> As engineers, at least as engineers of nuclear weapons, we have become omnipotent – an expression that is little more than a metaphor. But as intellectual beings we do not measure up to this omnipotence of ours. In other words: by way of our technology we have gotten ourselves into a situation in which we can no longer conceive (*vorstellen*) what we can produce (*herstellen*) and bring about (*anstellen*). What does this discrepancy between conception (*Vorstellung*) and production (*Herstellung*) signify? It signifies that in a new and terrible sense we "know no longer what we do"; that we have reached the limit of responsibility. For to "assume responsibility" is nothing other than to admit to one's deeds, the effects of which one had conceived (*vorgestellt*) in advance and had really been able to imagine (*vorstellen*). (Anders 1972, 73 f.)

Günther Anders reflects here the incommensurability or absolute disproportionality between the scale of human action and the scale at which its effects unfold. In one size regime occurs a perfectly conceivable technical malfunction or a human reaction to a perceived threat, something that is firmly rooted in our experience of the phenomenal world. In quite another size regime there is the perfectly predictable, yet utterly inconceivable end of humankind. When Günther Anders elaborated his distinction between *Herstellen* and *Vorstellen*, between technological reach all the way to human extinction and the failure of imaginative control to keep up with this, he repeatedly placed it in the context of Kant's philosophy. Kant's critique was to have shown how our intellectual capacities are limited, but Kant did not, could not foresee that certain possible effects of humanly produced nuclear technology cannot be accommodated within the limits of phenomenal experience and understanding but transgress or exceed them altogether (Anders, 1972, 33 f., 38, 73).

Anders wrote in 1956 that in a "new and terrible sense" we no longer know what we do. He is not referring therefore to the familiar and ubiquitous unintended consequences of human action, including technological intervention, and he is also not referring to our cognitive limitations when it comes to surveying all the effects of our action. What he terms new and terrible is precisely that humankind is pursuing a technological vision which asks for technology to get out of control, which works best as a deterrent when its threatened effects appear totally unmanageable. What was new was the calculated intent to produce an absolute incommensurability between a calculable balance of arms and the incalculable end of civilization.

Anders thus distinguished the practical inconceivability of the infinitely long chain of effects that follows upon any human action, from the absolute inconceivability of the infinite magnitude of the single, perfectly predictable, and immediate effect of a nuclear attack. Genetic engineering, nanotechnology, and smart environments involve a similar incommensurability. For these noumenal technologies it results from the fact that their indefinitely near- or medium-term agency is shielded from our sensory modalities, that their operations are absolutely small or absolutely large, discontinuous from our ordinary ways of establishing relative size. To the seismic movements of nature that may eventually produce an earth-quake, human engineering is thus adding further causal processes that operate behind our backs and may or may not produce catastrophic consequences of their own.

> At least we should try […] to assume the magnitude of that which we bring about in the world. […] Today's "*malum*" is essentially different from that which has dominated the European tradition, namely the Christian conception of "evil." […] *What makes us bad is*

> *that as agents we do not measure up to the products of our deeds*. […] *The gap* is therefore not that between mind and flesh but *between product and mind*. Example: We can produce the bomb. But we appear to be incapable of imagining what we have become as owners of our products and what we can do and have already done as their owners […] This difference is unique in history, and thus unique also in the history of ethics. […] Due to this being a failure of the imagination, what is "weak" here is the "mind." (Anders, 1972, 34–36)

After stressing that we no longer know even what we have initiated deliberately, Anders speaks here of the weakness of the mind. Both of these formulations point at what I have here called noumenal technology that in essential respects fails to be an object of experience and understanding.

5 Fears of Alienation vs. Globalization

Günther Anders's diagnosis of the new 'malum' figured prominently in his critique especially of nuclear technology. The present discussion so far suggests a perhaps more general critique of noumenal technologies, namely that it is regressive somewhat along the lines suggested by Bill Joy and others (Joy, 2000). Where Joy appears to worry also about the physical survival of the human species, Anders had already pointed out that we cannot take responsibility where we cannot conceive what we bring about in the world. Indeed, Joy's question why the future may not need us concerns our abdication of autonomy and responsibility rather more urgently than physical survival. Where technical advance and a continuous trend towards miniaturization introduces a discontinuity that renders the world less transparent and diminishes the reach of control, this so-called progress should be criticized as actually regressive in that it leaves us in a state of nature vis-à-vis the consequences of our own technical interventions. This is a critique no longer of what we do to nature in the name of social and economic control. Instead it is a critique of what we do to ourselves as we surrender control to pervasive technical systems. If concepts of alienation or ecological integrity can inform the critique of nature technologized, concepts of globalization and colonialism might inform the critique of technology naturalized (see Nordmann, 2005c).

Along with a different kind of critique comes a specific kind of fear. The classical project of nature technologized provoked a fear that found countless expressions in literature and philosophy, in the works of Lewis Mumford and Herbert Marcuse, Martin Heidegger or Michel Foucault, namely the metaphysical fear of the machine that imposes its demands and absorbs into its system all of nature, including human nature. In contrast, technology naturalized rekindles our oldest and perhaps deepest metaphysical fear of brute, arational nature that has not been cultivated, rationalized, tamed, domesticated and that now confronts us in the unlikely guise of technology. Both kinds of fear are unspecific and therefore tend to be viewed as paranoid or irrational. At the same time, considerable public expenditures are laid out to prevent the supposedly irrational fear of genetically modified foods possibly being transferred to nanotechnological devices. If it turns out, however, that genetic