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Hyundai Motor Company: Design Takes the Driver's Seat

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Hyundai Motor Company: Design Takes the Driver's Seat

PROLOGUE

FIGURE 1. Headquaters of Hyundai Motor Co. (right) and Kia Motors Co. (left).

Two skyscrapers rise side by side near the entrance of the Gyeongbu Expressway, South Korea's Route Number 1, connecting Seoul, the country's capital, and Busan, the country's second-largest city and the one with the biggest port. The taller one is the headquarters of Hyundai Motor Company, and its shorter companion represents Kia Motors Company (Figure 1). They are owned by the same parent company, Hyundai Motor Group.

Route 1 is now the most heavily travelled expressway in Korea, but building it required some vision. In the mid-'60s, with South Korea still climbing painfully out of its postwar miseries, there were only about 100,000 cars registered in the country. With all the work that needed to be done, why did South Korea construct a new and expensive road? After all, there was already a railway line betwen Seoul and Busan. Moreover, the price of the construction represented easily 10 percent of the Korean national budget, and thus many people were opposed to the new expressway. Despite all this, then-president Park Chung-Hee pushed ahead with construction by mobilizing three army corps of construction engineers and 16 private construction companies, including Hyundai Engineering and Construction (the Hyundai Motor Group's precursor[1]), which undertook 40 percent of the construction work. Chung Ju-Yung, Hyundai's founder and first chairman, was a key player behind the construction, receiving direct orders from the president and helping see to it that the Gyeongbu Expressway was successfully completed in spite of Korea's undeveloped construction technology and mountainous terrain. The project helped to revitalize the Korean economy. It also

[1] In 2003, Hyundai Group was divided into two sectors, each with its own chairman: (1) Hyundai Motor Group (Hyundai Motor Company and Kia Motors Company), Hyundai Mobis, Hyundai Wia, and others and (2) several non-automotive firms, including Hyundai Merchant Marine, Hyundai Securities Co., Hyundai Engineering and Construction, and others.

accelerated the development of its automobile industry. Now, almost 40 years after the Gyeongbu Expressway's final segment was finished, there were more than 17,000 cars in South Korea, and nearly 80 percent of them were manufactured by Hyundai Motor Group. Chung Mong-Koo[2] was now serving as chairman of the company.

In August 2009, Hyundai Motor Group appointed Chung Eui-Sun to the vice-chairmanship. Chung had been working for Hyundai Motor Group since 1994 and had served as president of Kia Motors for four years. He held a bachelor's degree in business administration from Korea University and an MBA from San Francisco State University. Chung had done good things for Kia. Despite its robust technical capabilities, Kia had suffered in global competition, and Chung had seen, correctly, that this was because the company's products lacked a certain emotional appeal. His first act as Kia's new leader was to establish a design-centered corporate culture, and he hired Peter Schreyer, former chief designer for Audi and Volkswagen, as a vice president and the company's first chief design officer. Kia opened a design R&D center in Frankfurt in 2007 and a year later opened a second design studio in Irvine, California. The innovative design that took place under Chung's direction boosted record sales of the Forte Innovation, the Soul, the Sportage R, the K5, and others. In 2009, by the time Chung Eui-Sun left to become Hyundai's vice chairman, Kia's design management had gone beyond simple product design and was fast becoming part of the firm's overall strategy.

Chung's move from his old office to the new one in Hyundai headquarters spanned only a few hundred meters, but the change in his responsibilities was huge. He was now squarely in charge of sales and planning for Korea's largest automaker—and the fifth largest automaker in the world.

[2] Chung Mong-Koo is Chung Ju-Yung's son and Chung Eui-Sun is Chung Ju-Yung's grandson.

The cars on the Gyeongbu Expressway were flying now. Time would not stand still either in the ever-intensifying survival game known as the world automotive market. Could he bring his design management focus to the parent company?

Building Cars, Building an Industry

In South Korea in the early 1960s, the automobile industry was an industry of dreams, to say the least. For one thing, most Koreans could barely afford a car (as late as 1971, per capita GDP in Korea was only $302.23). As mentioned, there were only about 100,000 cars (largely, of course, imported) registered for a population of nearly 30 million. On top of that, many of the industries necessary to produce automobiles did not exist in Korea. Consider that a car consists of more than 25,000 types of component parts, from the braking, steering, and suspension systems to the seats.

But the Korean government decided to cultivate an automotive industry as its growth engine. The idea was that the mass production of cars would jump-start a whole raft of related industries, thus accelerating the nation's economic development. In 1962, President Park Chung-Hee announced the first in a series of five-year economic development plans. One of its major objectives was the activation of the automotive industry through assembly of imported knock-down vehicles. One month later, the government formulated the Motor Industry Protection Act, which prohibited the importation of foreign-made cars until 1967. The act also encouraged the establishment of several big automakers in order to prevent the over-crowding of small assembly plants in the industry. Subsequently, small firms merged, and the predecessors of the Korean Big Three were established during this time. Kia Motors was established in 1962, and Shinjin Motors (the predecessor of Daewoo, purchased by General Motors in 2001) was created in 1966. In 1967, Chung Ju-Yung founded Hyundai Motors.

Hyundai had an agreement with Ford Motor Co., at that time the largest automobile manufacturer in the world, to assemble and produce the Ford Cortina. In preparation, Chairman Chung dispatched technicians to Ford headquarters in Detroit to acquire the technology needed for component manufacturing. Within seven months, Hyundai had successfully constructed its own assembly line, releasing its first Cortina in November 1968.

FIGURE 2. The Pony (1975-1982), the first automobile independently developed and mass-produced by Hyundai Motor Company.

In 1969, continuing with its plans for the automotive industry, the South Korean government announced a goal of developing 100 percent domestic models within 10 years. By 1972, President Park was supporting volume production of major parts and components, including engines and chassis. Serendipitously, in that same year Ford decided to end its partnership with Hyundai, and Hyundai as a result found itself in an ideal position to launch the production and development of its own automobile model.

Hyundai had no experience in designing its own model, however, and therefore it still needed a close collaboration with foreign automobile manufacturers. Japan's Mitsubishi Motors Corp. agreed to joint development of a power train and chassis, and the styling and design of the body were entrusted to Giorgetto Giugiaro's Italdesign Giugiaro. Hyundai dispatched a team of five engineers to Italy for a year to learn to design new models and to acquire the necessary product-development experience. In 1974, Hyundai submitted a prototype to the Turin Auto Show and two years later began to produce the Hyundai Pony (Figure 2).

With the production of the Pony, South Korea became the sixteenth country worldwide and the second country in Asia, after Japan, to produce its own automobile models. Thanks to its trendy wedge-shaped body design, the Pony was very popular not only in South Korea but also in Latin America, the Middle East, and Africa. By 1983, about one million Ponys had been sold.

Meanwhile, however, the second oil crisis, in concert with the sudden death of President Park in 1979, had produced a recession in Korea, and this decreased the demand from the Korean domestic market. To overcome these difficulties, the new government formulated a plan to prevent the overlapping of businesses in the marketplace. The intent of the measure was primarily to encourage specialization by each automaker, reducing competition in the domestic market and eventually increasing the competitiveness of each company in the world market. The upshot of this was that Hyundai and Daewoo were now strongly supported in producing passenger cars, while Kia was forced to withdraw from that sector until 1986, specializing instead in minivans and trucks.

By 1997, South Korea had become the world's eleventh-largest economy, twice the size of Russia. Although nations such as Thailand, Indonesia, Malaysia, and the Philippines were facing devaluations and severe stress to their economies, South Korea was thought to be safe from the contagion. However, this turned out not to be the case. Many of the country's companies had expanded their businesses by acquiring debts from banks, and the government's foreign exchange reserves were exhausted. South Korea faced what is now called the IMF (International Monetary Fund) economic crisis.

Kia Motors was at the brink of bankruptcy and experiencing severe labor disputes, and

was destined to be disposed of through international bidding. In September of 1998, Hyundai Motor Company beat out international competitors to acquire Kia and its affiliated companies. Hyundai chairman Chung Joo-Yung stepped down from his position in favour of his son, Chung Mong-Koo, who had led the bidding process for Kia, and by September 2000, the Hyundai Motor Group had been officially established through the acquisition of Kia Motors.

Meanwhile, a new democratic government, completely free from military influences, had relaxed its regulation of the manufacturing sector. Korean automakers were no longer supported by the government as the nation's growth engine. Hyundai had to learn to develop competitive new models with reasonable prices and high value-added features. They needed to offer something extra if they were to fully overcome the challenges they had been facing in the second half of the twentieth century.

A Quality Upgrade

In the automotive industry, quality and reliability significantly determine success. One of the first and biggest challenges Hyundai had to overcome was the perception of Korean cars as third-rate products that had been forced to compete on low prices to compensate for lower quality. Although the company had consistently pursued technological innovations—Hyundai's 1991 Alpha engine was the first automobile engine ever designed in Korea—the promotion of Chung Mong-Koo to chairman in March 1999 brought great improvements in quality management.

Chung Mong-Koo had been with Hyundai Engineering and Construction since 1970 and had worked in most of its major divisions, from materials to planning, management, and sales. Diverse practical experience and broad knowledge had convinced him that unless quality improved, Hyundai would always be hampered in its quest to become a globally competitive company.

"Our cars will sell when the quality is high," he was fond of saying. "That's the only way we will truly compete and succeed in the domestic and the international markets against foreign-manufactured automobiles." To say he was detail-oriented would be an understatement, and he didn't mind getting his hands dirty. On a visit to Hyundai Motor's main production facility in Ulsan, Chairman Chung thoroughly examined inside the hood of the Sonata model that was nearing completion, discovering a wealth of bolts and screws painted in various colors. He thought this looked crude and disorderly and ordered on the spot that all of the fasteners be plated with black chrome. This change involved an additional cost, but kept the components from rusting and offered consumers a feeling of neatness and organization. One of Chung's innovations was the establishment of a Quality Management Division to which on-site problems could be reported, suggestions made, and response made immediately. The division's 24-hour quality situation room allowed the establishment of a system in which problems arising in 150 countries around the world could be immediately reported to headquarters and swiftly solved.

ENGINE INNOVATIONS

Quality is closely related to technological prowess—it can only be improved when it is supported by powerful technology. Moving away from its technical dependence on Mitsubishi, Hyundai Motor had started its own engine design with the 1991 Alpha 1.5-liter (which debuted in the S-Coupe), adding the Beta 1.6-liter, 1.8-liter, and 2.0-liter engines four years later. The Epsilon 0.8-liter engine (which debuted in the Atoz) came in April 1997, the V6 Delta 2.5-liter engine (in the EF Sonata) in February 1998, and the Sigma 3.0-liter engine (in the Grandeur XG) in September 1998. Finally, Hyundai had its own line of engines. Indeed, seeing an opportunity to outclass competitors in manufacturing engines—essentially the heart of an automobile—Chairman Chung suggested in a management planning meeting in January 2003 that Hyundai should "aggressively apply new technology when it is determined to be necessary, even when the cost is high," further

encouraging R&D and especially engine development research.

With the CEO's support, Hyundai upgraded its engine technologies and started achieving global recognition. In 2005, the company developed the medium-sized Theta engine (2.0-liter and 2.4-liter), which was upgraded in terms of performance, fuel efficiency, noise, and exhaust emission level. The Theta was selected by the Global Engine Manufacturing Alliance (a joint venture of Chrysler, Mitsubishi Motors, and Hyundai Motor Company) as the foundation for a line of shared engines—and the source of $57 million in licensing fees for Hyundai. This first engine export suggested that Hyundai's engine technology had been globally acknowledged.

In addition, as it began to develop its larger premium models, Hyundai created a 125-member research team in 2003 and introduced a V-type 8-cylinder engine, the Tau, in 2007. It was mounted in the Genesis and Mohave (Kia) cars, which were exported to the US in 2008, as well as the new Equus announced in March 2009. *Ward's Auto* put the Tau on its list of the 10 best engines in 2009, 2010, and 2011.

ALTERNATIVE FUEL TECHNOLOGIES

Hyundai Motor was not left behind in the global quest to reduce pollution and explore alternative fuels. It developed an electric version of the Sonata, with a built-in compression cell, in 1991, and a solar-powered model in 1994. The company also produced Korea's first domestically developed hydrogen fuel vehicle in 1994. In February 2003, in response to tougher regulations and reduced fuel supply, Chairman Chung promoted environmental management as a core business strategy, establishing the Hyundai Kia Automotive Research Institute of Environmental Technology two years later, in 2005. The institute develops technologies for hybrid, hydrogen, and electric vehicles and also researches more ecologically friendly methods of manufacturing, as well as scrapping and recycling car parts.

Hyundai launched the world's first mass-produced hydrogen fuel cell car in early 2013. The Tucson ix boasts a proprietarily developed 100kW fuel cell system and a two-tank hydrogen storage system that makes mileage of up to 594 km possible with a single hydrogen charge. Hyundai claimed that this car would demonstrate technological prowess and manufacturing know-how at least two years in advance of vehicles from global competitors such as GM, Mercedes-Benz, and Toyota.

BUILDING ON A SOUND FOUNDATION

Chairman Chung wanted Hyundai to make cars that were known for their durability and reliability. The company's focus has now shifted to "secondary quality management" —by which Hyundai means optimizing usability from a consumer perspective by flexibly integrating vehicle systems with "smart" electronic controls to increase comfort and manoeuvrability.

Becoming a Dual Brand Company: Hyundai and Kia

Although Hyundai Motor Group had grown rapidly with active investments in new technologies and quality management, Chairman Chung Mong-Koo saw that the company had to focus on improving its brand value beyond quantitative growth in order to become more globally competitive. Thus, in September 2004, Hyundai Motor Group established a Brand Steering Committee to strengthen brand management capacities and develop a brand evaluation system, as well as long-term brand strategies. Chairman Chung also made brand management the cornerstone of his 2005 New Year message. The long-term brand strategy was a consumer-focused attempt to strengthen marketability and design identity while taking advantage of technological prowess.

Beginning in the mid-2000s, competition between Hyundai and Kia cars positioned in the same class—for example, Hyundai's Tucson and Kia's Sportage—had become more severe, both domestically and globally. After all, Hyundai and Kia had shared an

R&D department ever since Kia had been acquired in 2000. In order to prevent market cannibalization, Hyundai Motor Group began to differentiate Hyundai's and Kia's brand identity and target markets. Hyundai was positioned to appeal to career-oriented, upwardly mobile consumers with a brand image that said "refined and confident" and a new brand slogan: Drive Your Way. Kia, in contrast, narrowed its focus toward the younger generation, searching for an "edgier" persona and a brand image geared toward "exciting and enabling."

Design Takes Center Stage

Hyundai's first design department had been created in 1974. Located at the company's Ulsan factory, it gradually grew in size along with the company's capabilities. By 1990, as development began on the Hyundai S-coupe, a blind comparison of designs by ItalDesign and Hyundai's own design team (led by Park Jong-Seo, who ran the design department from 1979 to 2004) resulted in a surprising win for the "home team." This made the S-coupe the very first mass-produced car designed by Korean designers.

Renewed confidence in Korean design led to the 1990 establishment of an American design center in Los Angeles (it is now located in Irvine, California). The first large-scale project to come out of that move was a concept car, the HCD-1, which was designed by Oh Suk-Geun (at the time a senior designer in the California center) and other US designers. The HCD-1 won Concept Car of the Year honors at the 1992 Detroit Auto Show and became the basis for the Hyundai Tiburon, released in 1996.

By that time, Hyundai had also opened another design studio in Frankfurt, Germany, with the goal of designing cars that would specifically appeal to European market needs. Essentially, Hyundai now boasted a triangular design network for the major target markets of Korea, America, and Europe.

In 1996, Hyundai's management elevated the status of the Namyang design center into that of a "design institute," which implied much more strategic power. Similarly, its directorship was elevated to executive status. By that time, Hyundai was employing about 200 designers and engineers at Namyang.

When Kia was acquired in 2000, the design organizations of both companies were placed under the design division of the Hyundai Automotive Research Center in Namyang and managed as interior and exterior design teams comprising 300 employees. However, the independent brand strategies of the two companies eventually led to the separation of the design institutes in 2004. (In fact, Chairman Chung Mong-Koo prohibited personal exchanges between the two institutes in the hope that they would develop unique identities.) As a result, sales of Hyundai cars continued to grow and the company continued to differentiate itself from Kia.

Meanwhile, the 2009 promotion of Chung Eui-Sun as Hyundai Motor's new vice chairman heralded a new focus for design at Hyundai. One thing—possibly the main thing—that Vice Chairman Chung brought with him from Kia was a focus on design management. Soon after he arrived, Chung visited Hyundai's Namyang Design Center and had lunch with 100 employees, including all the highest-level designers and the director of the center, Oh Suk-Geun. The new vice chairman arrived with a stack of copies of a book by Robert Brunner and Stewart Emery—*Do You Matter? How Great Design Will Make People Love Your Company*—and handed them out to everyone in the room. His advice: "Let us contemplate how Hyundai Motor Company can be like Apple and make products that customers love."

Another significant change: When Chung Eui-Sun took over as president of Kia, he had made the unprecedented decision to recruit a distinguished foreign designer to head up new design initiatives. Now, instead, he turned to Namyang's Oh Suk-Geun.

The Birth of a New Design Philosophy: Fluidic Sculpture

Executive Director Oh Suk-Geun had been the head of the Namyang Design Center since 2007. He had joined Hyundai Motor in 1984 and in 1990 had opened Hyundai's US-based design facility in Los Angeles as its senior—in fact, its only—designer. In an effort to get to know the American market better, Oh swiftly hired three American designers. The Hyundai brand was fairly weak in America, which actually struck the American design studio as an opportunity; it really had a fairly wide space in which to design.

With the rapid growth in sales throughout the world in the late 2000s, management began to call for a unique enterprise-wide product identity: a "family resemblance" that would be shared by all Hyundai vehicles and an appearance that would say to casual observers, "There goes a Hyundai."

In accordance with the necessity of distinguishable design identity, by 2007, Oh Suk-Geun had developed a design philosophy he called "fluidic sculpture": a marriage of nature and art that borrowed from sand-sculpted dunes, moving water, and flying birds—dynamic design that would make a parked car look as if it was still moving. This concept helped numerous internal designers (interior, exterior, color, and trim designers) to understand and share Hyundai's unique design language. At the same time, more than a year was spent in discussions among Hyundai's domestic, American, and European designers to narrow down what exactly they meant by those two words. Moreover, Hyundai strove to inject fluidic sculpture into the design process, as well as into the individual elements of design. For example, in the clay-model stage of the design process, rather than using the typical standardized templates, Hyundai modellers worked with the designers to develop more-dynamic, fluid body contours, using the clay medium almost as if it were sculpting material.

The YF Sonata, launched in the domestic market in 2009 and the American market in 2011, was the first Hyundai car to feature the new design concept, and it was a striking departure from the previous Sonata (see Figure 3). The 2009 model was actually the sixth generation of the Sonata, though only the fourth to be sold in the US. But the new design did not arrive without an argument.

FIGURE 3. The NF Sonata: fifth generation, 2006 (top), and the YF Sonata: sixth generation, 2009 (bottom).

The old Sonata was a car that had satisfied all the engineering issues. The new Sonata was a car that conventional Hyundai engineers had a hard time accepting. As Oh notes, "There was a constant tug-of-war between the designer who sought a smooth line by making the 'belt line' (the horizontal line that bisects the car's side) narrower, and the engineer who saw only limitations in internal visibility." However, it was clear that, at least in the US, the old Sonata had far too formal and conventional a look for it to really excite American consumers. Interestingly, although the dramatic design was more of a shock in the Korean market, Hyundai top management believed in its internal designers—rightly so, since the new Sonata was a great success. From the time of its launch up until May 2010, the Sonata sold a total of more than 5 milion units worldwide. In the US, in May 2011, monthly sales of the Sonata were higher than for any other midsize car. After the Sonata's successful launch, says Oh, "the engineers began to gain confidence in the opinions of the designers, and an

atmosphere of active support of realizing new designs through innovative technological development was formed."

The designers wasted no time in continuing on the fluidic sculpture theme.

A "family look" reflecting the elements of fluidic sculpture was to be maintained in all the Hyundai models (see Table 1). This was

TABLE 1. The definition of "fluidic sculpture" keywords and grille designs for its representative models.

Vehicle Design Concept		
Keyword (Model)	 Orchid Stroke (2009 YF Sonata)	 Wind Craft (2010 Elantra)
Keyword (Model)	 Grand Glide (2011 5G Grandeur)	 Aero Active (2011 i30)

Hyundai Family Look		
Grille Type	 Hexagonal Grille	 Wing-shape Grille

done by establishing a unique keyword for each automobile product line: Orchid Stroke (2009 YF Sonata), Wind Craft (2010 Elantra), Grand Glide (2011 5G Grandeur), and Aero Active (2011 i30). To consistently maintain the identity of the "face" of the car, automobiles below the SUV and compact classes were to feature a hexagonal grille, while grilles in midsize and larger models were to have a wing shape.

The more definite design philosophy contributed to innovative design within the engineering and other departments—and led to improvements, especially in collaborative processes between design and engineering. It was also a useful tool in effectively communicating Hyundai's new identity to consumers. Vice Chairman Chung made it a point to instill an understanding of fluidic sculpture in all of Hyundai's employees and actively supported its implementation. For example, sales employees were encouraged to explain the fluidic sculpture story to customers. Sales continued to rise.

As shown in Figure 4, Hyundai soon opened overseas design facilities in Japan (1995), China (2007), and India (2009). When a new model is slated to be developed, the design centers that will participate are chosen depending on the main target market. Vice President Oh believed that fierce internal competition was the shortcut to successful design development:

"*Superior design development competition among centers is always intense. Unlike the mobile phone industry, where all kinds of new products are developed, the automobile industry drills down to a single concept selected among the designs proposed by the hundreds of internal designers. Also, since only five new models are released each year, on average, the chance of your design being selected is fairly slim.*"

The final decision on a design generally goes to the Namyang Design Center, and although survey results from both domestic and international marketing teams are reflected, the excellence of the idea presented by the designer and conformity to Hyundai's design philosophy are the most critical factors that are considered in the design decision.

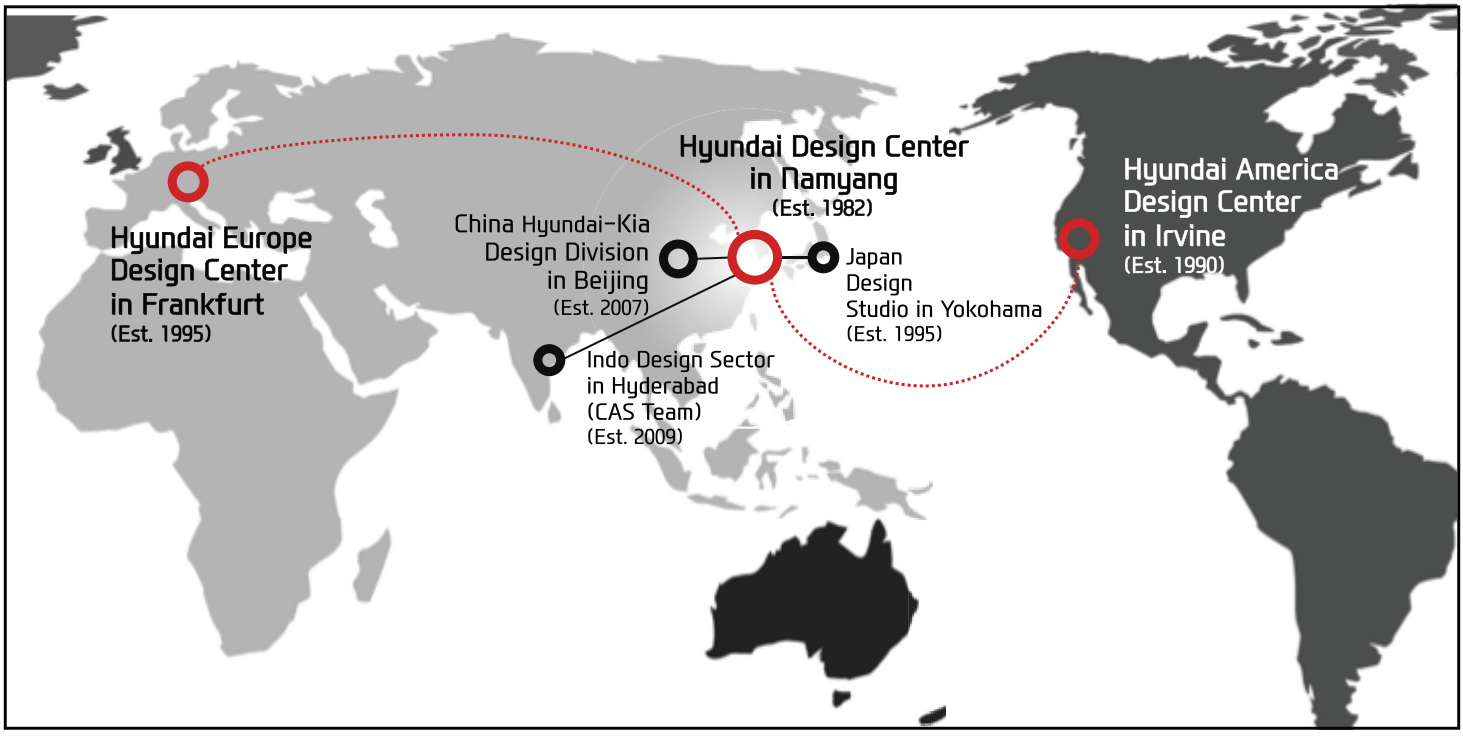

FIGURE 4. Hyundai's global design organizations.

As a result of these efforts, Hyundai Motor Company has received numerous international design awards. The YF Sonata received the Australian International Design Award (AIDA) in the Automotive and Transport category in 2010, and the Veloster (2011), Azera, Santa Fe Sport, Veloster Turbo (2012), and Santa Fe (2013) earned Good Design awards in the transportation category in America. Moreover, at the 2012 Detroit Motor Show, Hyundai Motor America announced its belief that design excellence had contributed 40 percent toward the greatly increased sales volumes of the YF Sonata and the fifth-generation Elantra, as compared with the sales volumes of previous models.

Becoming a Company "Loved by the Customer"

Hyundai had consistently increased its sale volume due to improvements in quality as well as its aggressive marketing activities (which included 10 years of warranty service and a prized slot for a commercial in America's Super Bowl). However, the Hyundai brand was still perceived as a purveyor of cheap cars. True, Hyundais were now seen as much more reliable than they had been in the mid-to-late '90s. People were still buying them, especially in the domestic market. But overseas, Hyundais were competing with many other brands, and the perception was that it was seen largely as a less-expensive "fast follower" alternative. By early 2010, Chairman Chung Mong-Koo had determined that a new brand management paradigm was necessary, one that marked Hyundai as more of a luxury brand than it had been before. Hyundai needed to be a market leader instead of a follower. And it needed to encourage its customers to really love the brand.

In January 2011, almost a year and a half after his arrival at Hyundai headquarters, Vice Chairman Chung Eui-Sun took the podium at the Detroit Auto Show and proclaimed "New Thinking. New Possibilities" as Hyundai's new brand slogan. Henceforth, at Hyundai, the brand would be thought of in two words: "Modern Premium." In spite of a volume brand, Hyundai provides premium experiences and values in the Hyundai way in order to connect with customers emotionally and make them feel proud of owing a Hyundai. In Korea, for example, in January 2011, the Hyundai Motor sales department introduced the idea of a test ride that came to the customer—rather than the other way around. Customers who called dealers with a request to try a Hyundai were visited by someone from the sales team who would actually bring the car to them. This service transformed the process of introducing new models and provided a new and premium service that consumers had never experienced. In every way, Hyundai tried to put across its goal to become a "lifetime partner" to its consumers.

Internally, too, Hyundai sought to drive a new comprehension of its premium brand. As Lee Keun-Young, head of the internal brand strategy team, pointed out, "Hyundai Motor Company is like a massive aircraft carrier that operates through numerous departments and people, so the ultimate goal of Modern Premium is difficult to attain without an understanding of the new brand direction by the internal employees. One of the main roles performed by our team is helping all the departments move in the same direction." To do this, the brand strategy team produced in-house training and promotional material and organized lectures given by international scholars on such topics as the market-driven company.

In addition, all kinds of campaigns to convey the idea of Modern Premium to customers have been organized and held by the brand communication team—from a "live brilliant" brand campaign ("Your life will shine with Hyundai Motor") to another celebrating "brilliant moments" ("Hyundai Motor will be with you in your brilliant moments").

The branding campaigns have had results. Interbrand now values Hyundai Motor at $7.5 billion in the 2012 Top 100 Global Brands, ranking 53rd (seventh in the automobile sector). Since Hyundai was first selected as one of the Interbrand's top brands in 2005 (ranking 84th with $3.5 billion), it has been

recognized as a rapidly growing company. Moreover, Interbrand has emphasized that Hyundai Motor Company is now attracting emotional purchasing with its transformation into a design-focused brand. In essence, the brand perception has now gone beyond a pure "value play" to develop a premium "halo."[3]

As for sales, in the first half of 2012, John Krafcik[4], CEO of Hyundai Motor America, noted that 221,070 Hyundai cars had been sold in America, overtaking even American brands like Ford—not bad in a market in which there is intense competition among more than 30 brands.

Case I. Hyundai's Elantra—the Fifth Generation

Named after *élan*—French for *spirit* or style—and the root of the English word *transport*, the Elantra compact car was Hyundai's first independently developed compact sedan, and it has been the company's longest-lasting automobile, continuously upgraded for more than 20 years since its launch in October 1990 (see Table 2). That first Elantra was a popular vehicle in Korea, pulling the highest sales volume of all cars in the domestic market in 1992 and 1993.

The second generation, launched in March 1995, was available as a sedan and a station wagon, and the domestic model was renamed Avante, after the Spanish word for forward. (The overseas model was still called Elantra). This second-generation Elantra was designed without the radiator grille that marked its predecessor, and the resulting curving shape of its front, as well as the flowing style of its body, made it even more popular with the domestic market.

A third generation of the Elantra was launched in April 2000; it was available as a sedan or a hatchback, mounted with either Hyundai's 1.5-liter Alpha engine or its 2-liter Beta engine and designed with a larger body and an edgier, straighter style. The fourth-generation model was launched in April 2006; this one came only as a sedan mounted with a 1.6-liter Gamma engine and a 2.0-liter Beta engine. It was clearly differentiated with a streamlined body shape featuring a dynamic "character line" (the line creased into the side of a car to give it visual interest) and headlights that slanted to either side. The interior space also became wider to improve passenger comfort.

Although more than 5 million Elantras of various generations had been sold in the domestic market as of July 2008, overseas sales volume was still somewhat low compared with other compact-class models such as the Toyota Corolla and Honda Civic, whose sales volume accounted for four times the Elantra's. Moreover, by the end of 2007, as competitors continued to launch new cars with more-advanced specifications and

[3] Interbrand (2013). Hyundai. Retrieved from http://www.interbrand.com/en/best-global-brands/2012/Hyundai

[4] John Krafcik resigned as CEO of Hyundai Motor America in December 2013.

TABLE 2. Changes in Elantra design from the first to the fourth generation.

	1st Generation (J1) (1990.10)	2nd Generation (J2/RD) (1995.03)	3rd Generation (XD) (2000.04)	4th Generation (HD) (2006.04)
				
Body Type	Sedan	Sedan/ Station wagon	Sedan / Hatchback	Sedan
Engine	1.5-liter, 1.6-liter alpha	1.5-liter alpha 1.8-liter beta	1.5-liter alpha 2.0-liter beta	1.6-liter gamma

improved performance, the development of a fifth-generation Elantra aimed at the global market became an imperative.

A SHORTENED DEVELOPMENT SCHEDULE AND A COMPETITION AMONG DESIGN CENTERS

The launch date for the new Elantra was originally planned for early 2012. However, the urgency of the project was such that Hyundai management decided to significantly advance that date to the second half of 2010. It was decided, too, that the new model would be mass-produced in Korean factories for the first time; good communication between development and production departments would keep quality high and reduce production schedules. At the time, the US arm of Hyundai had proposed a "facelift" design for the existing Elantra, which would secure a quick launch for the fifth-generation model in the US market. However, the designers at Hyundai Design Center felt that a truly innovative Elantra could only be born of a new design philosophy. Oh Suk-Geun proposed, and Hyundai management accepted, that his own idea of fluidic sculpture was most likely to produce a sporty car that would turn heads across the globe.

Fluidic sculpture had already been used as part of Hyundai's new design language. It was first expressed in the company's 2009 Sonata—after nearly two years of work on defining a design philosophy that could be shared throughout the company. Now, to come up with a winning design for the Elantra, Oh suggested that Hyundai should mount an internal competition between the company's domestic design base in Namyang and its US design center in Irvine. The design brief: "The Sportiest Car."

In order to meet domestic and American consumers' needs, Hyundai created two design teams of two or three designers each, one from Namyang and one from Irvine, to compete for the winning exterior design. Over three months, the two design teams came up with such good ideas that the company decided the final plan would incorporate the best of both concepts from both design centers, and appointed Namyang's senior designer, Koo Bon-Jun, to put it together. The two design centers agreed to continue to share ideas; in fact, one of the designers from Irvine stayed at the Namyang design center for some time developing the design concept. Senior designer Koo infused the design team with visions of racing greyhounds and fierce speed competitions as they worked on an external design that looked sporty

FIGURE 5. The exterior design of the 2010 Elantra (hexagonal grille).

and fast. The final design was developed based on the visual cue of wind-crafted aerodynamics incorporating a form, side, and stance suggested by the Korean designers, combined with an unprecedented hexagonal grille and a wheel-arch design proposed by the Californians. The designers emphasized more dynamic and refined images of this compact car through visualizing its sleek profile and sporty bodylines (see Figures 5 and 6).

Along with making it look sporty, it was also important to avoid making the Elantra look small. Hyundai was expecting young consumers to be their target market, and while these customers enjoy a sporty and fashionable silhouette, at the same time they want to emphasize that they are not necessarily driving a compact car. The character lines of the Elantra's profile emphasized a big look, with the sides of the top view stretching as far outward as possible. The Elanta's hood was made lower and the trunk higher to improve airflow and aerodynamics. Basically, this allowed the designers to keep weight in the car, but not at the cost of competitive gas milege.

The interior design brief stipulated "unprecedented design innovation." The first innovation the interior designers pursued was the idea of making the interior of an affordable small car attractive, surprisingly spacious, and futuristic (at least one designer imagined the interior controls of a space shuttle). Twenty renderings proposed from locations including both Namyang and Irvine were evaluated, and two of them—both from Kim In-Seop, a Namyang designer—were selected to be turned into clay models.

Kim had been with Hyundai since 2002, and he liked to bring new design ideas into his consciousness through overseas travel. A recent trip to Barcelona inspired some of his ideas for the interior design of the new Elantra. Kim had always been a fan of the architect Antonio Gaudi, and in Barcelona he had been able to enjoy the Art Nouveau design of Gaudi's Casa Milà. Its curved, wave-shaped external appearance and organically shaped chimneys reminded Kim of the layered sand dunes formed by the wind. Based on those inspirations, he suggested a dynamic, rhythmical interior design with an emphasis on fluidic contours, as well as an X-frame-shaped center fascia garnish.

OVERCOMING MANUFACTURING DIFFICULTIES

The design concept for the new Elantra was adopted at its final evaluation with the blessing of Hyundai's top management. In the run-up to actual production, however, considerable difficulties had to be overcome. The Elantra's original exterior design, which lowered the C-pillar line and raised the rear-door belt line in order to emphasize the sportiness of the design, caused some difficulties for back-seat passengers. To improve side visibility and create more space in the back seat, platform and package engineers were consulted, and optimum solutions were coordinated through several evaluation processes. Eventually, the C-pillar line was lowered by 45mm to keep the sporty body line suggested by the designers, and the floor of the body was lowered by 30mm to improve headroom; the car's wheelbase was also lengthened to give passengers more legroom. For their part, Hyundai's engineers convinced their designer colleagues to lower the original rear-door belt line to further improve visibility for back-seat passengers.

The interior design also presented some problems. The wind-sculpted center fascia was connected with the top crash pad and the bottom console solely by a single silver "garnish" with no parting line. The engineers asked the designers to split the garnish into two pieces because they were concerned that it could eventually break with the movement of the car. Not only that, but the garnish was challenging to mass-produce—it required a more-complex assembling structure in the factory. The designers really wanted their garnish, though. In the end, designer Kim In-Seop broke with precedent by visiting the factory floor—with a colleague from engineering to back him up. After much negotiation and discussion, a solution that satisfied both sides was eventually found.

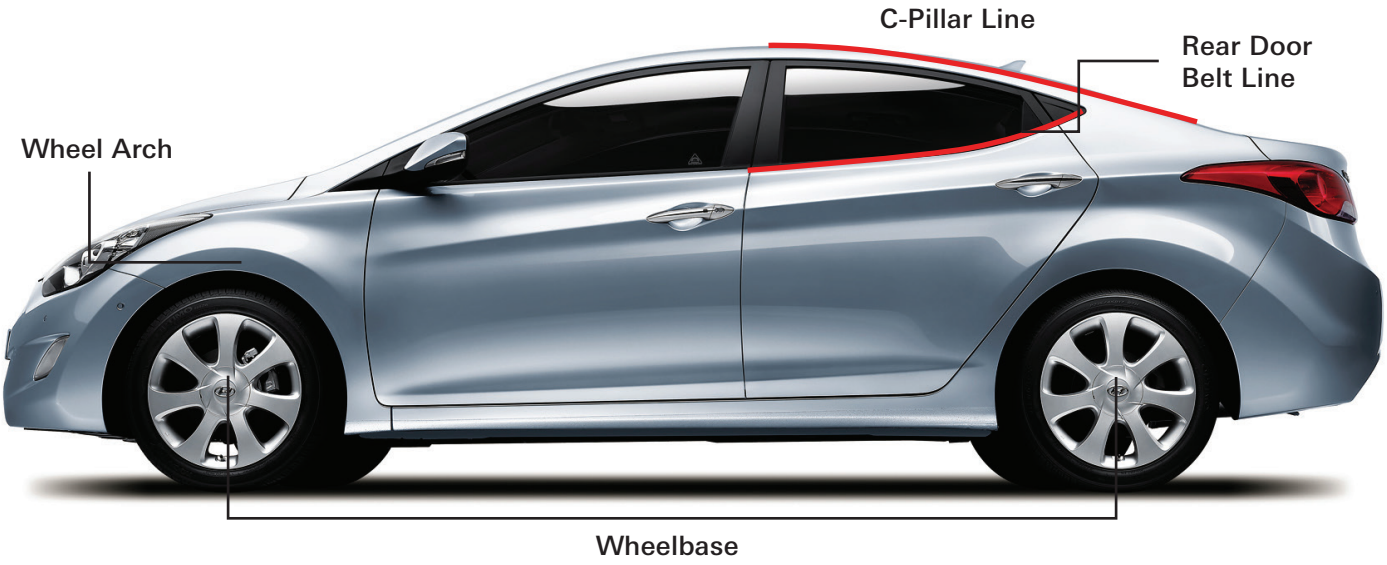

FIGURE 6. The C-pillar line, the rear door belt line, the wheelbase, and the wheel arch of the 2010 Elantra.

The interior designers also had to overcome problems with interior controls. Essentially, the cockpit design had forced the controls to be made smaller and more concentrated. As one solution to meet this restriction, the designers suggested a new user interface. For example, although it had been customary to have one control for temperature and another for the fan, the Elantra originally featured fan and temperature controls on the same knob (splitting the knob into two parts vertically, as shown in the inset in Figure 7).

According to *Consumer Reports* magazine's research, which was based on the comments of 100 test users who had been asked to drive an Elantra for a month,[5] levels of satisfaction with the Elantra's interior style and features were fairly high except in one respect.

Three of the respondents expressed dissatisfaction with the lower position of the center air vent. Although the air vent performed with no problem, its position made drivers feel they were lower than necessary when seated in the driver's seat. Hyundai raised the vent in subsequent models.

Decisions on the final interior design also featured the problem of high unit production costs because of the number of higher-quality materials required. However, with active support from Vice Chairman Eui-sun Chung, it was possible to persuade the relevant departments to maintain the original design concept all the way to actual mass production. As Kim In-Seop, now a senior designer, notes, "Because countless ideas from more than 30 departments, center heads, presidents, and the vice chairman must be collected in the process of deciding on the interior design, it is unusual for the original design to stay the same. Nevertheless, it was possible to maintain the original concept, thanks to an organizational culture that respects and encourages the mind and will of the designer in charge."

SUCCESS ON TWO CONTINENTS

Along with the YF Sonata, the fifth-generation Elantra was the sounding board for a full-fledged test of fluidic sculpture as a design philosophy—both domestically and abroad. Fortunately, it was an immense success. Launched in Korea for the first time in August 2010, the Elantra mounted with a 1.6-liter Gamma GDi[6] engine created a sensation by realizing fuel efficiency of 44.6 mpg—considerably better than for Toyota's

[5] The IQS (Interior Quality Standard) index is built on the opinions of 100 individuals who use a product for a given length of time. Dissatisfaction with the product is expressed as points.

Corolla or Honda's Civic. And its advanced and sporty design drove the car to become South Korea's best-selling automobile in 2011.

American consumers met the Elantra for the first time on November 18, 2010, at the 2010 Los Angeles International Auto Show. Subsequently, Elantra sales shot to 186,351 cars in the North American market in 2011—a 41 percent increase in sales volume from the previous year.[7] *Forbes* magazine named the Elantra as the bestselling car model worldwide for 2011. The Elantra also was named the 2012 North American Car of the Year and was awarded 2012's ALG Residual Value Award.

[6] GDi (Gasoline Direct Injection) is a variant of fuel injection used in modern two-stroke and four-stroke gasoline engines. It enables a stratified fuel charge ("ultra-lean burn" combustion) for improved fuel efficiency and reduced emission levels at low load.

[7] Ryan Beene, "Hyundai, Kia Set Annual Sales Records," Automotive News, January 4, 2012.

[8] The Veloster was firstly launched in the domestic market in 2011 and in the American market in 2012.

Case II. The 2011 Veloster[8]: a Stylish Car Aimed at Generation Y

The Veloster (derived from the word *velocity*) took its beginnings from the HND-3, a concept car developed in 2006 by Hyundai's Advanced Design Team as a "fun car for customers in their 20s and 30s." The third concept car developed by HMC's Namyang Design Center, the HND-3 was designed in consideration of lifestyles that include leisure activities such as skiing, board sports, and cycling—sports expected to be popular with the Millennial Generation in the years to come.

Interestingly, Hyundai chose four designers in the Gen Y age group to form the advanced design team that developed the HND-3—the idea being that they would naturally be tuned in to the spirit of the target customer. The original concept focused on coupe-style crossover utility vehicles (CUVs) and hoped to integrate those designs with the functionality of a hatchback. The design team worked with keywords such as *advanced, iconic, robust, confident,* and *good value*. Two plans were chosen in an early idea-sketching process

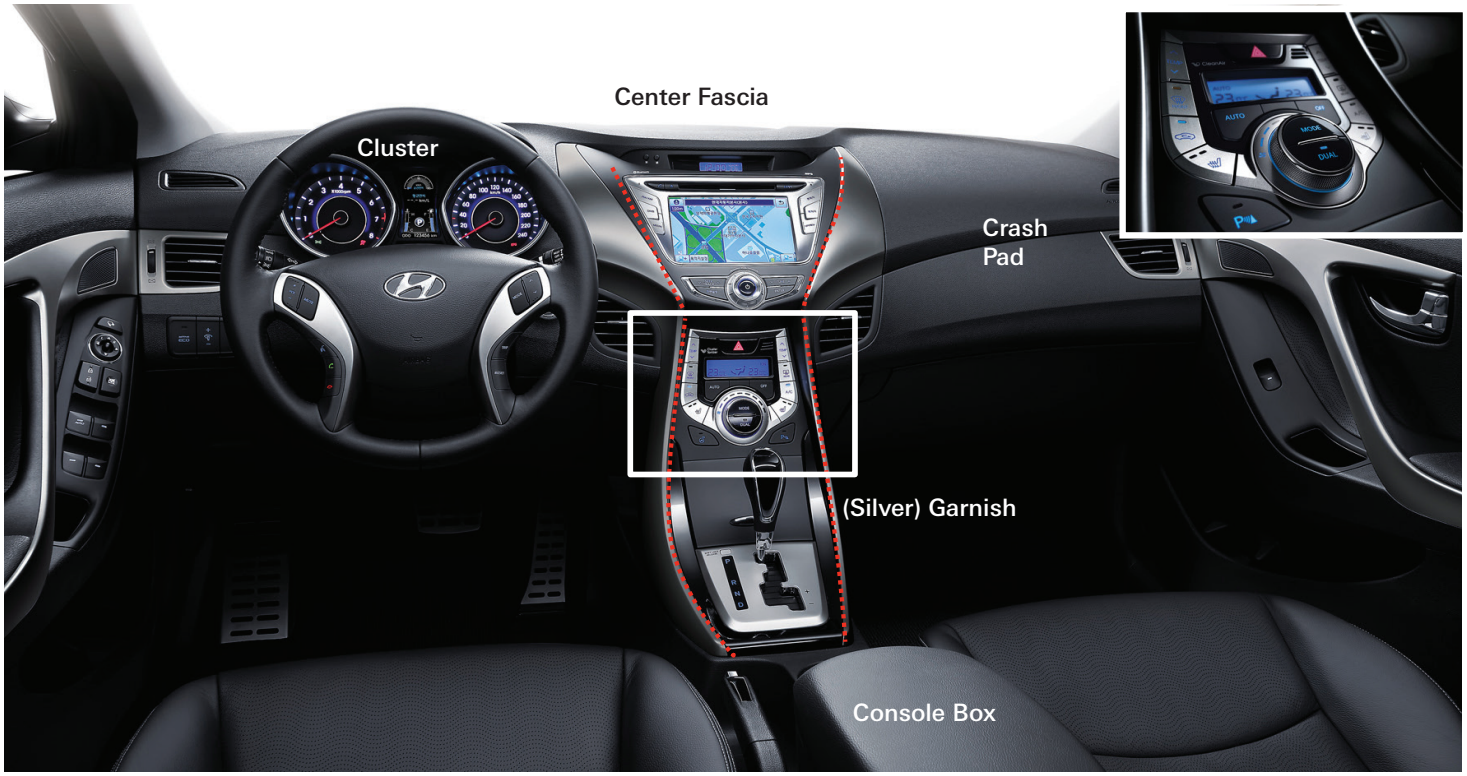

FIGURE 7. The interior design of the 2010 Elantra, featuring a center fascia with a silver garnish. Inset: the control knob for fan and temperature.

FIGURE 8. The HND-3 concept car (left) and its mass production model (right), Veloster.

and produced in clay models (1/5 scale). While one design was in the general coupe style with a sporty and sharp look, the other design visualized the cool feel of aerodynamic flow and caught the eye of Hyundai's newly appointed design director, Oh Suk-Geun, the architect of Hyundai's fluidic sculpture design philosophy, who directed that a full-scale model for the latter concept be made.

The final design of the HND-3 represented its aerodynamic automotive body carved by rays of light (This exterior design concept was defined as "carving rays" in the design process of its mass production model, which can be seen in Figure 8.) To keep the new model solidly in the Hyundai family, the familiar hexagonal grille was applied to the front. Interior elements, such as the crash pad, cluster, and console (Figure 9), were imagined as having much in common with the free and dynamic shape of a motorcycle.

FIGURE 9. The interior of the HND-3: a motorcycle look.

Launched for the first time in April 2007 at the Seoul Motor Show, the HND-3 was favorably received by experts in the automotive industry as well as by consumers, and was selected as the Best Concept Car of the Year. Thus encouraged, Hyundai's top management directed the designers to begin work on mass production.

The New Car Development Process—Led by the Design Team

The development process of the Veloster differed from the very beginning. The conventional approach would have looked like this: Hyundai's Product Planning Team would have conducted research and come up with a concept. With the Veloster, however, the Advanced Design Team at the Design Center initiated the entire development process of the concept car, from creating the new vehicle concept to developing the concept model. The Product Planning Team contributed supporting research, but essentially, the Veloster (Figures 10 and 11, page 19) was a design project.

The Advanced Design Team continued to play a part as

mass production began, working through the design stages of materializing the concept car. However, as development continued, a team of 25 exterior and interior designers forming the Mass Production Design Team largely took over. The interior and exterior colors planned for the Veloster differed considerably from those of existing cars. Hyundai's research on Generation Y showed that individuals in this age group preferred unusual (for a car) hues—primary colors such as red, orange, and yellow. Interior leather and fabric colors were designed in two tones to further stress individuality and a dynamic image.

The Veloster story was different from most car-production stories, in that the market for this car was very specific. In some ways, the small target group made for a stronger product. Fewer allowances were made to satisfy a wider audience. Meanwhile, as Vice President Oh Suk-Geun explains, "From the beginning, the development of this new design model was freely implemented with minimal interference from other departments or an insistence on cost reduction. The designers were able to be fully creative." Moreover, Oh notes, the journey from concept car to mass production made close cooperation with Hyundai's engineering and performance testing departments a necessity.

CHALLENGES OF PRODUCTION

The sporty design of the Veloster included a coupe-style roof, which was high in the front and low in the back and thus made the back seat seem uncomfortably small. The fitting position of the tailgate was a challenge. It needed to be high enough to accommodate back-seat passengers, but low enough to maintain a sporty profile. After much trial and error, the engineers were able to move the tailgate hinges forward (higher) so the tailgate could be opened nearly to the car's roof, thus improving backseat functionality, as well as making it easier to fit a bicycle or skis inside. However, this meant the spoiler (which served to separate the top and bottom of the two-piece tailgate) sat higher, causing difficulties with rear visibility. It took another month for the design, engineering, and evaluation teams to find a location that satisfied all of them and met safety regulations.

But that wasn't the last big challenge for the design stage of the mass-production model.

Just as the style and design of the Veloster's interior and exterior were on the verge of being approved, the Product Planning Team proposed a new concept of "1 + 2 doors" to enhance its practicality as a crossover utility vehicle (see Figure 12, page 20). This would avoid the problem most coupes have as a result of their two-door design—backseat passengers must tilt the seat forward in order to enter. Hence, the design team reduced the length of the passenger's door and added another door behind the passenger seat to make it easier to get in and out. At the same time, leaving only one door on the driver's side added to the impression of the Veloster as a personal sports car; approaching the car with the key, the driver would feel as if he or she were in a private two-seater. In addition, by hiding the outside door handle of the rear seat at the top, the visual differences between the right and left sides were reduced, thus maximizing the sporty coupe-style image.

Of course, this new wrinkle in the design changed the distribution of weight in the Veloster and also the stiffness of the framing, two important issues that had to be dealt with. However, both design and engineering teams liked the idea of the third door and worked closely to find a solution. The engineers succeeded in securing the torsional rigidity of the automobile body by designing a dual center rail roof, which became the central framework of the vehicle and also maintained balanced weight distribution. The car was thus made rigid enough to assure the safety of driver and passengers; but just to be sure, Hyundai safety-tested the car's design on both sides and ran more than twice as many crash tests with the Veloster as with other models.

The Veloster sported a dual muffler placed in the center, and this also made for problems, since the muffler impinged on the space where the spare tire was stored. The solution was to design the lower pipes to curve, thus

securing the necessary space.

DESIGNING A HALO

The Veloster was launched for the first time on January 10, 2011, at the North American International Auto Show and attracted much attention, seeming to embody Hyundai's new slogan, New Thinking. New Possibilities. In September, the German automobile magazine *Auto Bild* evaluated the Veloster as superior

FIGURE 10. The 2011 Veloster.

FIGURE 11. The interior design of the 2011 Veloster.

to Honda Motor Co.'s CR-Z sports hybrid, and Jason H. Harper at Bloomberg LP reported, "A car like the Veloster makes that '90s-era Civic look Neolithic."[9] The Veloster was acknowledged for its outstanding style both at home and abroad and received several prizes, including the 2011 design award for Korean Car of the Year and the 2012 Canadian Car of the Year Award—Best New Design, which was selected by the Automotive Journalists of Canada. In particular, immediately after its launch in the US market, the Veloster was selected as "the American college student's first car" and received 2011 Good Design Awards in the Transportation category in America. Based on such accomplishments, Hyundai Motor America Vice President Mike O'Brien explained the sales strategy for the Veloster in the US market as the following:

"In general, 'halo' vehicles, which determine the first impression of each brand, are high-price products aimed at a small number of customers. However, Hyundai employs a 'reverse halo' sales strategy through the Veloster. In other words, it endeavors to give a positive first impression of Hyundai cars to young customers who have purchased the Veloster, an affordable model with a unique design and differentiated characteristics, leading them to consider buying other Hyundai car models, such as sedans and SUVs, in the future."

FIGURE 12. 1+2 doors.

The Veloster is an example of how Hyundai's challenging attempt to "develop a mass production model that maximally reflects the original design plan for the concept car" was able to overcome numerous difficulties and obstacles. In April 2012, the Veloster Turbo, which boasts an even more improved performance (mounted with a 1.6 turbo GTi[10] engine) and more-luxurious car seats, was launched, thus expanding the Veloster lineup. Moreover, it has contributed to the formation of a modern premium brand image of Hyundai cars—while still broadcasting value for a reasonable price.

Conclusion and Epilogue

This case study recounts the surprising success story of an automobile company that rose out of a country with very little experience in that industry—and became one of the world's five leading car companies. That kind of success comes from a CEO's good decision-making and support, from innovative engineers who were willing to take some risks, and from the creativity and passion of some very good designers. A visit to the company's website demonstrates that design is a key factor in the R&D department. The courage and drive to develop original designs from the very beginning has helped to establish design innovation within the company culture. The Hyundai Motors brand now ranks as number 53 among the world's 100 brands, with a brand value of $75 billion in 2012.

Vice Chairman Chung Eui-Sun's affection and support for design management transformed that DNA into a design philosophy called fluidic sculpture, which now characterizes the full line of Hyundai automobiles. As we observed in the cases of the Elantra and the Veloster, this required cooperation and collaboration efforts from upper management,

[9] Jason H. Harper, "Hyundai's Veloster Delivers Ferrari Technology to College Kids." Bloomberg BusinessWeek, Nov. 10, 2011.

[10] The GTi (Grand Tourer Injection) is a fuel-injection car model variant. Traditionally used for Grand Tourer cars, the term is now applied to various hatchbacks (Source: Wikipedia).

as well as from design, engineering, and marketing—all done in an effort to carry out a shared plan. Vice President Oh Suk-Geun's role in efficiently managing competition, as well as cooperation from both in-house and overseas design studios, has both reinforced and improved Hyundai Motor's design management capabilities.

However, because Hyundai Motor Group manages dual brands (Hyundai and Kia), it faces a cannibalizing dilemma. Hyundai and Kia compete with each other in several categories, and one brand's success must not come at the expense of the others. To clearly differentiate the two brands, Chairman Chung Mong-Koo separated their design centers in 2004, and even restricted any movement between the two centers. In addition, Hyundai Vice President Oh and Kia Vice President Peter Schreyer have followed suit; instead of fluidic sculpture, Kia pursues a design philosophy known as "simplicity of the straight line." However, in order to consolidate the company's position in an even more competitive global market, the visual differentiation of these two brands will continue to be managed strategically.

Hyundai Motor Group has recently made the decision to establish a new position of Chief Design Officer and President to actively respond to such changes. During the annual promotion in December 2012, Peter Schreyer became the first to hold this title. Because it was generally unprecedented for a global firm to name a designer to president, this greatly boosted the morale of Hyundai Motors Group's in-house designers.

President Schreyer now has the grave responsibility of presenting a more-intense design vision and strategy for the dual brand, given the differences in history, culture, and characteristics. In early 2013, Schreyer explained that he would continue the unique design of Kia cars and reinforce Hyundai cars' design language.[11] It will be interesting to see how the new president accomplishes this. ■

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[11] Hans Greimel, "Refining the Hyundai-Kia Brand Plan," Automotive News, April 8, 2013.

Appendix 1: The History of Hyundai Cars launched between 1968 and 2011

1998


Sonate


Granduer


Euro-1


Avante


Santafe

2001


Tuscani


HCD-6


Clix


Click


OLV


Genesis


Tucson


Sonata

Growth & Development


Equus


Verna


Trajet XG


HCD-4

1999


HCD-5


Terracan


Lavita


HCD-7


HIC


Tuscani CCS


Neos-1


HCD-8


E-cube


Neos-2

2004

2005


HND-2


HED-1


Neos-3

2006


HCD-9


HCD-10


HED-2


HED-3

2007


HND-3


HED-4


Neos-4

2008


Equus


Avante Hybrid


Tucson


Sonata

Achievement & Advance


Granduer


Santafe


HND-1

2006


Verna


Veracruz


Avante


Grand Starex


i30


i30 CW


i10

2008


Genesis


Genesis Coupe


HED-5


Genesis Coupe

2009

HND-4

Avante

HND-5

Accent

HCD-11

HED-7

2011

i40

i40 Saloon

i30

HND-7

HND-6

HED-8

Innovation & Reputation

HCD-12

Veloster

Santafe

Avante Coupe

HED-6

Grandeur

Maxcruz

HND-9

2009

Sonata Hybrid

Genesis PRADA

2012

HCD-14

dmi:
design
management
institute