BENGT-ARNE VEDIN

With an Afterword by
DR. HENRIK BLOMGREN

THE *Design-Inspired* INNOVATION WORKBOOK

World Scientific

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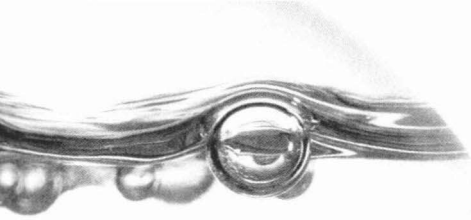

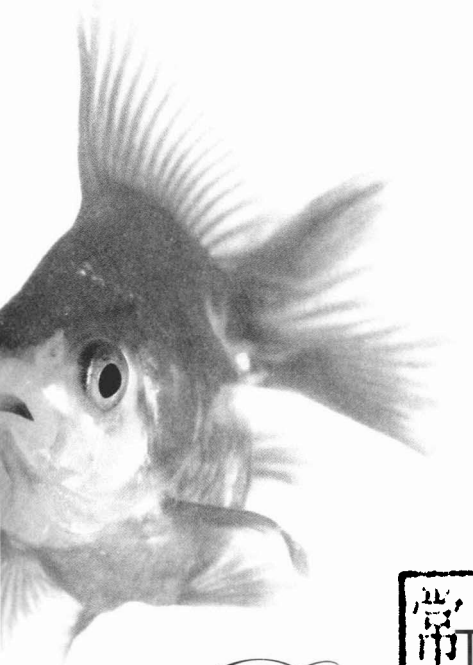

THE *Design-Inspired* INNOVATION WORKBOOK

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CONTENTS

Chapter 1

PROLOGUE: INSTANCES OF DESIGN — CASE STORIES

There is a world of fascinating designed objects, services, experiences, and emotions, and a host of wonderfully illustrated books on the subject. This chapter presents only a random few, with the idea that they serve as a backdrop for the remainder of the book. So they should function as the props of a scenery to be revealed, a reasoning to come — function as triggers for reflection, and stimulants to further ideas. And objections!

To be continued... the Vigix story

In *Design-Inspired Innovation,* Vigix founder and book co-author, Eduardo Alvarez, told the story about his business idea, and the associated product. The idea was to develop a system for the rental of DVDs that would require no human involvement; everything in the transaction would be handled automatically by a machine. To achieve maximum convenience, much-frequented locations would be preferable, thus where space is at a premium. Ergo: the machine must have a small footprint and be inexpensive, and also easy, fast, and inexpensive to re-stock. Together with design consultancy IDEO, Alvarez developed a scenario

for how a family en route on the highway to some distant destination was halting at a Vigix kiosk to rent a DVD to keep the kids happy, the DVD to be returned by mail later.

To achieve user friendliness, Alvarez has a principle – a concept must pass a critical test group of one: his distinctly un-nerdy mother in Mexico. Yes, the concept did indeed pass that critical "My Mom's Test"!

The problem of high reliability for DVD delivery from the machine led to a breakthrough, a key invention, resulting in a patent application. The method, the technology for letting the customer receive the DVD, turned out to be a generic one, not applicable just for DVDs. Remarkably, it is a system without any moving parts – reliability to a fault – and much of the whole system revolves around this breakthrough.

So what happened to Vigix? Where is it today?

Alive and kicking, thank you. The concept has rounded out with sophisticated software for controlling a network of Vigix kiosks – and as so often with new ideas, Vigix is developing along a different trajectory from the one initially foreseen. Distributing DVDs may not be such a big market, with broadband Internet transmission as one of the alternatives. Instead, the generic technique for dispensing a product automatically from a mechanism, maybe a kiosk, opens up a host of opportunities, the correlation being that kiosks may be loaded and re-loaded by ordinary deliverymen from the likes of UPS or Federal Express. Among such opportunities, the Vigix home page lists prepaid mobile phones and accessories, which may be generalized to other electronic gears such as iPods; print media such as maps, books, and magazines; event tickets;

Figure 1.1.

greeting cards; and more. As we can see from Fig. 1.1, the Vigix kiosk is designed to occupy about the same space as a person.

MIT and personal transportation

At the annual Buckminster Fuller design competition, the winners in 2009 were a group from MIT, who presented an entire system for personal transportation, Mobility-on-Demand. The concept holds that there should be a number of docking stations (racks) for the storage, retrieval, and charging of the electric vehicles that constitute the system hardware. There are three types of vehicles, envisaged to cater to

different transportation ranges – a scooter, a bike (possibly electric), and a minicab (Fig. 1.2). Their availability is monitored and their utilization managed by a computer system connected to those docking stations, also allowing users to reserve a vehicle from a net-book or a cell phone (Fig. 1.3). This computer management includes charging and acquiring payment for usage.

As can be seen in Fig. 1.4, the scooters, with electric motors fully integrated into their wheels, as well as the minicabs, are collapsible, making for compact storage. Safety, convenience, and comfort figure prominently – and fun as well. We can happily read in the presentation

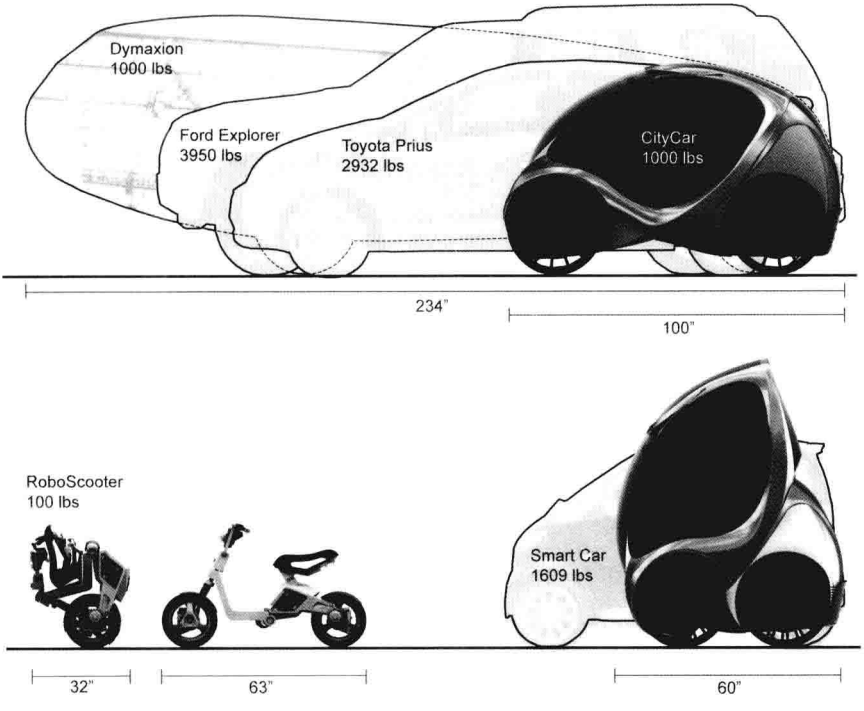


Figure 1.2. CityCar and RoboScooter Footprint comparison

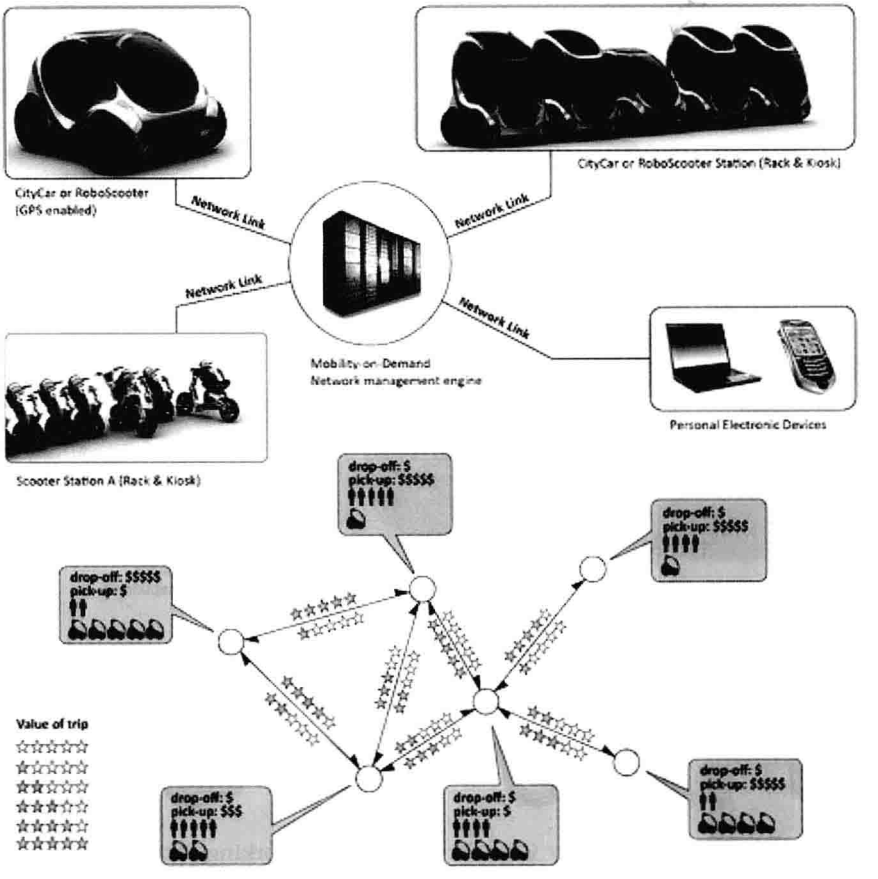


Figure 1.3. Availability and utilization monitored by a computer system

"In-wheel motors offer an example of *design-inspired innovation*" (emphasis added). Those CityCar fully integrated in-wheel electric motors and suspension systems eliminate all need for traditional drive trains like engine blocks, gearboxes, and differentials; braking and steering is likewise included. The wheels can be re-directed omni-directionally (that is, 360°), allowing for extreme maneuverability.

Figure 1.4. CityCar Chassis – Full Scale Working Prototype

Merry furniture

The Spanish design firm Merry seems to specialize in absolutely intriguing, playful designs (appropriate company name, no?). Here is a dish inspiring you to take a (another) bite (Fig. 1.5); a zip lamp, where you control how much light to use by zipping up and down (Fig. 1.6); and you must admit that the little end tables (Fig. 1.7) are absolutely charming, because they are anthropomorphic, no? – not, for a Swede, the ordinary IKEA frugality.

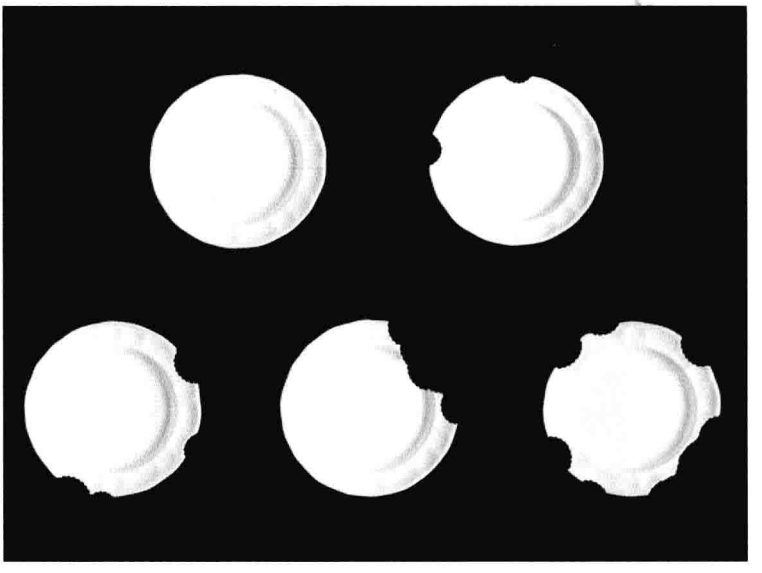


Figure 1.5.

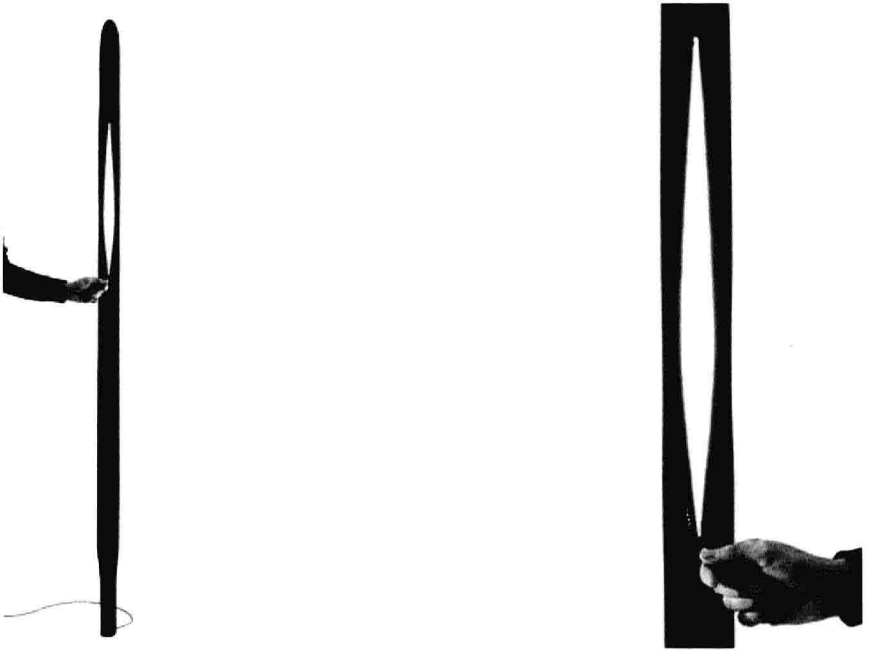


Figure 1.6.

Figure 1.7.

Nike+ into the shoe

Nike engineers, possibly inspired by the fact that in marathon races, runners are equipped with chips that help time them, discussed and brainstormed future intelligent running shoes. Runners often listen to music while jogging, relying upon an MP3-player like the iPod. Perhaps an iPod should be integrated into the runner's shoe?

One of the Nike designers had worked for Apple for a long time, so a contact between the two companies, and the relevant teams within them, came naturally. Together, they concocted storyboards telling how intelligent shoes might run, where one metaphor was 'the shoe speedometer,' recalling that initially, cars had no speedometers but now, of course, a car without one would be unthinkable.

Nike had come up with a sensor, but Apple took over that responsibility, miniaturizing and perfecting this component. Nike focused on the shoes and also on the interfaces to the iPod and the Web. Thus, the end result was a *system*, creating a log for the jogger as well as allowing her to hook up to an Internet community. In August 2008, Nike organized "the Human Race" in 25 cities around the world. There, runners could participate, individually, everywhere and not just in those cities, running 10 km and uploading their data to Nike. All in all, almost 800,000 people took part in that run. Of course, the community is open to more or less ingenious initiatives, such as people challenging each other: "first to 100 miles," "don't miss doing three workouts a week," "beat *the average per km time* for your age group" (not *everyone* can do that)...

For an individual running, the Nike+ helps keeping track of distance, speed, and may also help establish the route covered with the aid of maps on the Internet. The gadget may intercept the jogger, prompting if she sags and also activate some exciting music if such might be called for. Already a long time ago, biomedical research had established that the time that a runner's foot is in contact with the ground is inversely proportional to the runner's speed, independent of stride or slope. This had been frowned upon as not terribly exact, but turned out to hold well within error margins sufficient for the Nike+ function, a research discovery fundamental to the gadget's design.

The Nike+ consists of just three parts – an accelerometer, a transmitter for communication, and the necessary battery (Fig. 1.8). It has to fit into a shoe so shoes must be prepared with a small compartment

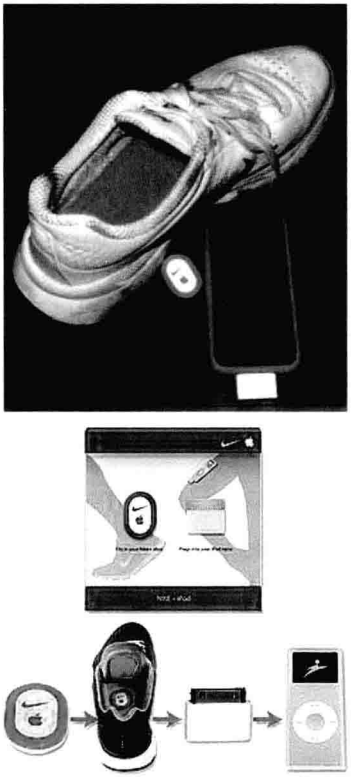


Figure 1.8.

for the Nike+ (Fig. 1.9). There is no heart rate monitoring, and no GPS tracking of the course run – that has to be done on the Nike web site. This equates with a lesson Nike learnt from Apple and the iPod: simplicity, focusing on user experience.

Nike has learnt a lot from users and their behavior. Not every runner has an iPod, so the alternative is a bracelet monitor (Fig. 1.10) where the data collection part is detached after the run and fit into the USB port of a personal computer. Data can then be uploaded to the runner's

Figure 1.9.

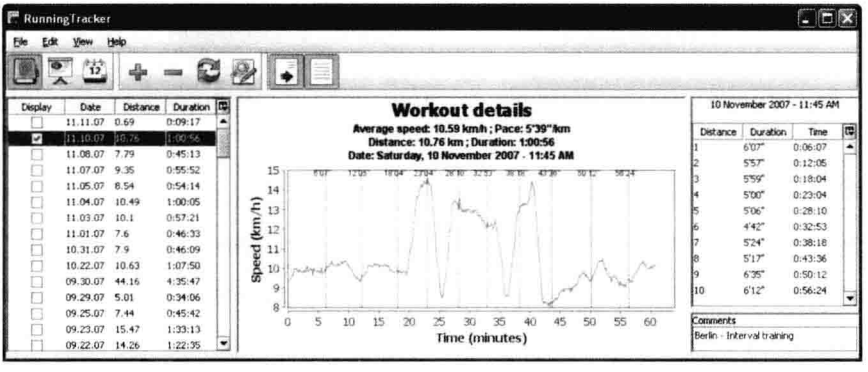
Figure 1.10.

personal file at the Nike+ site. On the site, the runner may follow her progress, establish goals, and compare with other runners or statistics of various types. One of the lessons for Nike was that people may try and test the site a few times but if they have logged on five times, then they are hooked and have become regulars. Or, perhaps, this reflects the positive habit-making effect that running – at least five times – has had on the individual?

As with the iPhone App Store, independent developers have established themselves, with open source initiatives such as Neki++ and freeware Running Tracker, making the user independent of the Nike+ site (Fig. 1.11). And for those who wish, Twiike can post their running data directly on to Twitter. Traditionally, Nike has been eager on patent protection but now seems to look rather positively on open source as a mechanism to enlarge the Nike community and thus the brand's appeal. Also traditionally, Nike focused on physiological needs — with Nike+ it is aiming at psychological and social demands, and, well, the *meaning* of running.

Shimano (re-)invents bicycle coasting

In *Design-Inspired Innovation*, we credited Shimano with having been instrumental in establishing "mountain bikes" as a market of its own, not by attempting to elbow itself into the place occupied by entrenched bike



Analyze and **compare** your Nike+ workouts with Running Tracker !
Import your existing workouts directly from the Nike+ website
Import your workouts from your iPod Nano
Analyze and compare your workouts
Generate graphs and statistics

Figure 1.11.