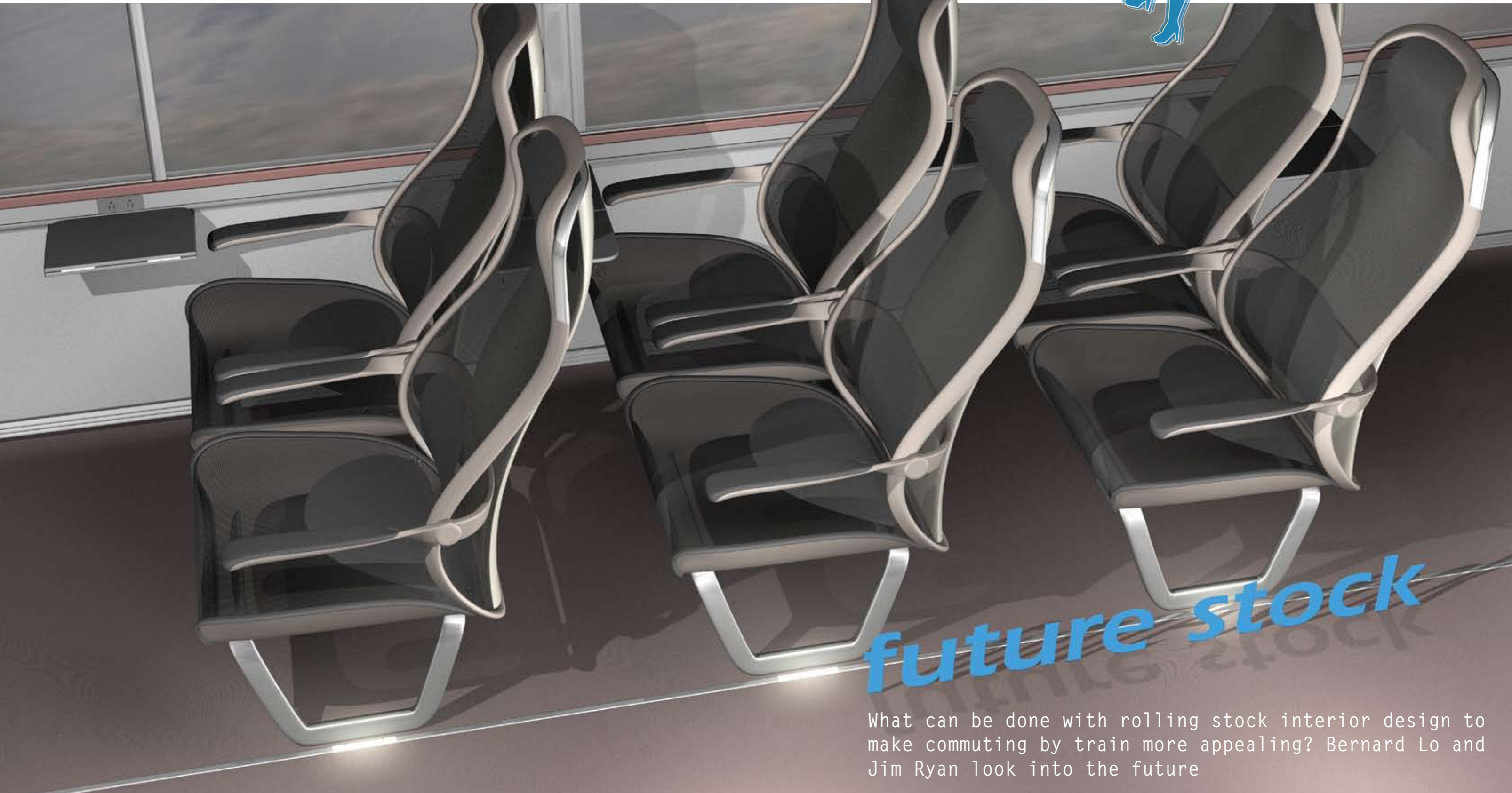




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Vibration elimination on page 32



future stock

What can be done with rolling stock interior design to make commuting by train more appealing? Bernard Lo and Jim Ryan look into the future

The objective is to enrich the passengers' experience - to turn a routine everyday trip into an enjoyable productive time

THIS PAGE: The woven mesh material makes the seats cool and comfortable

If we want to convince commuters to leave their cars at home, we must offer them more. The objective is to enrich the passengers' experience - to turn a routine everyday trip into an enjoyable productive time, encouraging commuter train use and reducing car emissions.

Many products and services once thought to be extravagant are now regarded as basic daily necessities that we cannot live without. The advances being made in communications and materials technologies will soon permit these conveniences to be extended to commuter rail.

Seating

Eric Chan, principal of Ecco Design, has an ongoing collaboration with Herman Miller and is at the forefront of using ergonomic design and new materials to maximise seating comfort. Increased seat and aisle width can be gained by using innovative 2+2 configurations. The seat design provides greater usable passenger space at a reduced seat pitch.

Mesh membrane has proved to be a viable material in many office-seating products. The membrane is completely self-contained in a

COMMUNICATIONS ONLINE

Based on years of experience designing products for the consumer electronics industry, Ecco Design contends that passenger communications and entertainment will be the most notable changes to commuter railcars in the future.

Mobile phone access is already available on most routes, and very soon wireless connectivity for internet access will become an expected feature in all new railcars.

Our research has shown that facilitating on-board portable communication is one of the most valuable propositions we can offer to rail commuters. Providing passengers with recharging

stations for their mobile phones and laptop batteries will also become standard in future interior designs.

Seatbacks will be equipped with displays, delivering short summaries of sports, local and world news and entertainment selections; turning downtime into an enjoyable and informative experience.

Operational messages in the form of basic digital displays will keep passengers informed about destination, next stop and time of day details.

Full-colour digital graphic displays on end walls or overhead monitors will inform passengers about special events, timetable changes and any emergency announcements.



subframe and can be readily replaced as a unit. Visco-elastic cushioning conforms to the shape of the body, distributing the pressure more evenly for better comfort. The woven mesh-supporting membrane provides breathability, as well as weight reduction and space conservation.

Lighting

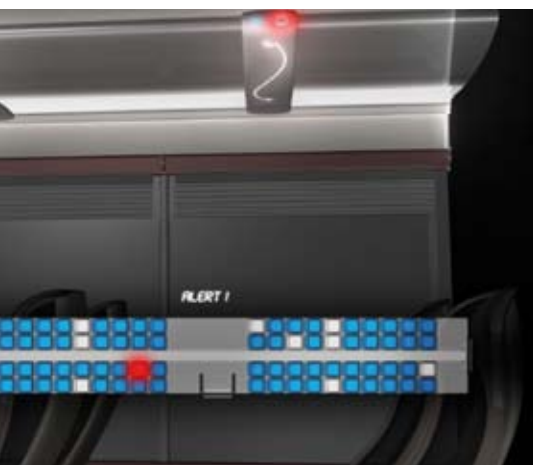
In the future, lighting concepts will automatically adjust light level and intensity based on the exterior conditions – depending on whether the train is in a tunnel, station, or open platform. The experience of direct overhead fluorescent lighting glaring down from the ceiling will become a thing of the past – ceilings and sidewalls will be indirectly lit by soft LED-wash lighting. Light output, colour, temperature and longevity improve each year with this technology. It consumes less power, has an extended service life and weighs less, balancing its initial higher cost.

Lighting colour and intensity can be adjusted to provide different lighting concepts in cabins and entrances. Until recently, reading lights were rejected in commuter rail concepts due to prohibitive maintenance costs. The extremely long life of LED units now removes this concern, making it possible for individual LED reading lights to supplement the softer wash light level.

Interior materials

Composite sandwich panel construction is displacing more traditional materials in flooring, ceiling and sidewall panels, end walls and doors. The composites are lighter in weight and more durable and decay-resistant. They also lend themselves to sculptural contouring, as needed in seat shrouds and lavatory compartments.

Surface textures and decorative treatments are unlimited. Window shades are now being offered that can be encapsulated between the panes of railcar windows, reducing cleaning and maintenance requirements.



INSET: Inconspicuous CCTV security cameras will be placed in each car (look to the right of the text in the destination sign). They will be able to detect unruly behaviour and reduce the time needed for personnel to identify the site of an incident
BELOW: Here, a fare needs to be collected

Research conducted by Ecco Design showed that lost property was an often cited concern for commuters. Lowering luggage racks and improving lighting in storage spaces addresses this issue. Mark-resistant surface coatings and sacrificial films are permitting the increased use of transparent panels for better light distribution and openness in luggage racks.

A fare deal

Fare collection will be automated by radio frequency scanning of the passenger's travel pass on entry and exit of the railcar, with every doorway being equipped with scanners. Regular commuters would periodically refill their RFID cards by credit card, while occasional passengers could still purchase their fare at vending machines or ticket booths at the station or local shops nearby.

Sensors located on the luggage rack or in seat backs will indicate to the conductor whether the passenger's fare has been paid. As well as showing the fare status of each passenger, the conductor's display panel will also show passenger density and the location of available seats in all cars.

The end result of these enhancements is increased passenger satisfaction. Adding value through design and creating an enjoyable and productive ride will encourage more people to commute by rail. More people taking the train means there will be fewer clogging up the roads, which will reduce fossil fuel consumption and production of greenhouse gases.

The cost of providing these features may seem daunting at present, but the benefits of passenger satisfaction would result in increased use of mass transit. The costs of new technologies always shows a downward trend as their use proliferates, as shown in the dramatic price reductions in PCs and flat-screen TVs in just a few years.

The more we can persuade commuters to leave their cars home in favour of rail travel, the better our environment will be. Many cities, such as London, and New York in the near future, are now instituting congestion charging to prevent the commuter and other traffic from strangling our inner cities. Enhancing the passenger experience for commuters will be critical in winning them over to using public transport. ☒

Bernard Lo is Senior Industrial Designer and Jim Ryan is Director of Transportation Design, ECCO Design.