From the Internal Combustion Engine to Hybrids and Beyond: The Canadian Auto Industry and Disruptive Technologies

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“Ballard fuel cells set for U.S. program (Globe and Mail 2005a: B17)

“Hybrids put Toyota ahead of the pack” (National Post 2005: FP6)

“Canada is fortunate to be early out of the gate on hydrogen and fuel cells. Canadian companies like Ballard, Hydrogenics and Stuart are global leaders in the search for new energy solutions” (Office of the National Science Advisor 2004: 2).
I. Vehicle assembly in the United States and Canada
2. Auto Industry R&D on Alternative Fuels
   2.1 Fuel Cell Vehicles
   2.2 Hybrid Vehicles
   2.3 Auto Industry R&D in Canada and Canadian auto industry capacity with respect to “disruptive technologies”
3. Canada’s Fuel Cell Sector
4. Government Support for Disruptive Technologies
5. Conclusion
ARGUMENTS

(a) Foreign ownership of the Canadian auto assembly sector;

(b) Limited R&D in the Canadian assembly sector and the character of that R&D;

(c) Leading edge research, on hybrids and fuel cells, is held close by the assemblers, and is taking place at corporate headquarters;

(d) Canadian fuel sector firms partnering in R&D with the assemblers, are working with these head offices;
(e) Canadian governments (federal and Ontario) have been slow to promote connections between the two sectors;
(f) Provincial government priorities for the hydrogen economy are broad and while Ontario’s includes the auto industry, this is not the sole focus;
(g) North American assemblers were caught off-guard by the emergence and popularity of hybrid vehicles and are playing catch up with their Japanese competitors around this transition technology;
(h) The Canadian parts sector is heavily dependent on the so-called ‘traditional North American assemblers – Ford, General Motors (GM) and Chrysler, now Daimler/Chrysler and generally has short time horizons;

(i) Vehicle specific parts for hybrid vehicles are currently available only in Japan;

(j) Canadian parts firms have little comparative advantage in those parts which are unique to and important for hybrid vehicles;