question or perspective is "How do I make the world better off *with* me than *without* me?" In this case, one scenario has you (or your organization) absent from the earth, while the other has you present, both polluting and making reductions in the footprints of others. If you didn't exist, then you'd have no footprint at all. So from this second perspective, you don't count reductions in your footprint as part of your handprint.

We'll refer to the first perspective, where our existence (as an individual or an organization) is part of both scenarios, as the "Standard perspective." And we'll refer to the second one as the "Contingent existence perspective."

3.5 Scope of Impacts in Handprint Accounting

As mentioned earlier, handprinting in general addresses the same comprehensive set of sustainability-related impacts as footprinting. It can address "environmental" (human health, ecosystem quality, climate change, resource depletion) impacts as well and "social" (poverty, human rights, working conditions, and community) impacts.

3.6 Establishing Business-as-Usual (BAU) Footprints

Our handprint will include the impacts of conscious changes to our own footprint (when using the Standard Perspective), and changes we bring about in the footprints of other people and organizations.

Thus, both individual and organizational handprinting rely on projections of both individual and organizational BAU footprints. Actually, to be precise, we don't necessarily require a complete forecast of the BAU and a complete forecast of the future with our handprint actions. It is often possible to simplify the modeling significantly, by only modeling the ways that the future will change, between the BAU and the actual. But even in this simpler case, we need to be visualizing implicitly the BAU future.

For an individual, the BAU footprint this year consists of the total footprint impacts of all the purchases they would make and activities they would perform this year *without* any conscious action by anyone to make those impacts better, without creatively trying to change their footprint. And for an organization, it consists of the total impacts which all of the organization's activities would create this year, without conscious attempts to reduce them.

3.6.1 BAU Footprints for Individuals

For individual BAU estimation, we make a very simple – and simplifying – assumption, which we call the "flat BAU assumption." It says that last year provides a relevant prediction of this year's BAU.

Of course, the flat baseline assumption can be argued-with. Indeed, any prediction about the future is virtually guaranteed to be at least a little wrong. Our impacts without making special efforts next year would be larger than this year if we end up making and spending significantly more money next year than this year, for example. An individual's housing impacts change if they move in with someone else, instead of living alone. A couple's impacts get larger if they have a child? Our un-

conscious, business-as-usual footprints go up and down at different phases of our life, due to all sorts of factors.

We could try to figure out a more complex prediction for this year's BAU footprint than the flat BAU assumption. But really, why go to all the trouble? After all, healing means making things better tomorrow than today. If we can make this year better than last year, we're healing. It will be harder in some years than others to achieve this balance, but these challenges tend to balance out over our lives, and over populations of people. The point of handprint accounting is to provide a guideline for actions that will truly heal the planet. The flat BAU assumption is reasonably accurate much of the time, and eminently practical.

If for our Individual Handprinting, we decide to adopt the Contingent-Existence Perspective, then we won't be counting reductions to our own footprint as part of our handprint. But even in this case, we should be interested in a projection of our footprint this year, because our goal is to create a set of handprints which is larger than our footprint. And regardless of whether we adopt the Standard or the Contingent Existence Perspective, we will still need to have BAU footprint projections for any other individuals and for organizations whose footprints we act to reduce.

3.6.2 BAUs for Organizations

The output of company is a response to, and also an influence on, what economists call “final demand.” Final demand is the total consumption by all consumers or households, plus consumption by government agencies, plus exports. You could say that final demand is total demand from “outside” the economy being considered; it is demand by entities other than the companies whose output meets this demand. The output of the economy to serve final demand includes both the production of the goods and services sold directly to final demand, plus the production of the goods and services needed by the companies to enable their production, directly or farther up supply chains, so that the economy as a

whole is able to supply total final demand.

How does the economy partially shape final demand, if this demand comes from outside the economy? First, payments to workers by companies are what enable most of the consumer spending which makes up a big portion of final demand. Next, payments of taxes by companies provide funding to governments which enables them to operate in providing their own goods and services, and to purchase required inputs from the economy. And third, companies play a role in shaping demand through advertising, product development, innovation and pricing. Thus, while the economy clearly responds to, or is driven by, final demand, we also see that the economy and final demand are situated together in a "feedback loop" relationship with one another.

As we have seen, the footprinting perspective traces ultimate responsibility for the impacts of economic activity to final demand. We build on this perspective in defining the BAU footprints for companies, by simplifying the modeling to ignore the feedback influences from company to final demand described above, and focusing on the ways that the economy responds to final demand. Specifically, we assume that each individual company responds to, but does not itself influence, the demand for its goods and services. We express this by saying that firms are "demand-takers", that forces beyond their control determine the *quantity* of good or service they sell this year. They can still influence the footprints of what they sell, because companies design their production processes and their products, and they select their suppliers (and thus the whole supply chains) for the inputs they require to operate.

In BAU modeling for companies, we do take account of the fact that for many of them, the demand for their products can rise and fall significantly from year to year, more so than the income and spending of most households. What can also be dynamic for companies who sell a diverse set of goods or services is the *mix* of different goods or services sold. For these reasons, we do not presume a purely "flat" BAU in the case of companies.

The BAU for this year for a company is one in which the company serves this year's demand with last year's product models, produced using last year's production methods. That is, BAU involves companies meeting this year's demand the same ways they met last year's demand.

Considering the output of companies as resulting from final demand makes modeling company handprints from the Contingent Existence (CE) Perspective quite interesting, and more complex (data-intensive) than the Standard Perspective. Recall that the CE Perspective calls on us to make the world better off with us than without us, while the Standard Perspective calls on us to do more good than harm. This difference lead to the result that for individual handprinting, in the CE Perspective we do not count reductions to our own footprint among our handprints.

If final demand is not influenced by the company, then if the company were not in existence, the demand for its output would be met by output from other companies. Which other companies would replace our company's output, and with which impacts? This is often difficult to estimate. We might assume, in the most general case, that the demand for our output would be met by the *average* producers serving our market.

In this case, if our company produces products which have lower-than-average footprints, then the existence of our company is reducing total impacts. For example, say a company produces computers which are more energy-efficient than average. Without our production, buyers would be buying average – and higher impact – products. In our example, consumers would be buying computers which will require more electricity to operate, over their lifetimes. Thus, company handprinting from the CE Perspective requires an estimate of the difference between our footprint and the average footprint of producing our quantity of output. This requires data on the footprint of average production of the goods and services which we produce. This in turn also begs questions about how we define the geographic scope(s) of the market(s) into which we supply our goods and services, against which our footprints will be compared.

If a company makes improvements this year, to its products or its production processes or its supplier shares, so that it has a lower footprint, this influences its handprint in the CE Perspective because it changes the footprint (its own) which is compared to that of average production. To this first portion of its handprint, we would add the impacts of any changes to other entities' footprints which the company is responsible for.

Corporate handprinting from the Standard Perspective is simpler, in that we don't need any data about the average production of the goods and services that serve the markets into which we sell. We simply need to keep track of how our own products, and supply chain impacts, and production processes are changing, from year to year. As noted earlier, we simply calculate the benefits from meeting this year's demand differently this year than we did last year. Then, as with corporate handprinting from the CE Perspective, we add the impacts of any changes to other entities' footprints which our company is responsible for.

3.7 Credit for Footprint Reductions, Part 1: Changes to Our Own Footprints as Individuals

Every event has multiple causes or enablers. When we change our own footprint as an individual, for example, we could be giving credit in all sorts of directions. Let's say we install a low-flow showerhead. We could give credit to the inventor of the showerhead, the company that made it, the company that sold it to us, and to our friend who inspired or encouraged us to start paying attention to our handprints. It doesn't stop there! We could also give credit to the authors of the books or articles we have read that have inspired us to live more sustainably, and to the publishers and sellers of those books. Maybe we even give credit to our high school ecology professor, our inspirational neighbor or aunt or uncle, or to our parents for raising us to become someone who cares about these issues.

In addition to giving credit, we can take credit for our own actions. In handprint accounting,

when operating from the Standard perspective, we take full credit for the impacts of actions we take to reduce our footprints relative to our BAU. "Taking full credit" does not mean we're the only people or organizations getting credit for the impacts of our actions – more on this point below, in the section on handprint credit overlap. Rather, it means that the full impacts of our actions are counted within our handprint.

3.8 Credit for Footprint Reductions, Part 2: Changes to Other Entities' Footprints

Above we discussed action influences such as awareness and inspiration. To take an action, we need to be aware of the possibility, and motivated to act. Motivation can come from information about the impacts of our action, from persuasion or cajoling or inspiration provided by a friend, from our tendency to imitate or emulate the behavior or others, from the desire to impress our friends, and so-on. In all of the causes above, *information* is involved. That includes information of all kinds (not just "data"), conveyed by all routes of information sharing (written, verbal, etc.)

Some handprints are created by very basic events or decisions. This will often be the case for handprints arising from individual choices and changes in consumption or lifestyle. For example, a person may decide to start biking to work, or walking to work, or adopting a vegetarian diet. These handprints appear to depend purely on *information* (in its many forms, from many sources), in order to occur.

Assigning partial credit to the different informational causes of an event is highly problematic, because it is essentially impossible to measure or even accurately estimate the degree to which different informational contributions have influenced an action, other than in the simple relationship where the information was necessary. In the case of being necessary, it makes sense to give full credit. Since overlapping or shared credit is possible in Handprinting, and since any non-full estimates for informational credit allocation are essentially impossible and would thus be arbitrary, the simple (and

simplifying) approach recommended here is to give full credit to all informational contributors that are known to have helped enable or cause an event.

Sometimes the simple and individual handprint actions require some investment by the individual, as when purchasing higher-efficiency appliances. But generally this funding comes "out of the pocket" of the individual themselves.

Other handprints will result from larger efforts, which we might call "projects." Projects tend to require the input of two additional resources in addition to information: these additional resources are labor, and investment funding (or "capital"). An interesting thing about both labor and capital inputs is that their proportion of contribution can be readily measured. For this reason, it is recommended that proportional credit be given to the contributors of these resources. It is further recommended that the labor credit share for a project be equal to the share of total labor hours contributed by all contributors of labor to the project; and that the capital/funding credit share be proportional to the economic value share of total funding required to fund the project.

When an enabler or cause of an event or project is *instrumental* in causing or enabling the event, this means that the event would not have happened without the input. The impacts of an event can be fully credited to each instrumental input or cause; this is how we acknowledge that without them, the event or project (and its impacts) would not have happened. For project-style events, each type of resource is instrumental. The project would not happen without the required funding, nor without the required labor, nor without the required informational inputs.

Based on the above, the total labor credit apportioned among all labor contributions will equal 100% of the project impacts. Likewise, the total investment credit apportioned among all funding contributions will equal 100% of the project impacts. Finally, total informational credit given to all informational contributors can often exceed 100% of the impacts.

It makes no sense to give credit for more than 100% of a project's impacts to any contributor of

any resources, including contributors of multiple resources. Thus, someone who contributes 10% of a project's funding requirements and 15% of a project's labor-hour requirements would receive handprint credit equal to 25% of the project's impacts. However, if they contributed 70% of the labor and 70% of the funding, they would receive handprint credit equal to 100% of the project's impacts.

The information in sections 3.6 – 3.8 is summarized in Table 1.

Table 1: What's In Your Handprint

	Individual Handprinting	**Organizational Handprinting**
Standard Perspective	Changes to your FP relative to your BAU (which is your last year's FP), plus changes to other's FP's relative to their BAU.	Changes to your FP relative to your BAU (which is supplying this year's demand as you did last year's demand) plus changes to other's FP's relative to their BAU
Contingent Existence Perspective	Changes to other's FP's relative to their BAU.	The benefits of your existence (which are the impacts of your production minus the impacts of average production) plus changes to other's FP's relative to their BAU

3.9 Handprint Credit Overlap in Customer Chains

As in Footprinting, there is shared responsibility. That is, the total Handprint of a set of actors can be less than the sum of their individual Handprints, *if* there is any overlap in their responsibilities – meaning, *if* their Handprints include any of the same unique events. As with Footprinting, accounting correctly for their shared Handprint is done by avoiding double-counting of the impacts of the same event, which can be done by preserving information about the uniqueness of each event, and counting the impacts of each event only once.

Our footprint is made up of the footprints of everything we buy. So one way to reduce our footprint is by buying less. Another way is to purchase low-impact products – including products sold

by companies which have a handprint that is large compared to their footprint. But there is the potential for some double-counting of benefits which needs to be paid attention to in handprint accounting.

For a company to be net-positive, the handprints of the company must be greater than the total footprints of the company in a given year. In this case, from a handprinting perspective, the company's products are net-positive too. One domain of impact over which companies have a lot of control is the life cycle impacts of their own products. If they innovate in order to make this year's footprint of their products' life cycles lower than last year's, this innovation is part of their total handprint this year.

For some products, a major portion of the life cycle impacts occurs during the usage phase. How are handprint and footprint accounting affected for the buyer of a product, when the product's handprint includes the effect of reductions to its usage-phase energy? If our goal is to estimate the total handprint of the product manufacturer and the customer together, we would avoid double counting the usage phase innovation benefits, as we do in *all* cases of footprint and handprint aggregation, by finding the *union* of the handprints in ways that maintain the unique identity of the event of reduced usage phase energy.

Consider the buyer of an energy efficient computer. If the manufacturer has completely offset its footprint with its handprint, then its products have no net footprint, meaning that the buyer's footprint is not increased by buying the computer. Part of the computer's positive impact stems from the fact that it is more energy efficient than the prior-year equivalent model sold by the company. This benefit is not part of the consumer's footprint changes, however, so counting it does not involve double-counting a benefit. If the computer is more energy efficient than the buyer's previous computer, then this provides a reduction in the consumer's footprint which was not already accounted for in the computer's footprint.

3.10 Handprint Gratitude

Because most events have multiple causes, handprints will tend to be very social. Imagine a group of 10 people, in which each person's annual *footprint* is 1000kg. Then, imagine that together they collaborated on a project that reduced total emissions by 2000kg, and that the project would not have been successful without the efforts of each person in the group; that is to say, each person's contributions were *instrumental* to the project in some way. In this case, each person can accurately say that without their efforts, there would have been 2000kg more emissions. So each person can say that they are "net positive" this year: their individual footprint minus their individual handprint is 1000-2000 = -1000kg. But their individual impacts cannot be added to estimate the net impacts of the group. The total group impacts are (10*1000) – 2000 = 8000kg, which is a net pollution footprint, not net-beneficial at all.

Setting the goal to be a healer as an individual person or company is an important start. But we need to also set *collective* goals, shared goals. For example, we might aspire that we as a family, or as a community, will *also* be healers. When we do the accounting for the impacts of the full group, we need to account for the unique identity of each event or project. Indeed, we need to look at our collective project impacts a new way. In the hypothetical case described above, we as a member of the group could accurately say *both* of the following:

- Without my efforts, the 2000kg of CO2 emissions would not have been avoided.
- *Without the efforts of each of my handprint partners, my efforts would not have had an impact.*

Thus, while my project partners are thankful to me, I too owe gratitude to them. We can accurately claim that without us, everything we've helped cause wouldn't have happened. But for everything we co-cause, we are also indebted to the other co-causers. Tools for handprint accounting need to enable us to identify our "handprint partners": all the people or organizations whose contributions made it possible for us to have the handprint we do. This will help us to be mindful – and

grateful – for all the ways our interdependence helps create the positive impacts we are a part of achieving.

3.11 Achieving Healer Status

Next, let's consider *how* we can be net healers at all. The conceptually simplest way of approaching handprinting is to focus our efforts on making changes to our own footprint, changes in our own life. (Obviously, we are operating from the Standard Perspective in this case, because from the CE Perspective, reductions to our own footprint do not count among our handprints.) In this case, we will be a healer if we make enough reductions in our life's impacts that this year's footprint is a bit less than half of last year's. Why is this the case? Imagine that last year we had 10 units of negative impact on the planet. Living unconsciously this year, the flat baseline assumption says we'd have 10 units of impact again. If we can have just under 5 units of impact instead, while "cleaning up" or preventing 5 units of impact that would otherwise have occurred, we are net-positive – we have been a net healer or net contributor this year. And to be a healer again next year, we're going to need to cut this year's impacts in half again.

That's some pretty intense reduction in impact, isn't it? If last year's footprint was 10 units of impact, this year needs to be at least a bit less than 5 units, and next year needs to be under 2.5 units. Our third year footprint needs to be below 1.25 units. And after 5 consecutive years of being a healer based solely on reductions to our own personal footprint, we will have reduced our footprint to about 3% of its original size!

Now, you may be thinking that there is *just no way* we can reduce our own footprint to 3% of its initial size in just 5 years. I have the same feeling, believe me! But here are three pieces of good news that make being a healer – for multiple years – quite conceivable.

- First, our handprint can be anywhere in the world. It needn't only include reductions to our own

footprint. Just as our footprint is composed of lots of small impacts, our handprints can be composed of lots of small reductions in impact.

- Second, we are all connected. Our footprints are influenced by the footprints of tens of thousands of businesses and activities spread across the earth. This means that other people's handprints, eventually, will start to reduce our own footprints too. These won't count in our handprint, but they will reduce the size of handprint we need in order to be net-positive.
- Third, humanity is intensely creative. This creativity, plus the ability of all people to share ideas, plus the fact that our footprints are connected, tells us that maybe, every person and every company or organization which wants to be a healer in a year will be able to do so, and that over time, this desire and ability to be healers can scale. By the time that even one quarter of humanity is trying, we will have truly healed humanity's relationship with the earth, in a deep and lasting way.

References

McCann Group, 2011. The Truth About Youth. Retrieved from http://www.scribd.com/doc/56263899/McCann-Worldgroup-Truth-About-Youth

Corriero, Jennifer, 2004. Role of Youth Survey. Published by TakingITGlobal. Retrieved from http://research.tigweb.org/roleofyouth/

Pew Research Center 2010. Millennials: Confident, Connected, Open to Change. Retrieved from www.pewresearch.org/millennials.

WRI / WBCSD 2011: World Resources Institute / World Business Council for Sustainable Development. *Product Life Cycle Accounting and Reporting Standard.* October.

Hoekstra et al. 2011. *The water footprint assessment manual: Setting the global standard.* Earthscan.

Liroff, Richard 2009. Don't know your company's toxic footprint? Ignorance will not be bliss. GreenBiz.com. May. Retrieved from http://www.greenbiz.com/blog/2009/05/13/dont-know-your-companys-toxic-footprint-ignorance-will-not-be-bliss

JNCC 2009: Joint Nature Conservation Committee. *The biodiversity footprint of UK Foreign Direct Investment*, ISBN 9978 1 86107 610 6.

Oxfam 2010. *Oxfam Poverty Footprint: Understanding Business Contribution to Development.* May. Retrieved from: http://www.oxfamamerica.org/publications/oxfam-poverty-footprint

Slaveryfootrint.org. Website.

Hertwich, Edgar and Glen Peters, 2009. Carbon footprint of nations: A global, trade-linked analysis. *Environ. Sci. Technol. 43:* 6414-6420.