
Letter to the Editor

Tukker, A. and M.Cohen. 2005. Letter to the editor responding to T. O'Brien's letter regarding Tukker and Cohen's (Summer 2004) "Industrial Ecology and the Automotive Transport System: Can Ford Shape the Future Again?" *Journal of Industrial Ecology* 8(3): 14–17.

We appreciate Tim O'Brien's thoughtful response to our commentary and welcome the opportunity to expand on some of our initial remarks. We fully acknowledge here, as we did in our initial article, that O'Brien was asked in his formal presentation to discuss the revitalization of the Ford Rouge Center and not larger issues pertaining to corporate strategic planning. At the same time, the issues of facility redesign and product improvement are not as separable as he suggests. From the standpoint of systems innovation, it is meaningless to talk about Ford's commendable accomplishments modernizing its outdated industrial plant without considering the performance characteristics of the product manufactured there.

The essence of O'Brien's comments only serves to strengthen our impression that it will be difficult to reach a common vision. We are nonetheless hopeful that it will be possible to make some progress bridging this impasse. About this we will have more to say toward the end of our discussion. Let us first provide some clarification on the specific points that O'Brien makes:

1. With reference to Ford's improvements over the past three decades engineering lower emission vehicles, we respectfully submit that these accomplishments have been the result of clean air requirements imposed by government mandates and they are not the result of strategic innovation. At the same time, these air quality standards have been imposed across the board on all automobile manufacturers and attainment does not, at least to our minds, speak to any special capability on the part of Ford. Moreover, the scale and rate of technological change over this period pales in comparison to the design advances Ford pursued during the first third of the twentieth century.
2. It is noteworthy that Ford allocates half of its research budget to improving the environmental and energy implications of its vehicles, but these expenditures do not appear to have played much of a role in the development of the Hybrid Escape. The gasoline-electric engine with which the Escape is outfitted is licensed from Toyota and is identical to the equipment that powers the Japanese automaker's Prius. According to industry sources, this agreement helps to establish Toyota's technology as the automotive standard.

Issues at this level, however, are not foremost on our minds. Moreover, they did not serve as the primary inspiration for our earlier article. As industrial ecologists and scholars of sustainable innovation, we find it hard, in the absence of radical reinvention that overcomes manufacturers' steadfast commitment to mass transport by private automobiles, to be sanguine about the future of the contemporary mobility system.

Despite current enthusiasm for hybrid technology (and we could add to this other ideas both new and old such as diesel engines, biofuels, and hydrogen fuel cells), we should not delude ourselves. These innovations represent incremental improvements that do not change the essential configuration of the system. The Hybrid Escape may look like a gateway to a new future, but we should remember the vehicle still uses more gasoline per mile than a conventional fuel efficient car. We are reminded of a cynical comment that one of us overheard during a recent conference: "If you ask the automobile industry to describe the elements of a sustainable transport system, you can be sure of one thing-it will have four wheels."

It has no doubt become a cliché to encourage managers to "think outside the box" and we are naturally reluctant to go down this road. Nonetheless, we honestly believe that companies such as Ford need to challenge themselves and to envision drastically different mobility systems, and to redefine their roles in these terms. We do not intend to suggest that this, by any means, is an easy job, but it is essential. If we cast an eye to where such reenvisioning is most robustly taking place we are necessarily led to companies such as Shell where managers are preparing the company for a future in which half the energy carriers will increasingly be non-fossil fuel based. In similar terms, Nokia, a company that was once mainly known for manufacturing rubber boots and truck tires, has made an astonishing number of strategic readjustments and has proactively adapted itself to new demands and opportunities.[1]

All of this brings us to the point where Ford and the industrial ecology community might go from here. We would like to take this opportunity to proffer the suggestion that the automobile company and a small group of industrial ecologists form a joint task force to discuss issues pertaining to systems innovation and what it might mean for the future of mobility. Obviously, the mechanics of such an endeavor would need to be mutually worked out, but we are convinced that some compelling insights, of interest to both sides, might spring from such a partnership.

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1. For details on the history of Nokia see <http://www.nokia.com/nokiahistory/index.html>.