The Sustainability Code – A Policy Model for Achieving Sustainability in Human Social Systems

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Abstract: In this paper, I present an epistemological theory of sustainability, according to which sustainability in the conduct of human affairs is linked to the content of learning-related (or innovation) policies or rules in human social systems. I claim that in order for a human population to be sustainable, it must have two things: (1) unfettered knowledge of its impact on the world, and (2) an uninhibited capacity to learn or adapt in response. I propose a policy model for achieving these conditions.
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1 Introduction

Many years ago, the well-known science fiction writer, Isaac Asimov, wrote of futuristic societies in which intelligent robots would work in the service of humans[1]. At the most fundamental level of design, Asimov's robots were indelibly imbued with what he called the Three Laws of Robotics: (1) A robot may not injure a human being, or, through inaction, allow a human being to come to harm; (2) A robot must obey the orders given it by human beings except where such orders would conflict with the First Law; and (3) A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws."

When viewed from a Knowledge Management perspective, Asimov's laws relate to an instrumental level of behavior on the part of robots. In other words, his laws apply to the actions or potential actions of robots, to things they might *do* in the material world. But there is a precursor to instrumental action that Asimov's laws did not address – his laws did not address *learning*. In Philosophy, we call the study of laws of learning, or innovation, Epistemology[2][3]. Let us imagine for a moment, then, what it might mean to design robots with hard-coded epistemologies, and how their capacity to learn – as well as *what* they might learn – could differ, depending on the epistemologies we give them.

Consider two identical robots, equal in every respect except for their respective epistemologies – one with a Realist epistemology and the other with a Relativist epistemology. Chances are, when faced with the same set of circumstances, these two robots would develop very different conclusions about the world around them, and what actions they should take in response. Note, as well, that all such different actions could fully comply with Asimov's Three Laws at an instrumental of analysis, despite the fact that their underlying epistemologies and factual interpretations of the world could be different. The point is that Asimov's Laws are laws of action, whereas epistemologies are laws of learning.

Now let us turn to the real world of humans in modern times. We, too, are constrained by laws of action at many different levels of analysis. We are constrained by moral laws in our families and communities; by formal laws in our legal systems; and by administrative or procedural laws in our organizations. Our learning laws, or rules, however, are not so well defined. Still, we rely on them, utterly, for our survival, yet they are not explicit. Nonetheless, they greatly influence how we think, how we view the world, and how we reach conclusions about truth, and what should pass as knowledge for us.

Because action is nothing more than knowledge in use, the quality of our conclusions from learning matters greatly in terms of the quality of our actions, and whether or not our actions are effective, beneficial, and sustainable. Can we not say, then, that epistemology is a variable in sustainability? I believe we can[4]. To the extent that action taken on the basis of truth is more likely to be effective, epistemology is very much a factor in the sustainability of actions and outcomes. Truth and sustainability are joined at the hip, but how to arrive at the truth is not so clear.

Indeed, when the day comes when scientists are faced with the question of how best to endow robots with a capacity to learn, which laws or rules of learning will they choose? Will the robots and electronic brains of the future be Relativists or Realists? Will they rely on the correspondence theory of truth or the coherence theory? Or will they be pragmatists or instrumentalists? And if the choices

scientists ultimately make on these matters will presumably have impact on the actions taken by robots (and their sustainability), can we not say the same for ourselves, even now in present times?

2 Methodology

Last year, a colleague of mine, Joseph M. Firestone, and I resolved to expressly take up the question above – not about robots, of course, but about human beings. We asked ourselves: *If what people on earth want is a pattern of action that is effective, beneficial, and sustainable, what must their learning systems be like in order to meet those goals? If effective learning is a precursor to effective action, what rules, laws, or principles of learning should we have in order to maximize the quality of our learning – to achieve sustainable innovation?*

We started by acknowledging that *truth matters* in the conduct of human affairs; that if what people want is the ability to take effective action, they should predicate their behaviors on the basis of truth, not falsity – for falsity arguably leads to *ineffective* action. Thus, it is always better to take action on the basis of the way the world *really is*. Here, we admittedly adopted a Realist epistemology[2][3], a metaphysical assumption that the world *in fact exists*, and that we can therefore interact with it, describe it, and evaluate it. Why did we take this position? We did so because of its intuitive, commonsense appeal, and also because it provided us with a regulative ideal that we felt was better than the alternatives.

Next in our formulation was a decision to give priority to sustainability as a desired outcome from effective learning. We called our set of rules, or laws, *The Sustainability Code*: 'Sustainability' because we saw learning as an adaptive strategy for living systems, and 'Code' because of the prescriptive or regulatory sense in which that word is sometimes used. What we were trying to create, then, was a prescriptive policy model that innovation managers, or policy makers, could use in order to operationalize sustainable innovation, *and sustainability*, in human collectives.

3 Results

Thus, the Sustainability Code was born[5]. It is a policy model for organizations and other human social systems that managers can use in their attempts to cultivate sustainable innovation: a pattern of rules or requirements for organizational learning and problem solving that is more effective than mainstream approaches to innovation management, and which helps its practitioners to adapt. Thus, it is a target-state model; a target state that can be used as a 'blueprint', or specification, for aiding in the development of sustainable innovation, with an eye towards achieving sustainability in the conduct of human affairs.

Let us now examine the components of the Sustainability Code, a prescriptive set of eleven rules, or policies, for learning:

1. All knowledge used as a basis for individual and/or shared action by members in a collective – in the context of the collective – shall always be open to criticism, and no such knowledge shall ever be regarded by any member as true with certainty. This is the FALLIBILITY rule.

This rule stems from (a) the Realist epistemology we chose, and (b) our conviction that all human knowledge is irreparably fallible[6][7]. Thus, it would be unsustainable to take action on the basis of the view that knowledge of any kind is true with certainty, since it would only serve to insulate potentially false knowledge from criticism or correction, and expose us to undue risks arising from actions taken on the basis of mistakes.

2. All organizational knowledge in the collective shall be accessible and transparent to all members, regardless of management roles or structures in place. No such knowledge shall be withheld from a member of the collective by any other member, except in cases where fulfilling fiduciary duties or the need to respect privacy entitlements are involved. This is the TRANSPARENCY rule.

The principle of transparency is fundamental to effective learning, innovation, and survival. For how can we expect people to adapt to their circumstances if information *about* their circumstances is

withheld from them? Thus, opacity, the opposite of transparency, is unsustainable as a policy for learning.

3. All learning and innovation processes in the collective shall be accessible to, and inclusive of, all members, regardless of whatever separate and/or restricted management roles or structures may be in place. This is the INCLUSIVENESS rule.

We sometimes refer to this concept as *epistemic inclusiveness*. What it means is that stakeholders, or members of a human social system, must be permitted to have access to, and participate in, the learning, innovation, or knowledge processing activities of the collective. Excluding individuals from such processes only engenders resentment, and deprives the broader population of its own members' capacity to learn and solve problems.

4. All learning and innovation in the collective shall be rooted in the principle of fair critical comparison, such that prevailing or competing knowledge claims may always be criticized, tested, and evaluated against one another in a fair and complete way. This rule shall apply to claims of what such tests themselves should consist of, and not just to the primary claims to which such tests may be applied. This is the FAIR COMPARISON rule.

This principle stems from the distinction between theories of truth and theories of evaluation. Even when we have settled on theories of truth, such as the Realist epistemology and the correspondence theory that often accompanies it, we are still left with questions about how to test and evaluate competing beliefs or claims. The Fair Comparison test is a specific theory of evaluation; it was originally developed by Joseph M. Firestone[8]. It was later incorporated into a theory of Knowledge Management put forward by Firestone and McElroy, known as *The New Knowledge Management*[4][9].

5. All members of the collective shall employ their best efforts to seek, recognize, and formulate problems in existing knowledge through critical evaluation of the performance of that knowledge in action. This is the LOOKING FOR TROUBLE rule.

The purpose of learning and innovation is to help us adapt by allowing us to close our epistemic, or knowledge, gaps. Learning is our adaptive strategy[10]. Therefore, the most adaptive human collectives will be those in which the search for epistemic gaps is a deliberate and continuous process. Trouble, in this context, would consist of epistemic gaps that we might not be aware of, but which could be discovered if only we looked for them.

6. The actual or potential performance of knowledge in action shall be defined to include the social and environmental impacts of actions taken, and in particular the sustainability of such impacts. No such impacts shall arbitrarily be externalized or otherwise excluded from the scope of evaluations performed under rules number 4 and 5 above, and all such impacts determined to be unsustainable shall be internally assessed accordingly, in related evaluations. This is the INTERNALIZATION rule.

This is a terribly important rule that goes to the very heart of the sustainability crisis in the world today[11]. To the extent that businesses around the world are externalizing many of their negative social and environmental impacts, knowledge of such impacts as a precursor to potential action in response is also being externalized. This inhibits learning, and biases knowledge of external impacts as irrelevant to the sustainability of human behaviors, which of course they (the external impacts) are not. Thus, this is a prescription for disaster in the conduct of human affairs, and it must be rejected if we are to make any progress in improving the sustainability of our course. Knowledge of externalized social and environmental impacts (and their costs) must be internalized in the learning routines of a collective, as if the impacts (and costs) were internal to the collective itself. Boundary orientations must be redefined, accordingly; and the performance measurement and reporting systems used by businesses, in particular, should be similarly redesigned.

7. Members of the collective may produce any new rule not otherwise specified by these rules, so long as it and the learning system used to produce it do not contravene these rules. This is the GROWTH OF KNOWLEDGE rule.

Sustainability and effective performance requires the continuous production of new knowledge in order to make adaptation possible[10]. The fact that we have established these learning-related rules is not to say that knowledge of other kinds cannot, or should not, be produced. Of course, it should.

8. Rule numbers 1 through 7 shall apply to not only knowledge claims of fact, but also to knowledge claims of value, as well. This is the FACT/VALUE rule.

This rule acknowledges the all-important distinction between our knowledge of facts and our knowledge of values[12]. We simply mean to suggest here that both kinds of knowledge are subject to the same principles of learning, and that sustainability in the conduct of human affairs is not just a function of our knowledge of facts, but also of our knowledge of values, too.

9. The collective shall establish a Knowledge Management function that will be independent of the Executive Function and invested with enforceable authority to (1) allocate resources for enhancing all leaning and innovation in the collective, (2) change and enhance all knowledge processing rules, (3) handle crises in knowledge processing, and (4) negotiate for resources with other organizational functions. This is the KNOWLEDGE MANAGEMENT rule.

Rules and policies for learning and innovation require management, if only to aid in their implementation and use. This is a definition of Knowledge Management (KM) according to which KM is a management discipline that seeks to enhance the quality of learning and innovation in a social system[9]. Moreover, it is a management discipline that a social system must have if its patterns of learning are to be sustainable, and themselves adaptive.

10. The Knowledge Management function shall adopt and implement only knowledge processing policies that are aligned or synchronized with the self-organizing tendencies of people in organizations to produce and integrate knowledge as they will. This is the POLICY SYNCHRONIZATION rule.

People have a tendency to self-organize around the discovery of problems (epistemic gaps) and the social knowledge production and integration activities that follow. A sustainable innovation system will be one that is consistent with these endogenous (and emergent)[13] tendencies, and which does not either (a) conflict with, or undermine, them, or (b) engender learning or innovation outcomes that have the effect of working against people, not for them[4]. Indeed, a sustainable innovation system will be one that actually helps people to adapt, not mal-adapt!

11. Any member who fails to abide by these rules shall be subject to exclusion from the collective by its other members, at their discretion. This is the ENFORCEMENT rule.

Collective living need not involve unbounded tolerance in cases where some members act in ways that put others at risk. To the extent that the Sustainability Code is a policy model designed to enhance the capacity of a collective to survive, adapt, and live in sustainable ways, members who work against these goals may justifiably be excluded from the community by their peers, who remain committed to sustainability principles and sustainable innovation, as an epistemology.

4 Conclusion

For an organization or society to be sustainable, it must have two things: knowledge of its impact on the world, and the ability to learn or innovate in response. For this reason, conscious attention must be given to managing the epistemology of a social system, for it is the epistemology of a system that makes understanding, innovation, and knowledge possible. Thus, we can say that an epistemology, or innovation system, that meets these two criteria is sustainable, whereas one that does not, is not. Sustainable action requires sustainable innovation.

The concept of *sustainable innovation*, then, rests in part on the distinction between learning and action. In other words, we can differentiate between the sustainability of what a business, for example, produces or how it behaves, and the sustainability of the internal innovation processes it relies on for problem-solving and learning. In general, we can say that unsustainable innovation processes will more often beget unsustainable innovations or outcomes, and that such innovation processes are more likely to work against us than for us.

It should also be clear that in many mainstream business settings, a majority of the rules set forth above are missing. While the predominant corporate epistemologies in most multi-national corporations are admittedly Realist in form, their learning-related policies are too often regressive. In most cases, for example, organizational knowledge is justified by appealing to the authority of management (violates Rules 1, 4, and 5 above), and most official organizational knowledge is too closely held and developed by managers only (violates Rules 2, 3, 7 and 10 above).

Of even more concern is the failure of most organizations to fully take their external social and environmental impacts into account, as they make plans and assess their own performance (violates Rules 6 and 8). In the process, not only are the full factual implications of organizational operations overlooked, but so are the evaluational or value-based reactions we may have when confronted with our own impacts on the world around us.

Alas, most organizations take a rather reductionist and mechanistic approach to the management of innovation, choosing to solve artificial problems with artificial processes, and they thereby miss out on benefiting from the real potential of human creativity and problem-solving (violates Rule 10 above). Instead, aberrations of our rule number 11 are enforced, according to which people are punished or excluded from a collective simply because of their desire to participate in the innovation processes of the organization. Instead of being welcomed, they are too often branded as *insubordinate*.

In sum, the key question raised by this essay is: *Is mainstream innovation, or the pattern of innovation that we very often aspire to achieve, sustainable?* My contention is that it is not, and that innovation pursued for its own sake, or for the sake of commerce or profit unabated, is inauthentic and irresponsible. Why? Because it is unsustainable, because the price of inauthentic innovation is usually social and environmental degradation. To be sustainable (and authentic), a pattern of innovation must be stimulated and supported by the kinds of policies I propose above.

The theory presented here, then, is that innovation is a variable process, and that it can either serve our purposes or defy them, depending on whether it makes it possible for us to understand our impacts in the world and devise our actions, accordingly. To the extent that it does, it can serve our purposes; but to the extent that it can distract us from such understanding, or worsen our social or environmental impacts, it can be our undoing. The choice is up to us.

In the final analysis there are no guarantees – sustainable innovation will not necessarily lead to sustainable action. Indeed, the outcome of innovation is never predictable. Still, we can ask: *Can there be sustainability in the conduct of human affairs without sustainable innovation?* From the perspective of a Realist epistemology, I think the answer is clearly *No*.

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