

PEOPLE • PRODUCT • PROCESS

# AUTOMOTIVE A Industries

DECEMBER 2004

ai-online.com

## NEW DIRECTIONS IN DESIGN

- ★ Mitsubishi Designs a Turnaround
- ★ Saturn's New Frontier
- ★ The New Face of Audi

- ★ GM in Shanghai
- ★ California Design
- ★ East Meets Bibendum
- ★ Homogeneous-Charge Compression-Ignition

ECLIPSE





# NEW DIRECTIONS IN DESIGN

by Gary Witzenburg

**W**e suggested a year ago that car companies tend to embark on radical new design directions when they desperately need to — a marque's product image is down, sales are tanking, blood is in the water, sharks are circling and smacking their leathery lips. We offered Cadillac, Chrysler and Nissan as examples and tossed in BMW as an interesting exception.

This year, it's appropriate to examine troubled Mitsubishi and Saturn (plus up-to-now uncompetitive interior design at GM) with a side glance at increasingly successful Audi.

## Designing a Turnaround

■ **Mitsubishi North American design chief Dan Sims reaches forward by exploring the marque's roots.**

**W**e'll see two early moves in Mitsubishi's new direction — an all-new 2006 Eclipse sportster and a (Dodge Dakota-based) Raider pickup — unveiled at January's 2005 Detroit North American International Auto Show. Both were teased by radical concepts at last year's NAIAS, and the Concept E sports coupe was fairly close to the '06 Eclipse.

Not that Mitsui's current products don't look good. The Galant sedan and Endeavor SUV are appealing designs awash in a sea of competition, while the rally-bred Lancer Evolution small sedan overcomes its boxy basic shape with a monster wing and ember-hot performance.

Still, with the parent company beset by scandals in Japan and its U.S. arm suffering a convergence of that plus a bunch of bad loans to insolvent or irresponsible members of its youthful target market, a healthy dose of design excitement seems in order. So we asked Mitsubishi R&D America Design Center Manager Dan Sims what might be over the horizon.

### Heritage and DNA

"We're in a unique position," he began. "Unlike some of our European counterparts,

Mitsubishi manufactures a wide variety of vehicles ... everything from small K-size cars in Japan to SUV-type vehicles. It doesn't make sense for us to have an approach similar to BMW's, for example, where they apply 'flame surfacing' to virtually all their cars.

"We'll be getting back to our roots, our core values, what Mitsubishi DNA is all about. We've been doing a lot of soul searching, and we have a lot to draw from both in motor sports and exciting vehicles from our past.

"One thing Mitsubishi represents is 'fun to drive' — our marketing people have called it 'spirited cars for spirited people.' Our cars are engaging, not appliances. They don't isolate you from the road. So we want to design to reflect that — muscular, athletic, agile. Another core value is a strong presence in the SUV world, including off-road racing. Another is unique vehicles — we've found little white spaces in the market that we've jumped into. Still another attribute is strength — a lot of tuners like our vehicles because the engine blocks are so strong that they can tweak them and add a lot of power, and they hold up."

How will Mitsubishi translate such attrib-

ECLIPSE



**The next Eclipse, based on the Concept E, doesn't necessarily set a theme for all future Mitsubishis, though it does wear the family face, a wind split feature with the three-diamond logo.**

utes into its future designs? "You'll see our designs going in a cleaner, simpler and bolder direction," Sims continued. "We want them to be recognizable and distinctive — you look at the car, and it's very clear what it does and what its intent is. We went through a stage of geomechanical designs — geometric and machine-like — now we're shifting to a more emotional direction. I also want our designs to be simple enough that someone can describe a car's side view by drawing three or four lines. The current Eclipse has a line that goes along the fenders and three strakes in the side. If you draw those lines for anyone, they'll say, 'Oh yeah, I know that car.'

"One other thing is a wheel emphasis. We want to shrink-wrap the body as much as possible to enhance the wheels, which are shoved out to look very stable, nimble and driver oriented. That's going to be a character of our future designs — that look of stability."

**Concept E**

We assume that last year's Concept E reflects that cleaner, simpler, bolder and more emotional direction. We remember it as very rounded and curvy, without a straight line on it. "That is a very emotional design," Sims responded, "and there

are some sharp edges — the line that cuts between the taillights and creates the spoiler, the edges of the hood that are stepped down from the fenders, the chin spoiler that runs along and becomes the side still structure. The surfaces are natural, like surfaces on an athletic human body. Viewed from above [plan view], it pulls in like a human waist. The cabin is teardrop shaped and the rear fenders are where your hips would be. Those are grounding elements.

"You can imagine a structure along the bottom and around the wheel openings and the body as a flexible membrane shrink-wrapped over the chassis. We don't want an amorphous, non-defined shape. We want the car to look like it has a sub-structure under the skin with muscles and skin above that structure. It's a look that says, 'This is a muscular, athletic, high-performance car.' Yet it's very simple and clean, not overly busy. There are no extraneous or unnecessary lines. Every line is there because it needs to be."

Is that an example of "organic" design? "Our designs are not pure organic," he responded, "because there's contrast between soft flowing forms and sharp, sheer forms. The Concept E has very muscular, soft fender shapes, but they're highlighted, almost like a suit with creases in the

pants and sleeves. Imagine a weightlifter wearing a suit ... his muscles pushing the fabric of the suit out in certain areas. Yet other areas of the suit have sharp lines that set him off, making him look distinctive and sharp. That can be handled with varying degrees of formality. On a sedan, you might want more of the creases; on a sports car, more of the muscle showing. In both cases, the cars look athletic and fun to drive. The sport truck also has some of that same design philosophy — very muscular, kind of stealthy, but highlighted by some sharp lines."

**New Direction**

We asked whether Concept E was a preview of not only the '06 Eclipse but a new direction for the Mitsubishi line as a whole.

"We're not going to take one surfacing technique and apply it to absolutely everything," he asserted, "because we have different types of vehicles. We don't want to abandon what we have. We want to take elements of what's there and push them forward to differentiate ourselves from other manufacturers. But you won't see a sedan from us that looks like a brick. When you look at it from the top, the corners will be chamfered off and the wheels thrust out to the corners. Even while it's standing still, it

will look like it's moving — that type of attitude.

"The fronts of our vehicles will have a definite similarity — this wind split feature with the three-diamond logo. You see different expressions on the faces of cars, with headlights as eyes and the grill as the mouth. We want a sort of aggressive, dauntless look to our cars, where they don't look sleepy eyed or surprised or silly but have a bit more serious expression. That face will continue for a number of years and will continue to evolve."

We also had to ask whether DaimlerChrysler was involved in the '06 Raider pickup design.

"No, not at all," Sims responded. "The roof is shared, but the unique sheet metal is entirely our studio's design, and the approval was solely up to Mitsubishi. They only wanted to make sure there was enough differentiation from their own product."

### Organization and Process

Because Mitsubishi manufactures vehicles in the U.S. and Europe as well as in Japan, corporate design leader Akinori Nakanishi oversees studios on all three continents, and all three typically submit competing concepts for new designs regardless of for which market(s) the product is intended. For example, Sims says his U.S. studio is currently working on future concepts much too small for North America.

"Designs that are done here are completely under our control while they're here," he explained. "When they're presented [for review], the corporate board decides in which direction to go. Those decisions are made in Japan."

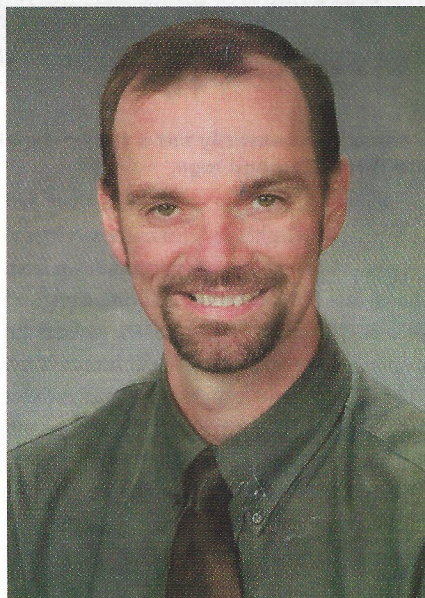
However, once a design is selected, the target market's studio logically finishes and executes it. "The next Galant and Endeavor will be built in Bloomington," he continued, "so our studio followed up the design work on them. We were responsible for releasing the surfaces and colors, which makes sense because we have local suppliers and engineers. We communicate with our suppliers and with our marketing people next door."

### Risk and Responsibility

Due to the long lead times and huge investments involved in the vehicle business, any meaningful change in product styling carries a high degree of risk. "It is a heavy weight," Sims agreed.



While the 2006 Mitsubishi Raider pickup will share mechanicals with the Dodge Dakota, design chief Dan Sims (below) says the outer sheetmetal is all Mitsubishi.



"That's why our lights are on here past eight o'clock a lot of nights. But there is more than design in it — a lot of pieces of the puzzle have to fit together. You can have an excellent product, but if nobody knows about it, that's a problem."

"We not only work on the cars but also with the advertising group to ensure that the message we're trying to convey gets made to the public. We work [in advance] with marketing to ensure that we're all on the same page, so that when we go to Japan and present the design, we're all agreeing that this is what this market needs. It's a heavily integrated process and very people-oriented. You have to get a lot of groups lined up and communicate

with a lot of people. But the industry is so capital intensive that the bottom line is that it comes down to product, and it's up to the design staff to make sure that we're doing products compelling and attractive enough to get people to part with their hard-earned money to buy them.

### Turnaround Mode

In major turnaround mode, do management decisions get a little more bold? Do designers feel less restrained? "Management realizes that we need distinctive designs," Sims responded, "but we have to work within limited resources. We have to be as creative and work as hard and efficiently as possible with the resources we have."

"The company has to weigh its priorities. Everybody's looking at costs and efficiencies, so it's up to the designers to be advocates for the customer so that when those costs and efficiencies are addressed, you leave in place what the customer wants. You need to make sure that where the customer touches and feels the car, it's appealing and has all the hot buttons that he or she wants. It's hard, because it's an unscientific thing, and you can't always clinic every bit of the car."

How does he feel about future Mitsubishi products? "We've got two introductions at Detroit and more very exciting products coming next year. I think people will be surprised. We're going to take great products and make them much better."



## Saturn's Next Frontier

■ **GM design chief Ed Welburn gives Saturn a new look that will appeal to its new audience.**

**E**d Welburn has been General Motors' Design Vice President for nearly a year, and he's still so excited he can't sit down. "I'm standing up," he shared with us halfway through a recent phone interview, "because I've got a bunch of photographs in front of me. Plus when I'm talking about the subject, I can't sit still. I'm that passionate about it."

We were discussing the new direction of Saturn, which is on the verge of a Cadillac-like design renaissance to be revealed at Detroit's January 2005 North American International Auto Show. We understand why he's excited about Saturn; we attended an off-the-record preview this summer, but we can't show it until next month. Trust us, the wait will be worth it!

What you will see in January is a two-seat roadster almost sexy enough to make you forget the stunning Pontiac Solstice with which it will share GM's new rear-wheel-drive Kappa

platform. And a crisply handsome mid-size sedan on the excellent (Chevy Malibu/Pontiac G6/Opel Omega/Saab 9-3) Epsilon platform with a highly un-Saturn-like high-zoot interior. Both made us go, "Wow!"... a reaction seemingly shared by everyone who saw it that day.

Remember when Saturns were great-looking, oft-imitated styling leaders? Neither do we, because it's never happened in the brand's brief life span. GM believed until recently that the unsurpassed Saturn ownership experience would be sufficient to sell substantial volumes of uninspiring, so-so cars. But that is about to change. Really!

Saturn's plan is to continue expanding its lineup while moving upward out of Chevrolet's way into the more-youthful-than-Buick, more-mature-than-Pontiac fertile territory once ineffectively occupied by GM's now defunct Oldsmobile division. For example, a third star of

**The Saturn Sky roadster (above) will make its debut at the 2005 North American International Auto Show. Ed Welburn says that the Sky will be to Saturn what Evoq was to Cadillac.**

that tantalizingly short future product show — which we can't yet discuss — was an early Saturn version of GM's coming 2007-08 mid-size SUVan crossovers. They pulled the cover off of it briefly, and we didn't get a peek at the interior, but it looked like another solid "Wow!"

Welburn wouldn't yet show us pictures, so we asked for a description of Saturn's new design vocabulary in words. "I consider it very international in nature, very clean, very distinctive," he responded. "And there will be a very strong face." He also pointed out that Cadillac's recent design revival provided a model for Saturn, beginning with the production roadster as a 'halo' to set the direction as the Evoq roadster concept did for Cadillac."

■ We recall prominent chrome bars across the faces of all three future vehicles. "That is a



major element," he said. "In the past, you had the Saturn emblem sometimes within a grille, sometimes above it, and sometimes there was no grille at all. This is a far more integrated face, and whether it's the roadster, the mid-size sedan, the next generation VUE or any other vehicle that we bring to market, you will see that trademark central grille with the bar at the top and the Saturn logo integrated into it. The sides are very sheer, with a real edge to them. And there's a common theme with a common taillamp treatment in the rear."

By "edge," did he mean Cadillac-like sharp-edged forms? "Yes, hard-edged with hard crease lines, but there's a significant amount of crown, or form development, between those crease lines. It's not a 'folded cardboard' design."

Since he replaced Wayne Cherry at the beginning of this year, how has GM's design development process evolved? "We're a close global team now," Welburn explained. "We can really utilize the power of global collaboration. Our design centers around the world were involved in this future Saturn theme, from our studios here in Detroit to advance studios in California and another in the U.K., which developed the Vauxhall Lightning concept from which the new Saturn roadster theme was derived. We also learned quite a bit from Opel, which worked with us on the mid-size sedan. One other studio — which I can't mention yet — had some involvement as well. The collaboration was very good."

"We've been working for a number of years on developing a technology that enables live VR [virtual reality] reviews with all the studios simultaneously, and in the past year it has really come together. As an example, this past Friday, I had a review with our design teams from China, Australia and Brazil, along with our advance studio in California. We were able to review advance designs together, all viewing the same things on-screen in their local areas,



**GM design chief Ed Welburn spends much of his time traveling to all of GM's global design centers as he works on development of the new Saturns.**

and discuss them live. It was really good, like we were all in the same room. And at the end of the review, we can send data to any of the sources for further development.

"We're using that technology on a very regular basis, but the key is — and I can't stress this enough — we still need direct contact." Meaning that a fair amount of travel is still required to get new global designs developed and ultimately approved? "Correct," Welburn conceded. "In fact, I'll be in Brazil on Thursday of this week. We can go pretty far with virtual

reviews, but we can't really buy off on a design until we walk around a physical property. It's easier for the Design team to do that because we do it every day. But there's a limit to how much time I want to spend reviewing designs in virtual reality with people outside of design.

He added that VR reviews tend to focus on a specific project, while global conference calls typically involve strategy discussions. "And periodically," he said, "the whole global team will get together, generally around one of the major auto shows."

**GM has been widely and correctly criticized for being slow to improve both real and perceived quality of its interior fits, finishes and materials. One reason, Welburn admitted, was a past unbalanced emphasis on exterior to the detriment of interior design.**

GM has been widely and correctly criticized for being slow to improve both real and perceived quality of its interior fits, finishes and materials. One reason, Welburn admitted, was a past unbalanced emphasis on exterior to the detriment of interior design. No more, especially since GM North America Chairman and product development guru Robert Lutz arrived in September 2001 and began jacking up the importance and the priority of world-class interiors.

"It has become a huge priority in the company," Welburn emphasized. "The best designs happen when design and engineering work in collaboration, and I credit [former Interior Design Executive Director] Anne Asensio and [Interior Engineering Executive Director] John Calabrese. They really pushed this initially, it was very hard work, and I credit Anne with breaking down some barriers. She has now moved on to lead Advanced Design. Dave Rand has taken over interiors in North America and has continued to push the team, and we have staffed his team with the absolute best designers, who work collaboratively and very quickly.

"One good analogy might be learning to be a great painter. Artists have to start with the basics, learn the fundamentals and learn by doing some very straightforward still life paintings before they can start getting more creative and experimental. They did that in interiors, went back to the fundamentals, started to develop some solid interior design, then gradually built on that and became more creative. The work they're doing today is not only very good interior design with great materials, it's also very creative."

Do higher quality interiors necessarily drive higher costs? "There is more cost in the interiors," Welburn responded, "but I would say in many areas it's just attention to detail and dedication to quality that are bringing some real advances. The teams are stronger and very dedicated, and not just the interior design team but also the color and trim department, which has renewed energy. It's a number of things. It's managing development of the entire vehicle,



**Buick is next in line for a design renaissance with the Velite convertible concept (top) hinting at the new direction. By managing the engineering and the design of the entire vehicle, GM has been able to put better design and material quality in its interiors. The stylish cockpit of the 2005 Pontiac G6 (left) is a prime example.**

interior and exterior, and getting the right balance between them. It's the relationship between Design and Engineering, relationships with suppliers and understanding their capabilities. And establishing a strong vision for what a given interior should be."

How does improving relationships result in better interiors? "We're able to get relationships between instrument panels and doors like we've not been able to in the past, which gives the interior a more flowing look from door to IP. Integration of instrument panels to consoles is done in a way that we've not been able to achieve in the past. Instrument panels are lower and further away from the occupants, giving interiors a more spacious appearance. That's all due to design and engineering working better together. We create a very strong vision for a given interior very early with the advanced engineers, which makes it a whole lot easier for everyone to get on board with the design."

Finally, more than Saturn's new direction and stronger-than-ever emphasis on quality interiors, how would GM's new Design VP sum up his overall philosophy? He thinks for a moment, then responds: "A design really needs to be a strong statement, and we will continue to execute strong designs. That is why we have more than one brand, each with a very different character. And that carries into interior designs, material selections, colors and trim."

And once Saturn's revival is well underway (which it is), what comes next? Get used to the novel idea of a stunningly gorgeous new design direction at Buick. It didn't happen with that marque's new 2005 LaCrosse mid-size sedan, a fine car that has taken flack for its ho-hum conservative (and derivative) appearance. But we know it's just around the corner. Look at last year's sensuous Buick Velite convertible concept for a very strong clue, and watch this space a year from now. ★

# Face First

■ The Audi A6's bold new grille is the new face for the entire Audi family.

Achim Badstubner, lead designer for Audi's new A6 sedan, strides confidently to the podium, takes out pencil and pad and begins to speak. As he describes the creation of a new custom suit for Audi's all-new mid-range sedan and sketches it line by line, it's projected on the screen behind him. We envision him selling this design concept in exactly this fashion to his company's leadership team in a wood and leather-lined conference room.

"A new product is a sketch pad plus a sharp pencil plus a vision," he says, then begins by outlining the front of the outgoing '04 A6, a clean and handsome but dated design. Then he sketches the '05's bold new look over it.

"A premium car is recognized by its face," he asserts, connecting the grille's top and bottom sections over what had been the '04's bumper. He adds sharp creases angling from the base of each A-pillar to the lower valence to define a subtly domed hood and nose. "You can see the muscle in the fenders and the big, big tires," he adds with a grin. "This is about overtaking prestige on the autobahn. If you see this face in the mirror, you pull over quick."

He flips the page and starts sketching the rear. "It's very important that if you remove the Audi rings, people will know what it is." The changes from the '04 are evolutionary but significant. The taillamps are lowered and connected by a slim chrome strip. The deck's lower edge is angled at the corners, a subtle spoiler caps its upper edge, and a blacked-out lower valence frames prominent dual exhausts.

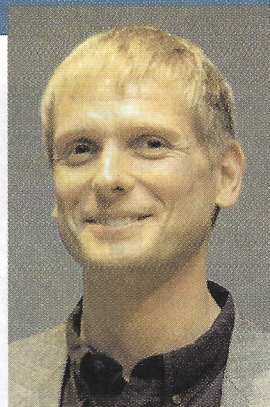
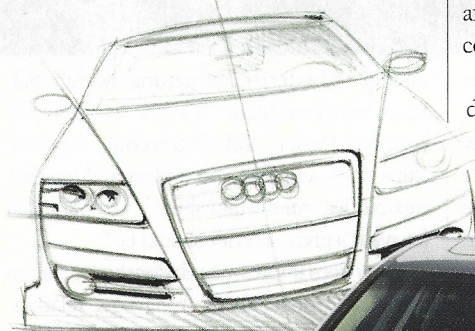
"The most important element of the old Audi was its roofline," Badstubner continues, flipping the page to start a new sketch: "For the new A6, we said, 'Let's do a 4-door coupe.'" It's a little larger than the old one, with more room inside, yet sportier due to bigger wheels and a "dynamic up-climbing lower sill line" that combines with a slightly down-curving shoulder to define a wing-shaped bodyside under the gracefully arcing Audi roof.

"We feel the passion of this design," he concludes, laying down the pencil.

We ask whether the A6's new frontal look,

with its not universally appreciated hood-to-valence gaping mouth (which will soon adorn Audi's entire line, including the next-generation TT sports car) might be risky for a maker known for sleek, conservative style. "If you do something new," he responds, "there's always risk that some won't like it. But we are very sure that most of our customers like a strong, self-confident face, and that's what we have now. Audi always progresses. We don't stand still. If you want to lead, you have to lead in some direction, and that's what we did. It communicates the power and sportiness of the car.

"This will definitely be a family face. If you are a premium brand, you need some key features where the customer can see he belongs to the family. The single frame [grille] will be one of those features. Also, the dynamic rocker line climbing up to the rear bumper. We thought the A6 is a very self-confident, strong



Audi's Achim Badstubner (above) and his sketch of the new A6's distinctive new face (below).

design that has been copied a lot, and there is a lot of intellectual capital invested in it that we wanted to retain. But the surface and line treatments are revolutionary for us, much more emotional and passionate, not as static as the car before."

How does he sell bold changes to the company's leadership? "It's not always easy,

but you have to keep on trying. You have to have a strong vision, and that strong vision has to be carried through. It needs models to convince management that our vision is correct, and it needs a lot of time, sweat and tears to finally create a car that shows that vision on the street. That's the most important thing. If you see that vision in the car, then we've achieved it.

"Actually, in this case, it was a fairly easy sell. Everybody was convinced pretty quick. But there were a lot of competing concepts. In the whole process, we did 12 full-size models ... then, step by step, cut some cars out. In the end we had two significantly different cars, and we used some features of the other car combined with this one.

"This is the first car communicating a new design language for Audi, the first car showing more emotion in our product, and it adds more value to the brand."

— Gary Witzenburg