

Infosphere to Ethosphere

Moral Mediators in the Nonviolent Transformation of Self and World*

Jeffrey Benjamin White

Abstract

This paper reviews the complex, overlapping ideas of two prominent Italian philosophers, Lorenzo Magnani and Luciano Floridi, with the aim of facilitating the nonviolent transformation of self and world, and with a focus on information technologies in mediating this process. In Floridi's information ethics, problems of consistency arise between *self-poiesis*, *anagnorisis*, entropy, evil, and the narrative structure of the world. Solutions come from Magnani's work in distributed morality, moral mediators, moral bubbles and moral disengagement. Finally, two examples of information technology, one ancient and one new, a Socratic narrative and an information processing model of moral cognition, are offered as mediators for the nonviolent transformation of self and world respectively, while avoiding the tragic requirements inherent in Floridi's proposal.

KEYWORDS: moral mediator, information ethics, Magnani, Floridi, nonviolence, distributed morality

1. Self, Poetry, and Information

Without adequate reasoning, even well-intentioned moral actions may fail – or, worse still, cause harm – and the best way to facilitate adequate reasoning is to confront problems with flexible and well-fed minds

- Lorenzo Magnani¹

Luciano Floridi has “defended a view of the world as the totality of informational structures dynamically interacting with each other”, in which the world as information ecosystem, the “infosphere”, and all individual inhabitants are essentially interconnected “informational entities” with any given thing’s “least intrinsic value” “identified with its ontological status as an information object” as determined by an “analysis of *being* in terms of a minimal common ontology, whereby human beings as well as animals, plants, artifacts and so forth are interpreted as informational entities” (Floridi, 2011b, page 564, 2002, page 287, 2006, page 33), “To be is to be an informational entity” (Floridi, 2008, page 199). On Floridi’s picture, living things are also informational entities, “inforgs”, informational organisms, with human beings nestled amongst them as “interconnected informational organisms among other informational organisms and agents, sharing an informational environment”,² and with that informational environment characterized by its degree of entropy (Floridi, 2011a, 2010, 2006). Entropy is important to Floridi’s information ethics as it is central both to the role of human beings in the informational

* jeffreywhitephd@gmail.com

environment, and to the problem of evil, understood as increasing entropy (Floridi, 2006, 2002, 1999).

Floridi understands human beings as *homines poietici* - selves whose defining capacity is to create order, from which derives the relationship between entropy and evil, for example the identification of evil with the destruction of order (i.e. violence), and with each self emerging “as a break with nature, not as a super connection with it” (Floridi, 2006, 2011b, page 560). Moreover, *homo poieticus* is unique in her/his reflexive awareness of this distinctive status, as an island of order within a sea of disorder, and with this recognition he/she is able to identify similar entities:

Selves are the ultimate negentropic technologies, through which information temporarily overcomes its own entropy, becomes conscious, and is finally able to recount the story of its own emergence in terms of a progressive detachment from external reality. There are still only informational structures. But some are things, some are organisms, and some are minds, intelligent and self-aware beings. Only minds are able to interpret other informational structures as things or organisms or selves. And this is part of their special position in the universe (Floridi, 2011b, pages 564-5).

The “progressive detachment from external reality” is a process undertaken by minds, human beings, as they understand their place amongst other informational entities, a process aided and accelerated by information communication technologies (ICTs). Floridi holds that ICTs are making possible a “fourth revolution” in human self-understanding, following Copernicus, Darwin, and Freud. Note both that these first three plot an inward trend, from humans understanding their place amongst the stars, to their position within evolutionary time on Earth, to their selves as products of physical and metaphysical relationships, and that this fourth revolution follows this trend, as ICTs aid humans not only in understanding themselves, but in actively designing and constructing them. Floridi writes that:

ICTs are, among other things, *egopoietic* technologies or technologies of self construction, significantly affecting who we are, who we think we are, who we might become, and who we think we might become (Floridi, 2011b, page 550).

As part of their “special position in the universe” (note: not some limited domain therein), detached from reality and from this perspective, through technology, increasingly empowered to both study and shape it, humans have a “vocation for responsible stewardship in the world” (Floridi, 2006, p. 34).

The more powerful *homo poieticus* becomes as an agent, the greater his duties and responsibilities become, as a *moral agent*, to oversee not only the development of his own character and habits but also the well-being and flourishing of each of his ever expanding spheres of influence, to include the whole infosphere (Floridi, 2006, page 32).

Accordingly, Floridi stresses not only the *egopoietic*, self-constructing potential afforded by ICTs, but also the world transforming, *ecopoietic* potential, where “The term “*ecopoiesis*” refers to the morally-informed construction of the environment, based on an ecologically-oriented perspective.” (Floridi, 2006, page 31)

On this basis, Floridi extends a principled ethics resting on entropy “meant to be a macroethics for creators not just users of their surrounding ‘nature’ ”, in which, “fighting

information entropy is the general moral law to be followed, not an impossible and ridiculous struggle against thermodynamics” (Floridi, 2006, pp. 33, 2002, p. 300):

The duty of any moral agent should be evaluated in terms of contribution to the sustainable blooming of the infosphere, and any process, action or event that negatively affects the whole infosphere – not just an informational object – should be seen as an increase in its level of entropy and hence an instance of evil (Floridi, 2006, p. 32).

But, how are we to understand “entropy” and “evil” consistently throughout our “ever expanding spheres of influence”, including the “whole infosphere”, so that we might not only become responsible stewards of the world but also become morally “good” human beings?

First, we may wonder how we come to know ourselves as distinct selves in the first place. Floridi volunteers “what may be a fruitful approach to start understanding the construction of personal identities” centered on three terms: “egology”, the development of selves, proceeding first by individualization and then by (self-)identification, “*self-poiesis*”, self-creation in the first-person through progressive detachment from the world (the not-self), punctuated by “*anagnorisis*”, the tragic realization that one’s self is not the self (the not-not-self) one thought one’s self to be:

In Aristotle, the phenomenon of *anagnorisis* refers to the protagonist’s sudden recognition, discovery, or realization of his or her own or another character’s true identity or nature. Through *anagnorisis*, previously unforeseen character information is revealed. Classic narratives in which *anagnorisis* plays a crucial role include *Oedipus Rex* and *MacBeth*. More recently one may mention *The Sixth Sense*, *The Others*, or *Shutter Island*. I shall not spoil the last three, if the reader has not watched them. Generalizing, one may say that, given an information flow, *anagnorisis* is the information process (epistemic change) through which a later stage in the information flow (the acquisition of new information) forces the correct reinterpretation of the whole information flow (all information previously and subsequently received). For this reason, I prefer to translate *anagnorisis* as realization (Floridi, 2011b, p. 564).

On this assay, one’s self is most completely realized when the self one thought one was is discovered to not, in fact, be the self whom one is, compelling “the correct reinterpretation of the whole information flow.” Moreover, this process occurs within narrative structures of our own creation, “through which we semanticize reality, i.e., through which we make sense of our environment, of ourselves in it, and of our interactions with and within it” (Floridi, 2011b, p. 564).

Notably, *anagnorisis* is not a stand-alone notion. In Aristotle’s *Poetics*, his analysis is essentially tied with that of *hamartia*, a tragic error in judgment, from which disaster results (Aristotle, 1995, *Poetics*, books 13 and 14). *Hamartia* is not a character flaw, but flawed judgment due to emotion over-riding incomplete information. An agent acts toward an end, misses, and effects the opposite of those intentions, falling to tragic irony, realizing himself in terms not only opposite, but inverted, to those presupposed, and is thus presented the option to reconcile the difference, transcending prior limitations, becoming wiser, or close to it, only thereby expressing a flawed character, vicious ignorance (White, 2006).³ So clarified, it is only to the original point of error, *hamartia*, that the information flow is re-cast, not the “entire” information flow as Floridi speculates. For example, the Occupy movement in the USA generally

calls for repeal of the Federal Reserve act of 1913, to the point where the people feel a tragic error had been made, and not for the revision of all of Western history.⁴ Moreover, this illustration of *hamartia* in historical narrative reveals a rather disturbing fact about the “entire information flow” – we create it on the fly. Often enough where we end up is the product of a mistake, and often enough due to inadequate information. Finally, it is what we do at this point, fully informed of possibilities otherwise, that determines our characters, good or evil.

Two problems must be addressed. First, entropy. Entropy in information theory does not exactly match that of the physical sciences, with the former understanding entropy as the probability of the presentation of a message, and with the latter understanding entropy as a direct measure of disorder relative potential energy. Floridi is a “nonreductionist”, supposing information of different forms to be qualified by exclusive accounts and measured by specific means, thereby admitting multiple sorts of entropy (Floridi, 2004). This position, however, stands against his “view of the world as the totality of informational structures dynamically interacting with each other”, a position demonstrated by his own direct application of the “entropy method” from the artificial to the “standard domain” in assessing the moral significance of a broken windscreen (Floridi, 1999). One cannot have things both ways – either the world is coextensive with the domain of information, as implied when information counts as the fundamental ontological dimension, or information is a sub-domain of the world, as is implied when informational entropy is otherwise than natural entropy. We shall realize an informational view of self and world grounded on a single form in the next section.

Second, the problem of value. Raphael Capurro counters Floridi, holding that all value derives from human evaluation, as there is a human being – a “mind” – at the center of any claim to moral significance. Leveling the field of being on the basis of a common information ontology, while at once disengaging from the natural world that governs human being, creates a conceptual environment that dislocates the source of valuation from selves to some realm of ideals, “out there”, diminishing both the human role in the production of value through work and its social value assessed through empathic mirroring of similarly embodied conditions, thereby inviting a slippery slope whereby things become more valuable than the human beings who engage with them (Capurro, 2008). This is problematic, recalling Plato, because as things gain value over people, we move from a healthy world to one with a “fever”. Indeed, as recent Occupy movements around the world demonstrate, it seems that we already live in such a world, illuminating two important issues. One, as asserted on OccupyWallSt.org, the movement depends on ICTs to coordinate actions, by the so-called “Arab Spring tactic to achieve our ends and encourage the use of nonviolence to maximize the safety of all participants.” This fact cements the moral significance of information. And, following Capurro, it also affirms that this value derives from human beings using information to construct a just social order. Two, there is no doubt that *anagnorisis* results in self-realization, for better or for worse. However, it is this potential for ending up worse that questions its fruitfulness as a strategy for advancing self-understanding. Certainly, at tragic ends already, it is a useful model for moral reasoning, but the people behind OccupyWallSt.org would certainly rather that the Federal Reserve Act had failed in the first place, just as Oedipus may have benefitted by DNA testing.

This is indeed a critical period in human development, even a “fourth revolution” of self-understanding catalyzed by information technologies and serving the potential construction of healthy selves and world. But, we must proceed with caution, else invite further tragedy. In this spirit, consider Lorenzo Magnani:

While I deeply believe that creating and acquiring new knowledge is critically

important, even I must admit that all the information in the world is meaningless unless we can use it effectively: the principles and ways of reasoning that allow us to put new ethical knowledge to work are just as important as the knowledge itself (Magnani, 2007, p. 162).

It is not enough to recognize that all things are potential sources of information, to commit to promote “the flourishing of informational entities as well as of the whole infosphere” by limiting entropy within it. “Coherence in moral behavior is not necessarily good in itself” (Magnani, 2007, p. 145). And, order for the sake of order is not necessarily good in itself, either, as OccupyWallStreeters stand in testament. At least until the moral significance of entropy is clarified, commitments to avoid it are nothing we can “put to work”.

We must conceptually transform Floridi’s infosphere into the “ethosphere”. But, with due caution, how should we proceed? To complete this task will require two things. For one, as it is inevitably some self, or selves, responsible for *hamartia*, piloting this transformation sans tragedy requires first of all a conception of self up to the task, “a conception of self that may be more easily shared (though of course, pluralistically) among the larger globe” (Ess, 2008, p. 167). An informationally modeled self is indeed easily shared, bereft as it is of culturally specific baggage, and so indeed the fourth revolution in self-understanding is well-presented as an informational one. Additionally, we require the tools and methods necessary to effect the transformation of the world of informational objects into one of moral value, infosphere to ethosphere. According to Charles Ess,

[...] we are in need of developing notions of *distributed responsibility* in an ethics of *distributed morality* - i.e., notions better suited to our realities as informational agents and patients, who are inextricably interwoven with one another via computer and other networks (Ess, 2008, p. 161).

2. Magnani, Mediation, and Method

In one word, science (critically undertaken and methodically directed) is the narrow gate that leads to the true doctrine of practical wisdom, if we understand by this not merely what one ought to do, but what ought to serve teachers as a guide to construct well and clearly the road to wisdom which everyone should travel, and to secure others from going astray.

- Immanuel Kant⁵

Lorenzo Magnani has written systematically on the role of abduction both in “scientific and everyday reasoning”, “typical reasoning in presence of incomplete information”, understood from Peirce as “inference that involves the generation and evaluation of explanatory hypotheses” and “inferring certain facts and/or laws and hypotheses that render some sentences plausible”, present even in simple instances of visual perception, and the form of reasoning most applicable to moral problems (Magnani, 2011, p. 61, Magnani and Nersessian, 2002, p. 306, Magnani, 2005). One Peircean illustration of this form of reasoning is offered in the distinction between two types of cloth by comparing the sensations of their textures, “but not immediately”, requiring one “to move fingers over the cloth”. (Magnani, 2007, p. 185). This is an example of “manipulative abduction”, “thinking through doing” which, from evolutionary and developmental psychological perspectives eventuates in increasingly sophisticated sentential and symbolic reasoning through a process that Magnani designates the “disembodiment of mind”

(Magnani, 2009).

Epistemically, by this process, the space of action is patterned in “construals” - effectively embodied and situated knowledge how. As these construals stabilize through repetition, they begin to pre-figure experience and rise to explicit awareness. Formalized, they become “parts of a memory system that crosses the boundary between person and environment”, forming the basis of ritual, conventional law, guiding religious narratives, and theories – such as information ethics - with predictive force and moral value, all “disembodied” aspects of distributed cognition (Magnani, 2007, p. 242 and p. 232). Accordingly, Magnani’s work has also focused on “model-based reasoning”, indicating “the construction and manipulation of various kinds of representations, not mainly sentential and/or formal, but mental and/or related to external mediators”, following Peirce in understanding that all thought, “being minds”, is mediated by “signs” - phenomena “available to interpretation” guide our actions “in a positive or negative way” and “become signs when we think and interpret them”, including feelings, e.g. “somatic markers” (Magnani and Nersessian, 2002, p. 308, Magnani, 2009, p. 490, Damasio, 1999). “Being a mind” means “to be absorbed in making, manifesting, or reacting to a series of signs” - recalling Floridi, “able to interpret other informational structures as things or organisms or selves” - while being also “an external sign” for self and others (Magnani, 2009, pp. 489-490). Most importantly, “the “person-sign” is a future-conditional”, “not fully formed in the present but depending on the future destiny of the concrete semiotic activity (future thoughts and experience of the community) in which s/he will be involved” (Magnani, 2009, p. 490). Thus, cognition is essentially evolved, developed, embodied, self-determining and distributed, “extended” through time and space, “consisting of the person plus the external physical representation” that facilitates and potentially changes the way that one reasons, as is the case with “epistemic mediators” like microscopes, telescopes, pen and paper, and information technology (Magnani and Nersessian, 2002, pp. 312-313).

Magnani locates morality in “all those situations in which humans have to manage problems related, for instance, to making decisions or policies that may have a moral concern and impact on our lives”, including “coming up with new ideas that can solve old problems and even create new moral concerns towards new moral entities, such as animals and things” (Magnani and Bardone, 2008, p. 104). This is ethics as a creative enterprise, “creating ethics” through moral reasoning, which can “be viewed as a form of “possible worlds” anticipation, a way of getting chances to shape the human world and act in it”, in this way “creating the world and its directions, in front of different (real or abstract) situations and problems” (Magnani and Bardone, 2008, p. 99). It “involves coming to see some aspects of reality in a particular way that influences human acting in shaping and surviving the future”, and through this process “many external things, usually inert from the moral point of view, can be transformed into what we describe as “moral mediators”, “moral tools” “distributed in ‘external’ objects and structures which function as ethical devices” (Magnani and Bardone, 2008, p. 100). Magnani takes inspiration from Edwin Hutchins’ “mediating structures”, emphasizing behavioral mediation, objects which direct, constrain, and guide action along culturally specific lines, contributing to cultural coherency, referring “to various external tools that can facilitate cognitive acts of navigating in both modern and ‘primitive’ settings” (Magnani, 2007, footnote, p. 237). Furthermore, in exhibiting “care” for and through these devices, we demonstrate for others a “conscientious” pattern exhibiting “a fundamental kind of moral inference and knowledge”, by which “even a lowly kitchen utensil can be considered a moral mediator” (Magnani, 2011, p. 133). Thus, moral mediators range from objects to agents to actions to systems including binding

narratives, through which we “make sense” of it all.

As a tool for “creative abduction”, making sense of self and world in light of incomplete information, a moral mediator is a special kind of representation. As “distributed morality”, it is a “task-transforming representation” able to “transform difficult tasks into ones that can be done by pattern matching” by performing what has been called “the “representational task” of representing moral problems so that their solutions are transparent” (Magnani and Bardone, 2008, p. 103).

Moral mediators represent a kind of redistribution of the moral effort through managing objects and information in such a way that we can overcome the poverty and the unsatisfactory character of the moral options immediately represented or found internally (for example principles, prototypes, etc.) (Magnani and Bardone, 2008, p. 105).

By “pattern matching”, one quickly imagines metaphor; and, of course, metaphor has been recognized as central to cognition, being a capacity to recognize patterns of relationships amongst vastly different arrays of objects (Pinker, 2007). Here, metaphor and “pattern matching” are best understood as a form of abduction, model-based reasoning, in which Magnani and Bardone capture “a considerable part of the thinking activity” (cf. also Magnani and Nersessian, 2002, Magnani 2005).

Perhaps the most ubiquitous pattern of thought is the simple “possible worlds” counterfactual, “If... then...” Magnani and Bardone provide a poignant example of this pattern in a most ubiquitous form of ICT, a website, CostofWar.com. CostofWar.com presents a running tally of the US dollar costs of wars continuously waged by the USA since 2001. As of October, 2011, it shows a total *monetary* cost of all wars begun since 2001 (costs to the USA, begun by the USA) to be over 1.2 trillion, with the total cost of war (invasion and occupation) in Iraq to be over 800 billion. Alone, these are simply big numbers. They are not “immediately” morally significant, only becoming so when recast counterfactually as opportunities lost, for example “the number of children we could have insured, if...” Presenting alternative consequences, CostofWar.com “represents the same piece of information so that the problem we face, for instance, thinking about going to war or not, is completely changed”, and qualifies as a moral mediator “because it mediates the task changing the representation we have of it, and making the solution more transparent” (Magnani and Bardone, 2008, p. 105). Thusly, information becomes ethics, and we are on our way to transforming the infosphere into the ethosphere.

One product of Magnani’s work that can help to illuminate the most difficult aspects of this transformation is his notion of the “moral bubble”. Moral bubbles are “viscous” subdomains of the ethosphere that bind persons within sub-groups of humanity, and that “systematically disguise” the violence of their actions by making them unable to “incorporate”(empathize with) “the effect of [their] behavior on other human beings” or, in “bad faith” on themselves, while easing moral tensions by allowing them to “avoid the cognitive breakdown” “triggered by the constant appraisal” of every action inconsistent with given moral conviction (Magnani, 2011, pp. 8, 59, and 77). Magnani models the “glue-like” integrity of moral bubbles on the disposition of agents within epistemic bubbles to “resolve the tension between their thinking that they know *P* and their knowing *P* in favor of knowing that *P*”, the difference being that, rather than “knowing” that something is *true*, “prisoners” of moral bubbles “know” that something is *right*, with this “knowledge” reinforced through gossip and narrative that “inform and disseminate the moral dominant knowledge of a group” (Magnani, 2011, p. 74, quoting John Woods, and p. 79).

Thus, a moral bubble is a type of “cognitive niche” in which persons are actively insulated both from the anxiety associated with admitting that “we know a lot less than we *think* we do”, and from perceiving moral inconsistencies, feeling responsibility for their actions (Magnani, 2011, p. 74). As domains of action expand, prisoners of bubbles conflict with prisoners of other bubbles and even those within the same bubbles “whenever one’s signaling does not conform with the ‘standard’ implications meant by the signal deployed.” (Magnani, 2011, page 84) Even war is justified in a moral bubble as the “predominant view is that in a state of war, the act of killing is ruled by different moral principles from those that rule acts of killing in other contexts.” (Magnani, 2011, page 175)

“Embubblment” is facilitated through the violent use of the prototypical ICT, language, cutting humanity apart with some divided as means to others’ ends, “exactly like a knife [...] of biological origin”, and as “the outward extension of an organic activity” (Magnani, 2011, p. 47). Violence is often justified, and the viscous integrity of the moral bubble maintained, through a “perverting of sympathy” tempering the cognitive dissonance arising when one “simultaneously holds two contrasting cognitions”, and rather than reconcile them ends up “obliterating facts supporting one view and fabricating appropriate evidence justifying that suppression in favor of the other” (Magnani, 2011, pp. 103-104). In this way, embubblment creates conflict, “structural violence”, that is “often diluted in the pervasive form of narratives”, including “the fairytales that are told to children from early youth”, as these inspire drives to champion the terms by which one thrives and strives for his/her own happy ending, thus presenting preservative actions as morally justified (Magnani, 2011, p. 123). Persons committed to the terms of such fairy tales pursue them with zeal, however violent, often “fabricating evidence” at the expense of others through deception, “bullshitting” (Magnani, 2011, p. 105). Magnani illustrates this fairy tale bullshit by way of recent “too big to fail” bank “bailouts” propagated on a “sacred myth” that at once, perversely, considers “government action of any sort beyond bare minimum” unnecessary while at once claiming that government financial support is necessary for the integrity of the “global” economic system, itself an over-inflated bubble, in a prime example of perverted sympathy “actively supported and encouraged not only by politicians, but also by intellectual elite” who leveraged expert testimony to undermine democracy and “dupe public opinion”, thereby serving one bubble at the expense everyone else (Magnani, 2011, p. 105). Thus, even employed in preservation of order, information is a tool of violence, resulting in tragic injustice, recalling OccupyWallStreet, entropy, and evil.

Magnani’s moral bubbles provide a model that helps to clarify the relationship between entropy and evil:

It is well-known that, from the point of view of physics, organisms are far-from-equilibrium systems relative to their physical or abiotic surroundings. Apparently they violate the second law of thermodynamics because they stay alive, the law stating that net entropy always increases and that complex and concentrated stores of energy necessarily break down (Magnani, 2011, p. 121).

They apparently violate the second law because they construct local orders - bubbles, niches, narratives, theories, and so on – maintain these orders, and pattern them in terms of modes of engagement that, ostensibly, increase survivability in the natural world, i.e. knowledge:

To create cognitive niches is a way that an organism (which is always smartly and plastically “active”, looking for profitable resources, and aiming at enhancing fitness) has to stay alive without violating the second law: indeed it “cannot”

violate it (Magnani, 2011, p. 121).

The second law is not violated because the niche is a local space of order created at entropic expense to whatever is other. This “entropic expense” translates into actions and attitudes ranging from violence to ignorance, in any case raising the level of energy necessary for systems external (logically, not necessarily physically) to the bubble in question to remain stable and retain integrity. Thus, increasing entropy in the “whole” infosphere, bubble-making is objectively “evil”. Meanwhile, being the space of information in terms of which people live and die, these orders are essentially moral, with their creation and maintenance perceived, selfishly, “good”.

Consider in this light Kantian moral theory, impelling persons to “Act so that the maxim of thy will can always at the same time hold good as a principle of universal legislation”, while “The direct opposite of the principle of morality is, when the principle of private happiness is made the determining principle of the will” (Kant, 1898, pp. 93 and 96). Putting these together, a principle of immorality emerges: “Act so that the maxim of thy will is private happiness.” The “propensity to evil” that this modified maxim represents is an inclination to “reverse the moral order” due to the weakness, impurity, and/or corruption of the heart, which for Kant is the seat of the “springs” of will, source of motivation, where the morally good agent acts solely by the spring of moral law, “alone an adequate spring”, and “*Whatever is not done from this faith is sin*”, while the bad agent acts selfishly by “deceiving itself as to its own good or bad dispositions” through “malignancy” that “extends itself then outwardly also to falsehood and deception of others which, if it is not to be called badness, at least deserves to be called worthlessness” (Kant, 1898, pp. 217-218, and 223). Worthless, “the moral agent falls into a perfidious moral bubble, where the evil is not perceived”, in what Magnani calls moral “disengagement” through which “The moral agent falls into a perfidious and self-deceitful reengagement in a new decisional framework where evil is simply supposed to be good, and so morally justified”⁶ (Magnani, 2011, p. 181).

In illustration, imagine a single, universal plane of moral order representing a low-energy stable state of maximal potential energy. Given the natural tendency toward disorder, further imagine the spontaneous disintegration of this universal moral domain into local regions, bubbles, that retain internal order at the accelerated disorder of whatever is external. Accordingly, “evil” is related with entropy as the tendency to exacerbate this disintegration, and “good” the tendency otherwise. However, recalling that organisms create bubbles as a way to “stay alive without violating the second law”, so think it “good”, subjective perceptions of “evil” differ from the preceding portrait. “Evil” is (subjectively) *idealized* as agents and actions “that intentionally harm other people thanks to a transgression of a moral rule perfectly present and approved in the agent’s mind”, while *actual* “evil-doers” are “embedded in their “moral bubbles”, understanding their actions “as totally or abundantly justified” with “evil” existing “only in the experience of the victim” (Magnani, 2011, p. 182).

Still, IF we want to become “good” persons, THEN by what method might we move in that direction? A demonstrated tendency to the good exists in non-violent movements for social change. Magnani writes that:

[...] nonviolence always promotes what I can call a “moral epistemology”: new “regimes” of truth related to the “*inessentiality* of something, or its nothingness, in the form of illuminating its fragility and pursuing the orchestration of its collapse” (Magnani, 2011, p. 142).

This description appears violent, and in the minds of the “victims” of non-violent movements for social justice, even “evil”. However, in this orchestrated collapse of the inessential the proliferation of bubbles is contravened. Through non-violence, people *work* – use metabolic energy – to increase universal moral order. Granted, they increase disorder in target moral bubbles – *bubbles get popped* - and granted that global disorder is always increasing per the second law, so they may appear engaged in a “ridiculous struggle against thermodynamics”. But, the resulting moral order, the ethosphere, is transformed otherwise. Consider Martin Luther King, Jr., on these points:

Nonviolent direct action seeks to create such a crisis and foster such a tension that a community which has constantly refused to negotiate is forced to confront the issue [...]. Just as Socrates felt that it was necessary to create the tension in the mind so that individuals could rise from the bondage of myths and half-truths to the unfettered realm of creative analyses and objective appraisal, so must we see the need for nonviolent gadflies to create a kind of tension in society that will help men rise from the dark depths of prejudice and racism to the majestic heights of understanding and brotherhood.⁷

King’s method is to force embubbled persons to overcome their cognitive dissonance by forbidding them to continue “obliterating facts supporting one view and fabricating appropriate evidence justifying that suppression in favor of the other.” Thus, reducing the number of moral bubbles in the world, bringing people together, and increasing order. Tellingly, he points out this intention through an entropically significant physical metaphor - “majestic heights”. He points up. And up is a good thing.

3. Technologically Mediated Moral Embubblement

How we ought to live is the central problem of morality, and the way we reason dictates how we live.

- Lorenzo Magnani⁸

Since King, however, we appear to have traveled in the other direction, with the “War on Terror”, as articulated in GW Bush’s infamous “doctrine” “Either you are with us, or you are with the terrorists”, delivered along with a supporting narrative justifying the occupation of Afghanistan due to its alleged involvement in the deaths of more than 3000 US citizens, “They hate us for our freedom.”⁹ This language split the world like a knife along an “Axis of Evil”, “rogue states” Iraq, Iran, North Korea, and later Syria, Libya, and Cuba.¹⁰ In Iraq alone, with “documented civilian deaths from violence” over 103,000,¹¹ while “the deliberate destruction of Iraq’s water and sewage systems by US bombings has been the major cause (for a decade) of an outbreak of diarrhea and hepatitis, particularly lethal to pregnant women and young children”,¹² and with “defects in newborns 11x higher than normal” due to depleted uranium munitions,¹³ poison with a half-life measured in the billions of years,¹⁴ Iraqis have suffered “irreversible injustice” due to “countless numbers of families, friends, refugees and orphans who have suffered losses” for which “the US and its allies are responsible”, while “the denial by the governments of the US and its allies over the number of excess Iraqi civilian casualties is further adding to this injustice” (Karagiozakis, 2009). With the critical reason for the invasion, alleged “weapons of mass destruction”, now acknowledged to have been founded on incomplete, faulty – if not bullshit - information,¹⁵ it is no mystery why so many are questioning “the whole

information flow”.¹⁶ We are at a tragic end, due to tragic error, and so many continue to suffer for it. Who is the terrorist, now? Before we ever look up, again, we - as future conditionals - must reconcile with the fact that we have become the opposite of who we set out to become.

As difficult as this process may be on its own, it is made all the more difficult through the employment of ICTs in the reinforcement of embubbling paradigms through a process that Magnani terms “cognitive hacking”. This is nothing less than technologically mediated and targeted deception. Information, through technology, is deployed in a violent “semantic attack” targeting the technology users’ minds and behaviors “by manipulating their perception of reality”.

In this case information is used in a violent and sophisticated way – beyond the well-known violent effects of traditional mass-media propaganda – to influence and to affect the behavior of humans through computational tools: a full process of *information warfare*, as it is called (Magnani, 2011, page 87)

Killing and poisoning so many people on the basis of *intentionally* bad information raises the issue of the relative moral status of persons and things. Certainly, deceiving a population in order to serve one’s own selfish purposes is to treat those persons as a means to one’s own ends, as a thing and not as an end in itself, and so is, at least from a Kantian perspective, patently immoral. However, this still leaves the relative moral *status* of persons and things unspecified, and deserving of immediate attention.

The distinction between persons and things is subtle, if not fuzzy, especially as we are embedded in a technological world, with technologies of all sorts increasingly mediating even the most mundane aspects of our lives. Lorenzo Magnani has argued that “advanced and more pervasive technology” has “blurred the line between humans and things” making it “increasingly difficult to discern where the human body ends and the non-human thing begins”, “so that we delegate action to external things (objects, tools, artifacts) that in turn share our human existence with us”, with this “hybridization” in turn necessitating “treating people as things”, however stating that “instead of treating people as means, we can improve their lives by recognizing their part-thingness and respecting them as things” (Magnani, 2007, *preface*, pp. x-xi). This position has created some controversy, to which Magnani has responded by clarifying that we must “respect [not treat] people as things” “only when things are already endowed with an ethical value, and sometimes endowed with much more ethical worth than humans” (Magnani, 2010, p. 162).

Also, consider that children are often killed and violated just because of the needs of “things” to which we have attributed too much ethical value (capitalistic profit, for example, to use an old-fashioned socialist idea). So I answer: we have to respect people at least to the same degree that we respect some “sacred” things. For now we are very far from this target (Magnani, 2010, p. 163).

Magnani simply holds that “human beings must be respected as we now respect many things; people deserve, at the very least, the same level of care we now lavish on library books” (Magnani, 2007, pp. 20-21). A sentiment more strongly represented by Martin Luther King, Jr.:

I am aware that there are many who wince at a distinction between property and persons – who hold both sacrosanct. My views are not so rigid. A life is sacred. Property is intended to serve life, and no matter how much we surround it with rights and respect, it has no personal being. It is part of the earth man walks on; it

is not man (King, 2011, p. 58).

Things, property, technologies and narratives *serve the living*. That is their purpose, as given in their origins as construals and employment as moral mediators. Reminding persons of this fact is the rationale behind crafting the claim that we must respect persons (at least as well) as things. There is certainly nothing controversial here.

Rather, what is controversial is admitting that things *are* valued above living, breathing human beings. For instance, in war, immoral treatment seems justifiable, with the value of life relative things like “oil” and “economy” turned upside-down:

Wars compel cultures to acknowledge that they attribute greater value and respect to tanks and technological weapons (and the all-encompassing commodification of human needs) than to an intact natural community of living plants, animals, and human beings (Magnani, 2011, p. 232).

As we have seen, people tend to insulate themselves from such uncomfortable realizations, embubbled in justificatory language like “Axis of Evil” and narratives like “they hate us for our freedom.” “War violently kills human beings, and this fact is too horrific for some people to accept when faced with it”, so they maintain their ignorance by “building an emotional firewall” behind which they “regress into a sort of psychological refuge from the horrors of war”, thereby keeping war “out there” (Magnani, 2011, p. 232). For direct agents of war, soldiers and mercenaries, this process is also aided by recent advances in technology, such as remotely controlled missile carriers which insulate the killer/operator from her/his violence behind a computer monitor within an air conditioned concrete bunker, “death by joystick”. Magnani analyzes this condition in terms of “bad faith”, wherein people dislocate the source of valuation from selves to some realm of ideals, valuing themselves in terms of narrative roles to which they give themselves over, for example transforming good democratic citizenship into blind support of the military and its dependent corporations or transforming military valor from courage under fire to faithful disregard for “collateral damage”, thus insulating themselves from criticism, “and more importantly, from responsibility for actions undertaken *as that role*”, by creating “a safe external entity that cannot participate in their own identity”(Magnani, 2007, p. 136). After an afternoon of air-conditioned murder, the killer/operator in the above example simply jumps into her/his SUV and goes home, an exercise in bad faith only possible through recent technological advances. Thus, aided by technology, persons make bubbles of themselves, become things, and so, rather than actively constructive *homines poietici*, become “mere objects of their own evaluation”.

Consider in this light the ubiquitous distinction between public and private life whereby a person does things at work that he might not do otherwise. Classic examples include the politician war-criminal claiming that “everything we did was legal”, and the foot-soldier that he was “only following orders”. Contrast this with that example of a person who does what he loves to do, and fulfills that role as a life of art and practice. Socrates, for example, famously went home rather than follow orders to arrest a man on trumped up charges so that his wealth might be seized, and the man executed. In the latter case, this person is not his role, but rather the role is himself. He is doing what needs to be done, and in this way is a means to others’ happiness, to their ends. However, there is no bad faith. He has not made a bubble of himself, but rather refused to enter one with others. Thus, we may fully grasp the respect due to human beings *as things*, because, as this example illustrates, the thing - a role, job, office, etcetera - is itself a human being, and can only ever *be* a human being. “If we fail to associate external things’

positive qualities with the person, if we do not ‘respect’ the human being as a means/thing, then we do not recognize that instrumental condition as incorporating ends in itself” (Magnani, 2007, p. 136). Indeed, respecting people as things is a moral necessity.

The “instrumental condition” is simply the fact that human beings are able to act towards the realization of constructive projects, create order. Where this inherent potential is leveled to the potential of any valuable thing, like a library book perhaps valuable but essentially not able to act in the realization of constructive goals, then the value of work is lost. The value of work does not reside in the product, but in the realization of the self as the work is done. *One’s self is one’s own greatest life’s work*. Also the most difficult. Perhaps this is why so many prefer to live in bad faith, while others fail due to what Kant calls weakness of will, “To will is present with me, but how to perform I find not”, ultimately the failure to gain the knowledge necessary to do the job that needs to be done, and why Magnani maintains that “appropriate ethical knowledge and proper moral reasoning are the basic conditions for maintaining freedom and taking responsibility for our actions”, the foundations of moral life and ultimately why he holds that knowledge is a duty, especially the self-knowledge to overcome “the lack of knowledge” due to bad faith that exists as “a blind spot in one’s knowledge of oneself” (Kant, 1898, p. 217, Magnani, 2007, pp. 221 and 249). This is also why models of self-construction are so important, to serve as technological *ego-* and *ecopoietic* mediators in the crucial yet difficult task of becoming “good” persons, perhaps even rendering the solution transparent.

In this direction, Luciano Floridi extends his “3C model”, suggesting that it accounts for the deepest difficulties in reasoning about the self, namely that a self is experienced as one self over time, perduring through changes, retaining integrity, and is capable of self-reflection whereby it becomes an object of self-evaluation. The 3C model grounds the emergence of selves in corporeal processing (chemical), from which arises cognitive (sentience, awareness), and finally conscious processing (self-awareness). Each sphere of processing supervenes on the last, delimited by “membranes”, as “the self emerges as a break with nature”:

Each membrane, and hence each step in the detachment of the individual from the world, is made possible by a specific, auto-reinforcing, bonding force. The corporeal membrane relies on chemical bonds and orientations. The cognitive membrane relies on the bonds and orientations provided by what is known in information theory as mutual information, that is the (measure of) the interdependence of data (the textbook example is the mutual dependence between smoke and fire). And, finally, the consciousness membrane relies on the bonds and orientations provided by semantics (here narratives provide plenty of examples), which ultimately makes possible a stable and long-lasting detachment from reality. At each stage, corporeal, cognitive and consciousness elements fit together in structures (body, cognition, mind) that owe their unity and coordination to such bonding forces. The more virtual the structure becomes, the more it is disengaged from the external environment in favor of an autonomously constructed world of meanings and interpretations, the less physical and more virtual the bonding force can be (Floridi, 2011b, p. 560).

Crucially, in light of preceding discussion, though “each membrane contributes to the construction of the self”, “inextricably mixed together to give rise to a self and its personal identity”,

[...] this truism hides the fundamental fact that, once a membrane is in place, the

particular inside that it detaches from the relevant outside becomes conceivably independent of the previous stages of development. It is correct to stress that there is no butterfly without the caterpillar, but insisting that once the butterfly is born the caterpillar must still be there for the butterfly to live and flourish is a conceptual confusion. There is no development of the self without the corporeal and the cognitive faculties, but once the latter have given rise to a consciousness membrane, the life of the self may be entirely internal and independent of the specific body and faculties that made it possible. While in the air, you no longer need the springboard, even if it was the springboard that allowed you to jump so high, and your airborne time is limited by gravity (Floridi, 2011b, p. 561).

Floridi is describing nothing less than self-embubblement in fairy tales, to which we may respond in like terms. Certainly, the butterfly is no longer a caterpillar in our eyes, but doesn't a single thread of physical information underwrite both entities? Certainly, airborne we forget the springboard, but failing to recall our origins in that weightless instant in the end transforms us only into a tragic mess in the dirt, *anagnorisis*. We can also certainly allow that the "consciousness membrane relies on the bonds and orientations provided by semantics", of which narratives are prime examples, but, morally speaking, do we really want our moral fables to encourage "a stable and long-lasting detachment from reality?" Where there is smoke there is (often) fire, but this is not for the sake of a message. It is simply a fact of matter.

4. Non-violent Transformation of Self and World

"Very well," replied Ivan, "you need not become soldiers unless you wish to."

- Leo Tolstoy, *Ivan the Fool*¹⁷

Floridi's approach invites a slippery slope dislocation of valuation hardly "suited to our realities as informational agents and patients" and hardly providing for "responsible stewardship in the world." Moreover, to forge an ethics on the disengagement "from the external environment in favor of an autonomously constructed world of meanings and interpretations" is only to proliferate bubbles. Disorder. We have seen how such a move is spontaneous, and why it may even seem appealing, entropically embodied as we are, but fairy tale happy endings exist, sadly, only in fairy tales, and ultimately, all returns to ground.

We are left with *anagnorisis* - which is to require that one first create a bubble of himself, only then have it unexpectedly popped, an experience perhaps fruitful but better off avoided - or Magnani's approach, creative abduction engaged with the world and with a "well fed mind", wary of embubblement. In the latter spirit, in my own work, I have developed the ACTWith model, inspired equally by bottom-up hybrid neural network models, complex/dynamic systems, traditional moral philosophy, and neurology - especially social cognitive neuroscience, empathy and mirroring (White, 2006, 2010, in press, forthcoming). Space forbids complete exposition, but it is detailed in other vehicles, so here will note only those ways in which the ACTWith (As-if Coming-to-Terms-With) approach, representing the bare minimum moral architecture, mediates *self-poiesis* sans tragedy. It is a situated, embodied and embedded information processing framework composed of a four-fold cycle - As-if (closed) coming-to-terms-with (closed); As-if (open) coming-to-terms-with (closed); As-if (closed) coming-to-terms-with (open); and As-if (open) coming-to-terms-with (open) - with the open "as-if" operations feeling a situation out, and the open "coming-to-terms-with" operations defining

the situation accordingly, an affect-first self-as-future-conditional model of agency retaining practical wisdom as its limiting condition. As in Floridi's model, integrity is ultimately a matter of embodiment. But, two important differences bear highlighting in the present context. First, in order to properly evaluate mirrored/empathized information, information is fundamentally understood in natural energetic/metabolic terms. Second, these ontic grounds discourage embublement and encourage "conscientiousness", habitual openness to self and others, as information crucial for solving life's most difficult problems (for example, the *ego-* and *ecopoietic* problems reviewed throughout this paper) is most efficiently collected thereby, and having done so, the risk of *hamartia* is reduced. Tragedy avoided.¹⁸ Representing the essential, embodied social nature of moral cognition, emphasizing the guiding resource that is shared experience, the ACTWith model both reinforces the threads of moral philosophical tradition that bind ancient tradition with cutting-edge science and technology, and extends this technology in an accessible form for active self-construction. It does so by extending a pattern of information processing essential to moral cognition, and as agents match this pattern, it serves as a technological mediator of *self-poiesis*, thereby rendering moral solutions transparent. Thus, facilitating the non-violent constructive transformation of self, the ACTWith model is an example of ICTs "significantly affecting who we are, who we think we are, who we might become, and who we think we might become."

But, what of narratives in light of which each one of us makes sense of it all? As we have seen, narratives represent the ordered spaces of information in terms of which one lives, dies, succeeds or fails, and so provide crucial support in the realization of personal identity.

We usually see our own lives and those of others as a series of narratives, and we "continually reinterpret and revise our narrative self-understanding". For example, we scroll through our cache of stories to find one that can best clarify the moral problem at hand and that we can reconcile with our self-representations and ideals (Magnani, 2007, pp. 177-178).

Our final problem is to find a narrative mediator for moral self-construction so that, fully informed of this potential, we can best determine our characters, good or evil. Scrolling through the cache of stories reviewed so far, we have already glimpsed such a narrative, in the illustration of a universal plane of moral order representing a low-energy stable state of maximal potential energy.

This picture is inspired by the narrative in terms of which Socrates makes sense of his environment, of himself in it, and of his interactions with and within it. In the *Gorgias*, Socrates maintains that language should be used to get rid of injustice (Plato, 1987, 480d) rather than to "scheme" for selfish enrichment at the expense of others,(481b), that bad leaders use language in the former mode, making people evil and encouraging bubbles, while good leaders in the latter even if it means telling people what they don't want to hear, (503a-) Callicles – an upstart politician of the former mode - poignantly objects "won't this human life of ours be turned upside down, and won't everything we do evidently be the opposite of what we should do?"(481c) Socrates affirms this, noting that Callicles is in a state of internal "dissonance", bad faith, pretending it just to do injustice (482a-c). Callicles denies this, maintaining that it is natural for the more powerful to take from the less powerful (483d), and, foreshadowing the most tragic instance of affirming the consequent in the history of future-conditionals, that only a "slave" (prisoner) would not do similarly if able, "one who is better dead than alive" (483a,b). Socrates then forces Callicles to confess that doing for one's self at the expense of others is unnatural, but

that fairness is, and that we ought to be fair (488e-489a), thereby popping his moral bubble. At this perceived violence, Callicles notes that Socrates lives outside of the reigning moral bubble of political opinion, issuing the veiled threat that some evil man might drag him back in to be judged in those embubbled terms (521c), to be imprisoned by those terms, with Socrates expecting that, as he aims for what is best rather than making people happy (521e), “it wouldn’t be all that strange if I were put to death” (521d). Finally, Socrates recounts the fable that brought him to this position. This fable establishes a beacon at the endpoint of life, a plane of moral judgement marked by the necessary three points for a geometric plane, represented as judges, from which two roads proceed, one down, to tragedy and *anagnorisis*, and one up (524a). On that field, all are judged outside of their moral bubbles according to evidence of their moral lives, whether seriously “warped” from life in a selfishly confined moral bubble, or “straight” from a life on a level plane of universal moral law, terms by which Socrates feels he will be judged favorably.

Socrates’ chosen fable helps him become “the most just man in Athens” in “a stable and long-lasting detachment” from the political reality of bad faith because it sets out the terms from which he acts, to which he aims, and ultimately for which he dies, thus serving as a mediator of moral self-construction ensuring against *hamartia* and *anagnorisis*. Living as if on a level plane of justice, Socrates remains an inhabitant of the ethosphere writ large, resisting embubblement through work, philosophy, and thereby providing through fairy-tale example the support we need to effect the nonviolent transformation of the world. He does effectively affirm the consequent of his life as a future conditional. But, don’t we all? And, if this is our greatest moral sin, it is also that which makes us most worthy.

5. Concluding Remarks

One’s self is one’s most important life’s work, but it is also the most difficult. In no small part this is due to the importance of the product, nothing less than one’s only self. Working with the right information, towards the right ends, aided by technology, the product of a life’s work is a just human being. This is a life worth living. Poorly informed and misdirected, one may suffer a tragic irony, to have acted with best intentions only become a very bad person, for it is truly terrible when one judges his entire life wrong. Moreover, as the world we build is as well the product of our actions, actions the effects of which are amplified by technologies designed to carry our intentions, to act on bad information is to risk a tragic end for not only one life, but for us all and everyone yet to come. Should we have no desire to suffer twice, both in our personal realities as well as in retrospect, looking back on the wreck made of the Earth through lifetimes of collective bad action, tools for the non-violent transformation of self and world must be our highest priority.

The conceptual tools necessary to effect constructive change to moral ends of both self and world was this paper’s central focus. We began by briefly reviewing Luciano Floridi’s information ethics. Four interconnected issues, arose – self-determination, moral valuation, entropy and narrative. We found that Floridi misplaces the source of moral valuation away from human beings, that the entropic base of his principled ethics is inconsistent in both assertion and application, and that his appointed pattern for effective self-realization is a path not only avoidable, but better off avoided. Granted that self, world, and their revolutions are best understood informationally, we found resources to understand Floridi’s “infosphere” as an “ethosphere” in Lorenzo Magnani’s cognitive niches, and tools to effect the transformation of infosphere to ethosphere in his moral mediators. With these came an understanding of human

beings as entropically grounded creators of order whose fundamental tool (and weapon) in the creation and maintenance of said orders is the prototypical ICT, language. Through Magnani's work in moral bubbles and insights into non-violent social change, we came to realize the power of myth to shape our lives, as well as our active role in the creation, maintenance, and reformation of said myths, their limits, and the ends to which they bring us. Finally, then, we were able to see how Floridi's 3C model fails to adequately represent moral self-development in a way that serves to mediate moral self-determination in actual moral subjects. In the last section, we briefly reviewed a model of moral cognition that does not suffer the shortcomings of the 3C model, and took a fresh look at an old fable, one which, when freely chosen, sets terms to shape a moral life into a just man. With a just world in sight, we must only get there.

Though we have the capacity to construct our own selves, our world, and the myths in light of which self and world all make sense, choosing the right story, and living accordingly, is a most difficult task. Luckily, we have the resources in moral philosophers, moral exemplars, and their guiding narratives with which to begin, and are gifted with the technological accumen to design the tools to get this most important work done. Hopefully, the preceding paper helps to set us on the right path in both efforts. In the end, what we do at this point, fully informed of possibilities and fully capable of realizing them, will determine who we become, good or evil.

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1 Magnani, 2007, page 165.

2 At 4:53.

3 These ideas play a central role in self-determination via the ACTWith model as articulated in 2006, and are more fully developed in my forthcoming book *The Mechanism of Morality* (White, forthcoming).

4 <http://presscore.ca/2011/?p=4637>

5 Kant, 1898, page 174.

6 Note the telling physical metaphor, “falls”, as in entropically spontaneous.

7 http://mlk-kpp01.stanford.edu/index.php/resources/article/annotated_letter_from_birmingham

8 Magnani, 2007, page 164.

9 <http://georgewbush-whitehouse.archives.gov/news/releases/2001/09/20010920-8.html>

10 <http://news.bbc.co.uk/2/hi/1971852.stm> All of which sharing a common yet unstated condition, no private central bank, a condition since rectified in all but three.

11 <http://www.iraqbodycount.org/>

12 <http://www.globalresearch.ca/articles/HAS506A.html>

13 <http://www.guardian.co.uk/world/2010/dec/30/faulluja-birth-defects-iraq>

14 http://www.iaea.org/newscenter/features/du/du_qaa.shtml

15 <http://politicalticker.blogs.cnn.com/2011/02/20/rumsfeld-wmds-werent-only-reason-for-war-in-iraq/>

16 Moreover, the arguments deploying this bad information were themselves fallacious, by Magnani’s analysis exhibiting fallacies of four forms “generated by a constitutive lack of any process of self-corrective cognition” - i) the appeal to authority (faulty), ii) the unquestioned referral to habits of thought (mixed with a lack of evidence and a barrier to alternative analysis), iii) flawed and merely persuasive reasoning (not seeing weapons seemed to provide evidence that Iraq had them), iv) minimal role of empirical evidence (further explained away as denial and deception or discounted because it did not support the habitual knowledge of a robust and active WMD capability). (Magnani, 2007, pages 156-7)

17 Tolstoy, L., 1917, chapter 11, paragraph 17.

18 Here, it may also be noted that conscientiousness and openness to experience are associated with myriad positive factors, including for example higher cognitive ability (Sharp et.al., 2010), longer life span in greater health (Kern and Friedman, 2008), and decreased depression (Ayotte et.al., 2009), while greater prefrontal integration of brain hemispheres (represented in the ACTWith model’s two basic operations in the open-open mode) is associated with greater agreeableness and sociability (Hoppenbrouwers et.al., 2010).