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What does your fridge say about global packaging?



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The development of coffee packaging design

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#### LOOKING COOL

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Delve into a snapshot of a variety of packaging from fridges around the world.



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How have a banana's spots influenced design? IDEO discuss nature's impact on packaging.



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# AROUND THE WORLD IN 65 PAGES

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FAO

IN LOOKS AT THE GLOBAL PACKAGING PICTURE AS A WHOLE, EXPLORING OPINIONS ON INNOVATION, DESIGN AND FUTURE POSSIBILITIES FROM A VARIETY OF VIEWPOINTS.





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# IMPROVED PACKAGING SAVES RESOURCES, EXTENDS FRESHNESS, REDUCES WASTE.



Innovative products, technologies, and shared expertise from Dow help create better food packaging around the world. Packages that use fewer materials. Packages to help preserve fresh foods longer. Packages enabling diverse foods to travel more efficiently from fields to families. Packages that are easy to use and easy to recycle.\*

For the imaginative seekers at Dow, plastic packaging isn't a problem; it's a solution – for helping to save natural resources, feed more people, and reduce global food waste. Visit the web sites to learn more. **Solutionism. The new optimism.®**

PERFORMANCE PACKAGING | [www.dow.com](http://www.dow.com) [www.dowpackaging.com](http://www.dowpackaging.com)

\*where recycling is available



## in EDITORIAL

IN 2012, THE GLOBAL PACKAGING MARKET TOTALED APPROXIMATELY US\$698 BILLION AND IS GROWING AT AN AVERAGE ANNUALIZED RATE OF 4.5 PERCENT, 1.5 BASIS POINTS OVER GLOBAL GDP.

This impressive expansion is chiefly driven by consumer market trends such as population growth, on-the-go lifestyles, and increased purchasing power from a growing global middle class. Packaging – and more specifically plastic food and beverage packaging – is a large and complex sector that is constantly evolving with enhanced technologies across the value chain to address this escalating demand and meet consumer expectations.

To keep pace with this growth, global packaging manufacturers are increasingly faced with the need to closely understand shifting market dynamics and societal change. IN: A Perspective on Global Packaging by Dow offers an in-depth analysis on the market variables for today's packaging applications as well as the leading innovations for tomorrow.

With help from some of the leading experts and associations in the industry, IN invites you to take a different look at packaging with a holistic voyage through the packaging process by focusing on three general areas of interest: **Packaging Affairs**, **Packaging Design** and **Packaging Culture**.

PACKAGING AFFAIRS looks at several key trends like mitigating food waste, sustainability, material supply/demand, industry innovation, and how these trends impact the global packaging market.



PACKAGING DESIGN explores the creative minds behind the development of packaging. With a nod to the past, experts in the field discuss the future of packaging design as it relates to changing market needs in areas such as usability and material functionality.



PACKAGING CULTURE offers insights on the consumer experience with packaging, such as global buying habits, perceptions and expectations.



I have a tremendous passion for this business and I'm excited about what the future holds to optimize and maximize emerging technology and materials science. Engaging with strategic customers and value chain partners to work together on initiatives to grow this dynamic industry is a priority for Dow, and I look forward to continuing those conversations.

With my compliments, please enjoy this tribute to the wonderful world of packaging. The next time you drink a soda or microwave a frozen dinner – I ask you to take a moment to think about the journey that package has gone through and the important role packaging plays in our everyday lives.

All the best,

**Diego Donoso**  
Business President  
Dow Packaging and Specialty Plastics



# Also available as an iPad App



More information on  
the iTunes App store



# in CONTRIBUTORS

IN THIS FIRST EDITION OF IN, WE ASKED SOME OF THE WORLD'S PACKAGING EXPERTS TO CONTRIBUTE THEIR PERSPECTIVES ON PACKAGING. FIND OUT MORE ABOUT WHO THEY ARE BELOW:

**PROFESSOR MICHAEL BRAUNGART** is a German chemist who introduced the Cradle to Cradle® concept and advocates that humans can make a positive instead of negative environmental impact.

**CLAIRE DUMBRECK** is a PR professional and was diagnosed with inflammatory arthritis in her mid-30s. She lets you in to her world and discusses living with the condition and how it impacts her perspective on day-to-day activities.

**JANE FULTON SURI** is a Partner and Chief Creative Officer at IDEO – a design and innovation consultancy. At IDEO, she is responsible for evolving excellence in content and craft, human insight, and design thinking. She shares her thoughts on the role of biomimicry in packaging and asks 'what can we learn from nature?.'

**LOR GOLD**, Global Chief Creative Officer at SGK, a leading brand production and deployment company. Gold discusses the three fundamental elements that enable the strong emotional link between a package and its brand.

**RAY HAMMOND** is a futurist with over 30 years of experience in researching, writing and speaking on the topic of major trends and their impact on society and business in the future. Hammond shares his views on the future global landscape in terms of the impact the emerging global middle class will have.

**DR. PAUL HARRISON** is a consumer behavior and marketing expert at Deakin University. Harrison is a specialist in social psychology and has conducted extensive research into consumer policy. Harrison highlights how consumer psychology and the shopping experience can impact the future of packaging.

**PROFESSOR RUUD HEIJBLUM** is a highly regarded academic in the field of international marketing. With experience in management, consultancy and academic worlds, Heijblom's vast global experience provides a solid foundation for understanding the cross-cultural implications on packaging.

**DINA HOWELL**, Worldwide Chief Executive Officer at Saatchi & Saatchi X, is an industry expert and recognized for her experience in shopper marketing. Howell talks about the importance of product placement for global brands and how this can have a huge impact on packaging design to influence consumer experience.

**PROFESSOR MÁXIMO MARULL** teaches Packaging at the School of Design in Rosario, Argentina and is also the founder of Caffeine Founding Brand Consulting. He talks about recent innovations and how these have supported the usability of packaging.

**TIM MCGEE** is an enthusiast in the field of biomimicry, a biologist and a designer at IDEO. He brings many perspectives from the fields of biology, design, engineering and more, to offer revitalizing insights into the relationship between packaging and the living world.

**ROBERT VAN OTTERDIJK** is team leader of the 'Save Food' initiative at the Food and Agriculture Organization (FAO) of the United Nations. He discusses the potential of packaging in developing countries.

**LARS WALLENTIN** is an experienced packaging designer having worked for major brands like Nestlé, Nesquik, and KitKat. Wallentin thrives on creativity and innovation in packaging design and challenges the way we see packaging today.

**DR. ALASTER YOXALL** is a packaging expert in design and ergonomics, specifically focused on packaging for an ageing population. His work with leading companies on developing new packaging formats has earned him the title of 'thought-leader in packaging'. He offers a reflection on packaging design and usability.

Thanks also go to the students from Elisava (Barcelona) and to the Dow employees from the Sadara plant who also contributed their ideas.



# A WALK THROUGH PACKAGING HISTORY

PACKAGING AND HUMAN HISTORY GO HAND-IN-HAND. MORE THAN 20,000 YEARS AGO, PEOPLE WERE USING GRASS, REEDS AND SKINS TO PROTECT AND STORE THEIR FOOD. FOLLOWING THE DISCOVERY OF ORES, METALS AND POTTERY WERE DEVELOPED. THIS INNOVATION REVOLUTIONIZED PACKAGING AND MATERIALS QUICKLY EVOLVED.

1500  
B.C.

Industrialization of  
glass-making in Egypt



2nd  
century  
B.C.

Chinese were the  
first to use sheets  
of treated mulberry  
bark to wrap foods

1690

The technique of  
papermaking arrived in  
America (Germantown,  
Pennsylvania)

1817

The first paperboard  
carton was produced  
in England – more than  
200 years after China  
invented paperboard

1852

The bag-making  
machine was invented  
by Francis Wolle in  
the US

1875

Invention of the  
can opener



1500 B.C.

1200  
B.C.

Glass was pressed  
into the form of cups  
and bowls

1310

Papermaking was  
introduced to England



1760-  
1840

The industrial  
revolution brought  
new manufacturing  
processes that impacted  
the packaging industry  
with the invention of new  
production machines

1844

Commercial paper bags  
were manufactured in  
England (Bristol)



1866

The concept of using  
packaging to 'brand'  
a product was born.  
Official trademarks were  
pioneered by Smith  
Brothers for their cough  
drops marketed in large  
glass jars

1876

Heinz's bottled  
ketchup was  
one of the first  
packaged foods  
in America.  
The iconic glass  
bottle – made  
with clear glass  
to showcase the  
ketchup's purity  
– was created  
in 1890 and  
is still around  
today



## APPROACHABLE PACKAGING HISTORY

From the moment the Smith Brothers, makers of the first cough drop, labeled their glass jars of cough drops with their trademark in 1866, packaging has been an important part of branding.

The 'Brands, Packaging and Advertising Museum', located in Notting Hill, London, displays a selection of items from consumer historian Robert Opie's collection. At the museum, visitors can journey through history, from Victorian

times to present day, via 12,000 packaging items all housed under one roof.

TripAdvisor reviews confirm that visitors love this 'small but unique' museum, which provides 'two hours of fascination' and great insight into the 'UK's social and design history'. This museum is a must-see for all trips to London.

Museum of Brands, 2 Colville Mews, Lonsdale Road, Notting Hill, London W11 2AR.

[www.museumofbrands.com](http://www.museumofbrands.com)



**1889**

Michael Joseph Owens invented the first automatic rotary bottle-making machine

**1940s**

Packaging was developed for frozen food



**1950s**

The milk carton became commonplace. Milk lasted longer in paper than it did in glass, and the lightweight cartons were considerably greener



**1959**

First aluminum cans appeared on the market



**1977**

Polyethylene (PE) became available for the packaging of beverages. Today PE is the most common plastic

**2013**

QR codes increasingly used on retail packaging to allow consumers to track information about the product



**2013**

**1900-1960**

The majority of liquids were packaged in glass containers

**Late 1950s-early 1960s**

First commercial use of cellophane. The invention of cellophane in 1920 marked the beginning of the plastic era

**1953**

Dow's new Saran wrap hit grocery store shelves. By the 1970s, Saran Wrap was widely used to limit the effect of gas, oxygen, moisture, and other chemicals that make veggies lose their freshness

**1961**

Aseptic cartons were used for preserving long-life milk



**1983**

Heinz launched the squeezable, recyclable plastic bottle, which meant better accuracy for ketchup enthusiasts



# So much more than just a drink

It wafts its warm and inviting scent through millions of households every morning. It is the social oil that fueled the English Enlightenment. It has been banned and lauded. It has spawned global retail chains and a US\$9 billion industry. What else could so set the heart aflutter, but coffee?

Coffee entered the Western world in the 17th century through the vibrant trade of the Venetian Republic with North Africa and the Near East that introduced many unusual goods to Venice. Centuries later, two developments helped promote the widespread popularity of coffee. First, the opening of the world's first cannery in 1813, which introduced preservation technology that merchants would clamor for. Second, the invention of the espresso machine in the middle of the 19th century which brought quality coffee brewing into the home.

Freshly roasted, coffee has a shelf life similar to that of fresh bread or fruit. In fact, coffee is very delicate, and the secret to a good brew starts by protecting the beans from damaging environmental factors such as sunlight, moisture and oxygen. Preserving and storing coffee beans is not only important for maintaining freshness, but also to keep up with global demand. It takes four years for a coffee plant to yield fruit, which makes it extremely difficult for farmers to respond quickly to the fluctuating market.

Coffee packaging has always gone hand in hand with consumers' evolving preferences and the different patterns of each decade. Coffee tins were the most popular method to preserve coffee back in the 1930s but since then, coffee packaging has taken many shapes and sizes. Today, packaging materials range from heavy foil, cans and laminates to paper bags and jars.

Modern life continues to push the coffee industry towards new packaging solutions – and accompanying challenges. The phenomenal success of major international coffeehouse chains has driven on-the-go consumption,



but also poses a major sustainability challenge in terms of the disposal of takeaway coffee cups. In parallel, the massive popularity of quality home-brewed espresso coffee has led to an explosion in the usage of single-serve capsules, and a growing concern of how to dispose of them appropriately. To minimize waste, businesses are already participating in customized take-back programs that help divert millions of coffee pods from landfill. It is not just in terms of packaging that the coffee industry has been trying to become more sustainable. Over the past decades increased focus has been on promoting Fairtrade coffee and certification. According to the Tropical Commodity Coalition's 2012 Coffee Barometer, some 16 percent of global coffee production and 9 percent of global coffee sales in 2010 were certified under a sustainability standard.

It is likely that the coffee industry will continue to surprise consumers with innovative solutions to meet ever-changing consumer habits. Because one thing is for certain: coffee will stay on the menu for years to come!

## DID YOU KNOW?

in

OVER 1,400 MILLION CUPS OF COFFEE ARE DRUNK AROUND THE WORLD EACH DAY. IT IS ONE OF THE MOST CONSUMED DRINKS AFTER WATER.





[in](#) | Watch the interview on our iPad version  
(available on the iTunes store)

# 'We need more packaging, not less'

# Lars Wallentin, an innovative packaging and global designer

LARS WALLENTIN IS REGARDED AS ONE OF THE LEADING PACKAGING DESIGNERS IN THE WORLD. DURING HIS 40 YEARS IN THE INDUSTRY, HE HAS BEEN RESPONSIBLE FOR THE DEVELOPMENT OF CREATIVE DESIGN SOLUTIONS FOR BRANDS SUCH AS NESTLÉ, NESCAFÉ, MAGGI, BUITONI, NESQUIK OR KITKAT. WE SPOKE TO HIM ABOUT SOME OF THE RECENT HAPPENINGS WITH PACKAGING INNOVATIONS.

## What is your definition of innovative packaging?

Innovative packaging has many different characteristics. Let's start with the simplest one: it has to look good. It's all about aesthetics. It's about creativity: it has to be different. It's about ecology: what do you do with the package afterwards. It's about ergonomics: you need to be able to handle it properly. It's about the five senses and it's about the selling effect: if it doesn't sell then it is art, not good packaging. And packaging has a lot to do with communication: the consumer has to understand instantly what the product is about.

I think these are the main areas that you have to think of when you develop new and innovative packaging.

## What have been the biggest changes in the world of packaging since you have been in the business?

When I came into the business in 1962 from Sweden, I was very much influenced by glass, paper, cardboard and metal. The plastics industry had just started. Today, I think it's all about plastic. People want to see what they buy – so transparency has become a big 'buying' factor and plastic is a good solution for that.

Plastic is not only transparent, it is light too, can be recycled or incinerated and of course, with the new printing technologies, you can print everything very beautifully on it.

## Which countries or regions are leading in terms of innovative packaging?

When it comes to material and creativity, our friends from Japan are far ahead. However, this packaging can be too expensive and not used in the Western world. So forget that for a moment.

England is very creative within the sophisticated retailer market. But they have been overtaken recently by France. Brazilians also come very high up as they have little tradition in packaging, and therefore they are more creative.

Another country that has developed recently in terms of innovative packaging is Sweden. They've become very creative while they were not creative ten years ago.

The US is definitely not leading the innovation of packaging. There is too much legislation in the US that kills creativity.

This means in a nutshell: if you want to learn something about innovative package design today, you need to look to England, France, Scandinavia and you should try to make a jump to Japan.

## What do you see as the biggest challenge to the packaging industry?

The challenge to the packaging industry is being able to work together instead of fighting each other saying that cardboard is better than plastic or the other way around. We need more packaging, good packaging and not less. As you know people still have a very negative opinion of packaging, despite saving billions thanks to good packaging in the Western world.

The real challenge for the packaging industry is to try to explain to the public and the industry that it's very often a combination of materials like plastic, cardboard, metal and others that bring the solution. I still see them fighting

each other, and this is not good for the future.

## What is the consumer's role in packaging innovation?

The consumer's role is next to nothing. When Steve Jobs created the iMac and iPod, he didn't need the consumer. He had a vision. If you ask the consumers what they want, they will tell you that they need everything but cannot define it.

## How do packaging trends vary and where will future trends come from?

Trends will depend on how sophisticated a market is. The trend in England with its retailers is that packaging has to be funny. Then you can go to the other extreme that is China, which is at this moment ten years behind – here the packaging is very busy. But watch out! The Chinese are moving at the speed of light. I can tell you, in five years' time I will go to China to learn about packaging design. They have new printing machines, the most up-to-date equipment and they have an ever-growing customer base.

In the US – where trends originated from many years ago – I have not seen many new trends starting because of their approach to packaging design and their legislation. I think the new trends will come from England, France and, maybe in five years' time, they will come from Greater China.

## Looking to the future, how do you see packaging design changing?

Packaging design is evolving very well today on the technical side. This is mainly due to how we use raw materials. Right now we are moving towards thinner films, thinner aluminum and more standardized packaging. One thing that will lead in the next five years is the whole ecological question. However, in terms of communication we stand still; some companies even go backwards as they believe the consumer needs everything on a package.





# SOURCING A GLOBAL SUPPLY

Report on the continuity of global supply of performance plastics for packaging

The next ten years will be a critical time for our world. Population growth will create escalating demand for more energy resources, resulting in tensions between increasing energy requirements and the impact on the environment.

Similarly, demand for high-performing packaging is expected to rise exponentially as a result of population growth and rapid urbanization. Nearly two-thirds of the developing world's population is expected to be living in cities by 2025 according to UN projections. Where will all this packaging come from?





Building future supply  
to meet growing global  
demand for packaging.

# BUILDING THE FUTURE NOW

## A CRITICAL DECADE

THE QUESTION BECOMES ONE OF BALANCE. HOW WILL WE AS A SOCIETY MANAGE GROWING DEMAND WITH APPROPRIATELY SOURCED SUPPLY? WHAT ARE COMPANIES DOING TO APPROACH THIS EVER-CHANGING GLOBAL PICTURE?

## PACKAGING THE GROWING MIDDLE CLASS

The flourishing global middle class, specifically in the developing world, is having an immediate and dramatic impact on the packaging industry. Over the next few decades, the 'global middle class' is projected to more than double, from 430 million in 2000 to 1.2 billion in 2030 – from 7.6 percent of the world's population to over 16 percent – according to the World Bank<sup>2</sup>.

By definition, the middle class spend anywhere between US\$10 and US\$100 per day and consequently any increase in numbers drives economic growth as well as boosting consumption and investment.

The largest segment of this ever-expanding middle class will come from Asia, specifically from hundreds of millions of Chinese and Indian consumers. According to Reuters<sup>3</sup>,

there will be a 70 percent drop in those living below the middle class standard by 2030. A report by Ernst & Young<sup>4</sup> estimates that by 2030, two-thirds of the global middle class will be in Asia-Pacific while Europe's share will have dropped by 14 percent. To put things into perspective, currently 525 million people in Asia identify themselves as middle class which is more than the total population of the EU! By 2030, the spending power of China's middle class alone will equate to nearly US\$10 trillion in goods and services<sup>5</sup>.

An expanding global middle class will drive an increase in demand for packaged goods such as drinks, pre-packaged convenience and packaged fresh foods (including milk, vegetables, meat and poultry). Lucintel's Analysis<sup>6</sup> estimates that the global plastic packaging industry revenue is estimated to reach US\$271 billion in 2018.



## SOURCING A GLOBAL SUPPLY

in

U.S. GULF COAST

SADARA

THE GLOBAL PACKAGING MARKET IS GROWING AT AN ANNUAL RATE OF

4.5%

1.2 basis points over Projected Global GDP



# 60,000

During construction of Dow's joint venture chemical project in Saudi Arabia – Sadara – the workforce will peak at around 60,000 people. This will require services and infrastructure much like a small city.

Growing consumer spending power as well as increased urbanization will likely result in a change in shopping habits – more supermarket shopping where consumers have more options to purchase packaged goods as opposed to shopping in specialty stores or local fresh food markets. Urbanization is expected to boost sales of healthcare plastic packaging, including personal care and cosmetics products, with the sector expected to see the highest growth rate by 2018<sup>7</sup>.

### THE CHANGING FACE OF SOCIETY

Other influencing factors on packaging demand include the trend towards smaller households, meaning food must be repackaged to suit this purpose; the trend towards an 'on-the-go' lifestyle

is also a key influencer as consumers are increasingly looking for functional, prepackaged and convenience foods. This is also influenced by a changing family structure, an increase in women entering the workplace and longer working hours. Consequently, people have less time to purchase and cook fresh home-cooked meals and are looking for packaged alternatives. According to a recent survey by the Association of Chamber of Commerce and Industry of India, 82 percent of India's workforce in cities prefers to eat packaged food than eating fresh food or in a restaurant<sup>8</sup>. The results are based on families where both husband and wife work or single person households, highlighting clearly the need for fast and convenient solutions.

### MEETING THE DEMANDS AND PREPARING TO GROW

The 2012 global packaging market was valued at US\$698 billion, a figure that will continue to rise with increased consumption. Although paper and board packaging make up the biggest chunk of this value, flexible plastic and rigid plastic are expected to see the highest growth levels in years to come – 4.5 percent and 5.5 percent respectively.

Let's take the specific example of Polyethylene (PE) – the basic building block of plastic packaging. Global demand continues to grow at a multiple of GDP – for every 1 percent growth in global GDP we expect a one MMT increase in PE. The long-term growth

opportunity for PE is tremendous, especially in developing regions (India, Africa, Latin America and South East Asia), if we take into account the predicted regional GDP growth rates. Population growth in these areas will also drive PE demand and growth.

Consequently, it is important for companies, such as Dow, to continue to invest in projects to enhance feedstock strength and meet growing demand around the world. An example of investing for growth is the Sadara project. In 2011, Sadara Chemical Company (Sadara), a joint venture developed by Dow and Saudi Arabian Oil Company (Saudi Aramco), was formed to ensure customers in developing regions have a constant and reliable supply of high-performing products. Comprised of 26 manufacturing units, the joint venture will be one of the world's largest integrated chemical facilities and the largest ever built in a single phase. Sadara will possess flexible cracking capabilities and produce more than three million metric tons of high-value performance plastics and specialty chemical products, capitalizing on rapidly growing markets in energy, transportation, infrastructure and consumer products, including

packaging. Location wise, Sadara is a prime spot as it will ensure product can be delivered to the world's fastest-growing regions such as Asia-Pacific, the Middle East and Eastern Europe.

To service demand in the Americas, Dow announced plans in 2011 to invest approximately US\$4 billion in projects along the United States Gulf Coast to leverage the abundant supply of natural gas currently being produced in North America. These investments will strengthen the company's integration to create a competitive advantage based on lower feedstock costs that will enhance the profitability and competitiveness of Dow's downstream businesses, including Performance Packaging.

It is clear that with a growing middle class comes increased spending power globally and a shift in buying habits that will drive demand for high-performance packaging that meets consumer preferences. Materials manufacturers like Dow will need to continue to invest in new assets to grow with the packaging industry. These investments in turn will strengthen local economies, create an influx of jobs and build durable foundations for the development of packaging innovation.

## SADARA IN NUMBERS



During construction, one large ship per day will arrive requiring offloading and transport of over 450 trucks of materials from the ports to the marshalling yards.

**5,400** km of cable

The complex will require 5,400 km of cable... enough to run from Jubail to London.

**720,000** sqm

Facilities needed to perform the pipe fabrication, stress relieving, sandblasting, painting and testing will require 720,000 square meters of shop floor, the equivalent of 176 football fields.



**80,000** tons

The amount of steel needed to build Sadara would build eight London Olympic Stadiums.



The amount of pipe would build two lines from Jubail to Jeddah – the entire width of Saudi Arabia.

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# SADARA

Five Dow employees on assignment with Sadara Chemical Company speak to us about life in Saudi Arabia and their hopes for the trailblazing Sadara plant.



## *AMY MAJESKE*

I work in Sadara Information Technology, and have two roles: Project Management Office Leader and IT Business Office leader. We have large-scale IT projects currently in place to bring enterprise resource planning

(ERP) and manufacturing systems to Sadara, and hundreds of people are working on those, but my specific role is very Sadara-centric. I focus on in-house IT projects, and cash flow. A lot of my work is setting things up to work well in the near future, and that is fun.

As soon as I heard about Sadara during an all-employee meeting at Dow, I knew I would love to work there. I have previous experience working in innovative start-ups, and knew how challenging and exhilarating it can be. The fact that Sadara is trailblazing in terms of what we are building, as well as the product mix and markets we are targeting, only added to the excitement and made me eager to be a part of this. Being one of the only women working on this project has also been a challenge, but I like being a groundbreaker.

Sadara will impact the chemical industry as a whole; the enabling technologies we are putting in place are state-of-the-art within the packaging industry. Everyone in IT loves to work on the cutting edge, and I know from experience how exciting it is to do that!



## *KING HONG*

I am a Supply Chain Specialist.

In addition to enhancing my experiences within Dow, Sadara is a rare opportunity to contribute towards building a very large chemical complex. It is also an exciting life experience. This will be something that I can be proud of and share with future generations.

With its strategic location within the Middle East, Sadara will be a key leverage for reliable supply of advance packaging materials for the packaging industry especially in Asia, Africa and Europe.



### JAMES STEINER

I am the Supply Chain Manager responsible for Planning, Customer Service and Site Logistics. For Sadara, the joint venture developed by Dow and Saudi Aramco, we are focused on building the organization, establishing the processes & systems, and mobilizing logistic service contracts.

I have been working with joint ventures in the Middle East since 2005 and I find this both an interesting and challenging area. The region is seeing very high growth in the petrochemical industry, driven by the national oil companies as they diversify their revenue sources. The Middle East is the place to be to experience first-hand a fast-paced, high petrochemical growth environment!

Sadara is another very significant project in the region. As the sector's critical mass increases, the supporting industries follow and grow. For example, packaging supplies were imported, now regional producers are establishing businesses. With new businesses, the latest technologies in packaging and logistics are deployed. In some cases, these new technologies are required to accommodate the unique requirements of the Middle East.

### PATRICK WEST

I am the Commissioning and Start-Up Leader for the Site Raw Materials Warehouse within the Sadara supply chain. It is my job to ensure that the Site Raw Material Warehouse is fully prepared for start-up by the identified start date. This includes operations design, implementation and facility construction. Additionally, I am responsible for providing logistics support related to delivered raw materials for all commissioning and start-up activities existing on-site.

When I decided to join the project, I saw Sadara as an opportunity to join a project that is unlike anything that most people ever get to experience in a career. Once I arrived, I learned that this project is not just transformational for Dow and Saudi Aramco but also for the Kingdom of Saudi Arabia. New products are entering the Arabian market, new infrastructure will be developed to support Sadara activities and the number of jobs created as a result will change industry in Saudi Arabia.



Sadara's impact on the packaging industry is two-fold. A new source of production of performance plastics will be more accessible to European and Asian markets. Additionally, Sadara will be a large customer of high-quality packaging materials used to efficiently transport and protect product going to our local global customers.



### JEROEN TAP

I am the project liaison between Sadara and three utilities companies, who will build, own and operate facilities to provide industrial gases and water to the entire Sadara site.

This is the largest chemical project in the world and it is exciting to be part of the team that will design, build and start-up this plant. It's simply something nobody has done before on this scale.

Sadara's high-quality polyethylene will allow packaging producers to use less material to create lighter packaging concepts that require less energy and in turn reduce the environmental footprint.



Interview with Ray Hammond, Futurologist:

# A glance into the future

FOR OVER 30 YEARS RAY HAMMOND HAS RESEARCHED, WRITTEN, SPOKEN AND BROADCAST ABOUT HOW MAJOR TRENDS WILL AFFECT SOCIETY AND BUSINESS IN THE FUTURE. HIS 2007 BOOK 'THE WORLD IN 2030' FOR PLASTICSEUROPE OFFERED PREDICTIONS ON DEVELOPMENTS THAT WILL SHAPE THE WORLD. HAMMOND HAS BEEN AWARDED WITH THE MEDAL OF THE ITALIAN CHAMBER OF DEPUTIES FOR SERVICES TO FUTUROLOGY. LEARN MORE AT [WWW.RAYHAMMOND.COM](http://WWW.RAYHAMMOND.COM)



'The principal consequence of a rapidly-growing middle class is a growing world market for food, water, energy, healthcare, education, transport and consumer goods'

'Human innovation is the key to all sustainable economic growth'

**QUESTION**

In your opinion, what are the three major global trends driving growth and innovation we will see emerging over the next two decades?

**ANSWER**

The first major trend is asymmetric world population explosion. There are seven billion people on the planet today. By 2030 the number will be approximately 8.2 billion and by the middle of the century world population will be over nine billion. By its very nature this population growth will trigger further economic growth, but it will also present world governments with very significant challenges.

The second major trend driving economic growth and innovation is accelerating, exponential technology development. Led by developments in the information technology sector, most areas of technology are seeing, and will continue to see, rapid innovation and growth for the next 30 years. It has been suggested for over 30 years that Moore's Law (the annual doubling of computer processor speed and power) is running out of steam, but microprocessor manufacturers now say that they can foresee the technological pathway that will enable exponential development into the 2030s.

The third trend driving economic growth is continuing globalization. When conducted ethically and sustainably, globalization is the greatest force for social good on the planet. Since 1995 globalization has lifted almost one billion people out of subsistence-level living and allowed those people to join an economic class that is able to afford accommodation, education and healthcare. Globalization has done more to reduce world poverty than all of the international aid given by the developed nations to emerging nations since World War II.

**QUESTION**

What critical challenges face us on a global scale?

**ANSWER**

The most critical challenge facing humankind is climate change caused by greenhouse gas emissions. This will

be a continuing challenge which will last at least until the end of this century. The world is undergoing a transition in which we must migrate our energy sources from fossil fuels to renewable and sustainable forms of energy. This will not be easy, quick or cheap.

A second challenge is to pursue global development in ways that do not antagonize those whose religious and cultural views are out of step with attitudes in developed nations. It is already suggested that we are seeing a clash of civilizations as globalization creates interfaces between developed and less developed societies, and it will require tolerance and good management skills to minimize the cultural dislocation that inevitably follows the connection of the world's peoples and cultures.

Global population increase is a third challenge that will have to be faced this century. It is likely that sufficient food can be grown and husbanded for nine to ten billion people (so much of today's agriculture in the developing world is still at subsistence level and can be greatly improved). Drinking water may prove more difficult to find as climate change exacerbates drought in the regions where there is likely to be the largest rise in population, and new techniques of low-cost, low-energy desalination and water purification will be required. Long-distance water pipelines may also have to be built.

As renewable energy harvesting and storage improves it is likely that the energy demands of ten billion people can be met, but the urge to continue world reliance on fossil fuels must be resisted.

**QUESTION**

There is an emerging global middle class which is set to number some five billion people by 2020. What are the consequences on the economy, supply and demand? Is the world ready?

**ANSWER**

The principal consequence of a rapidly growing middle class is a growing world market for food, water, energy, healthcare, education, transport and consumer goods. Global economic growth is

a given because it will be fueled by population growth and globalization.

The challenge for emerging nations is to achieve rapid economic growth while avoiding the many mistakes made by nations that have industrialized in the past. These risks include worker exploitation (child and adult), climate damage, imperial ambitions and international conflicts.

**QUESTION**

What can we change today to anticipate and enjoy future decades?

**ANSWER**

To be sure that we can enjoy future prosperity we must limit our individual and collective use of energy derived from fossil fuels. We must also look closely at other significant contributors to greenhouse gas emissions such as agriculture. The major symptom of climate change is extreme weather and this will spoil our opportunities to enjoy the wealth and leisure opportunities that will be created in the latter part of this century.

Human innovation is the key to all sustainable economic growth. Supporting and promoting a culture of innovation should be central to all economies and education policies. Innovation is not just about developing inventions and producing new materials, it is also about discovering new and better methods and processes for doing things we already do. The opportunity for innovative thinking to produce sustainable growth opportunities is enormous, but we do not yet do enough in our cultures, in our education systems and in corporate cultures to foster this most important talent.

**QUESTION**

What message would you send to business leaders around the globe?

**ANSWER**

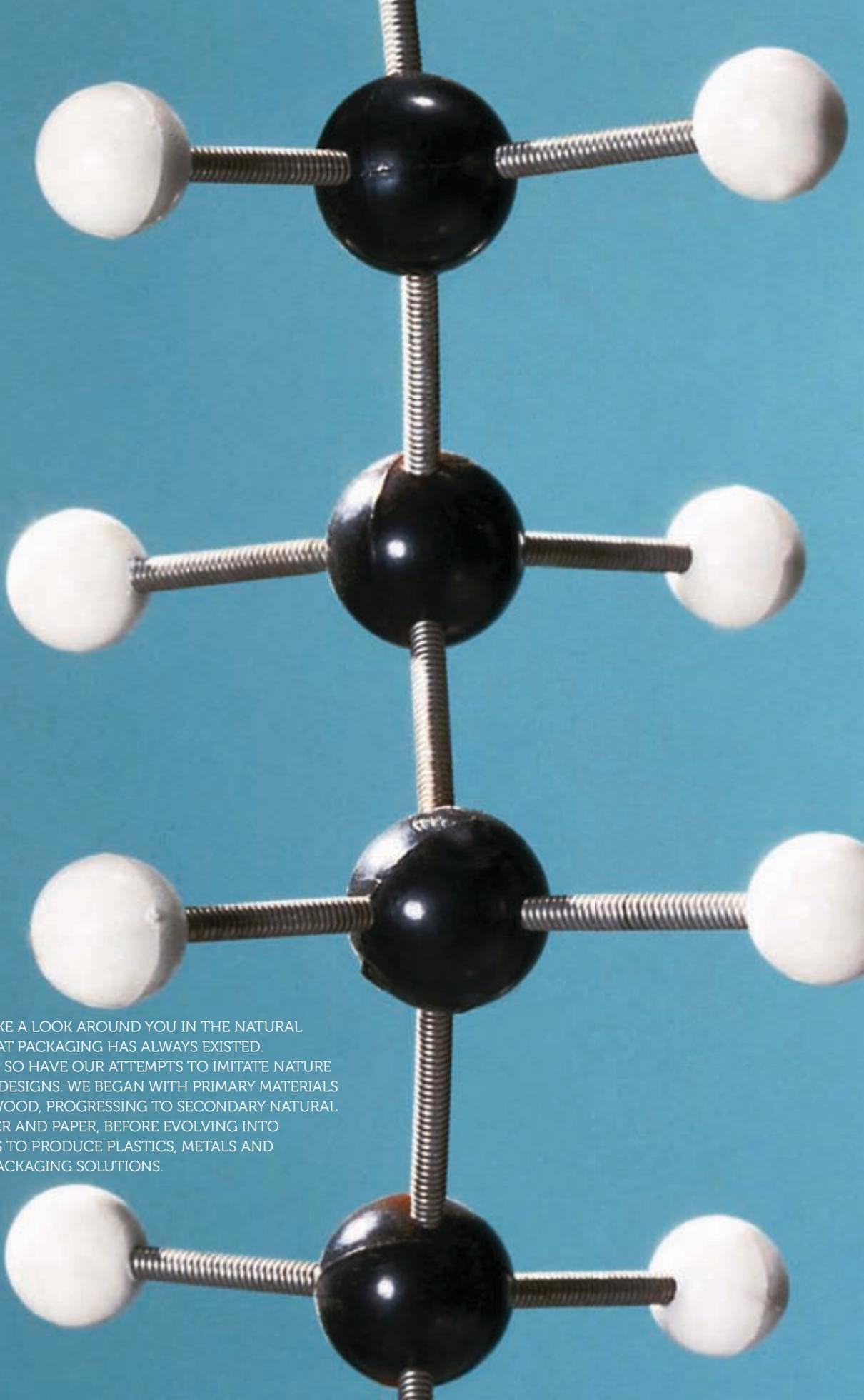
As mentioned before, our ability to enjoy our future depends on the climate in which we live. I would also add that education and further education needs to be given greater priority by almost all governments. As a futurologist, I know that the best way to shape the future is to develop the minds of those who will be creating it.



# With nature in mind

Report on packaging materials

YOU ONLY HAVE TO TAKE A LOOK AROUND YOU IN THE NATURAL WORLD TO REALIZE THAT PACKAGING HAS ALWAYS EXISTED. AS YEARS HAVE PASSED, SO HAVE OUR ATTEMPTS TO IMITATE NATURE WITH OUR MAN-MADE DESIGNS. WE BEGAN WITH PRIMARY MATERIALS SUCH AS LEAVES AND WOOD, PROGRESSING TO SECONDARY NATURAL MATERIALS LIKE LEATHER AND PAPER, BEFORE EVOLVING INTO INDUSTRIAL PROCESSES TO PRODUCE PLASTICS, METALS AND A WEALTH OF OTHER PACKAGING SOLUTIONS.



## PACKAGING ESSENTIALS

The purpose of packaging has always been the same – to protect the product. But how has packaging evolved to maintain this fundamental responsibility in line with consumers' needs?

Today's consumer lifestyles require smart packaging functionality: permeable packaging that keeps food fresher for longer; packaging that withstands high temperatures for microwave ovens, and packaging that withstands the lowest of temperatures in freezers.

Packaging designers require materials that meet these needs. Increased printability, better gloss, higher transparency, excellent taste and odor properties and enhanced flexibility – these are the attributes necessary to help make the package sell.

Niels van Hoof, a Strategic Product Designer in The Netherlands, stresses the critical role of packaging as the 'first contact a customer has with your product.' He adds: 'A lot of companies today have looked at how they can better develop packaging that mimics nature, not just in terms of its beauty and in some cases its simplicity, but also by using sustainable materials.'

## THE SOUND OF SUSTAINABILITY

Sustainability is becoming a louder buzz in the ears of packaging designers. Brand owners have to make decisions on material sourcing, suppliers and ultimately production, taking into account consumer preferences for sustainable packaging. Consumers are increasingly choosing products that are inherently sustainable and/or are marketed in sustainably sourced packaging.

An interesting case study to illustrate this trend is that of Mattel, the makers of the world-famous Barbie doll. Testing on the Barbie boxes revealed paper fibers from deforested regions in Indonesia. In the ensuing furor, the company pledged to change its sourcing policy and instructed its suppliers to commit to sustainable packaging. In another case, Proctor &

Gamble (P&G) took a more proactive approach, opting for sustainable plant-based fibers in the manufacturing of the trays for its disposable razors. Not only are they biodegradable, they are cheaper to make and lighter, resulting in lower transport costs and a lower transportation CO<sub>2</sub> footprint – a win for the company and a win for the environment. For P&G, the benefits are a sleek design and positive association for investing in environmentally responsible packaging in a highly competitive market.

## MAKING IT HAPPEN WITH INNOVATION

Innovation is at the very core of efforts to make packaging more environmentally friendly. Companies at the forefront of the packaging value chain, dedicated to ongoing research and development in this space, are pioneers in this.

Innovation is not limited to one packaging material over another, and companies appreciate that every

material has its role in the packaging evolution. Developments continue at a rapid pace, and as consumer demands change and creativity grows, so does the need to innovate.

Professor Michael Braungart (co-creator of the Cradle to Cradle® concept) has worked on a packaging solution

that is liquid at room temperature but becomes a film when frozen, allowing consumers to use the product and discard the packaging in an environmentally friendly way. Other packaging designers have captured environmental sustainability in a different way – embedding seeds in cardboard so any disposal will result in a plant or tree growing.

Nature bore the concept of packaging; we took it, evolved it and made it something more through chemistry and engineering. We seem to be coming full circle in packaging design, returning to the concept of nature through innovative and sustainable design. Will we complete the circle through a future where all packaging is completely in tune with nature? Only time – or innovation – will tell.



# THE PACKAGING GENIUS OF NATURE

Looking to nature can change the way designers think – and the way we make.

Consider the strawberry. Around the world, this delicious fruit quietly transforms its natural packaging from white to red, signaling that it's ready to eat. The external layer is a high-performance material, protecting from spoilage and moisture, yet also biodegradable and made with abundant materials. It blurs the line between packaging and product, and invites us to look deeper. In this conversation with IDEO's Jane Fulton Suri, Partner and Chief Creative Officer, and Tim McGee, Biologist, at IDEO we'll consider how nature's packaging flair can change the way designers make – and the way we think.

IDEO (pronounced 'eye-dee-oh' is an award-winning global design firm that takes a human-centered, design-based approach to helping organizations in the public and private sectors innovate and grow.

Why is IDEO looking to nature for design inspiration?

**Jane:** As designers, whether we're creating packaging, products or places, we usually think first of human purpose and pleasure. Nature's elegance inspires us with beautiful forms, folds, spirals, patterns, shapes, layers, materials and colors – immeasurably enriching human imagination. But three current opportunities in design prompt us to also seek guidance from nature: environmental impact, complex systems and new technologies for production.

**Tim:** We tend to talk about 'nature' as encompassing all living organisms on Earth – their interactions, behaviors, systems, and incredible diversity. Packaging in nature offers a multitude of mental models that can change our perception of what's possible in design. So, looking to nature can change not only what we create but also the way we think and the way we make.



Let's start with the first design opportunity you mention. How might we look to the natural world to help us design for better environmental impact?

**Jane:** First, we have a much better awareness now of the environmental consequences of many of the wonderful things we create for human convenience and delight. Too often we use materials and processes that deplete resources, destroy habitat, and pollute the air and water we all depend upon. In contrast, nature's processes enhance our environment – creating fresh water, clean air, habitat, and food for other organisms. So nature helps us see not just sustainable ways to make things but actually generous, life-friendly ways.

**Tim:** Yes, living systems tend to be generous in that they create richer systems throughout their life cycle. For example, the bare rock of a volcanic island eventually becomes lush and vivid green because life is creating conditions conducive to life itself. Could our designs be similarly generous? Think of the packaging challenges a tree faces in producing a seed; from manufacturing durable

coatings for protection, to creating pigment for attraction, to enabling complex life cycle processes that ensure delivery or transportation with other organisms. Yet at every step of the way the tree creates habitat, nourishes its environment, and supports the health and growth of the ecosystem, which it is a part of. I think we recognize that our designs aspire to be more like how natural systems behave.

**Jane:** Nature can teach us many elegant ways for packaging – to be space-efficient, light and strong like honeycomb structures, for instance. It would be amazing if we could design packaging that also enhances our environment the more we use it. A few companies have taken some steps in this direction by embedding seeds in material that can act as a growth medium after use. 'LifeBox' for example, embeds tree seeds and their symbiotic fungi in cardboard; several years ago Pangea Organics offered its bar soaps in packs molded from 100 percent post-consumer paper pulp that incorporated organic seeds like basil and amaranth.

But to be effective at scale, this requires the active consumer steps of germination and planting. It presents a systems challenge, asking us to change our behavior too. If we're to match nature's example to make a positive contribution to our environment, we also need to match nature's success at creating solutions that prompt intuitive behavior – perhaps by designing forms that intrinsically invite us to treat the environment differently.

**Tim:** We've begun to see a multitude of ways that biology is influencing design. It's clear that at times we'll be learning from nature's organisms the methods for creative manufacturing or ingenious solutions that inspire us. And it's also clear that at times we'll be working with other organisms to create our future.

One example of how designers are learning from nature is the Vitalis PET bottle, which explicitly draws inspiration from the way trees and other organisms are able to use shapes that minimize the amount of material needed to create robust structures.



Optimization of this bottle's geometry resulted in an iconic shape that is valuable for the brand, as well as savings of 250 tons of material a year.

By contrast, Ecovative's use of fungi to grow a new type of packaging material is about working with natural partners. Ecovative is using waste cellulose and introducing selected fungi to bind the waste material together. Because it's a growth process, rather than a subtractive one, the material can offer up unique opportunities to behave more like a natural system. The inputs and outputs can be biodegradable and non-toxic. The system can 'grow around' objects or complex forms with little retooling. Basically, it highlights a shift away from using simple bulk materials to using smart materials that are co-evolved with another life form.

**So, how does turning to biology help designers to better understand complex systems?**

**Jane:** Natural ecosystems, in which interdependent elements respond and adapt dynamically to ever-changing conditions, provide us with mental models and metaphors that help us grasp system complexity. This, in turn,

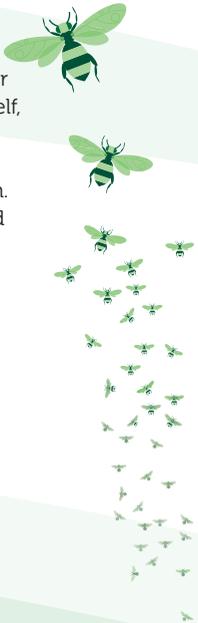
helps us see opportunities for design in the interdependencies between things. So, for instance, rather than simply assume we're going to design 'a new box,' designers consider how packaging plays in the overall experience we're trying to create. That lets us explore questions such as: What needs protection? From what? Where will it travel? And how? Who will engage with it? In what contexts? What needs to be communicated – perhaps emotional things, like brand and freshness, as well as functional issues? What other artifacts will relate to it? How will it be used, stored, reused or disposed of? And, of course, how might design support these myriad needs in elegant and dynamic ways? This is where more radical innovation happens, because we begin to rethink what packaging is.

One of my favorite examples of this kind of rethinking is Aaron Mickelson's design thesis project, The Disappearing Package, in which he presents ingenious ways of containing individual items, such as tea bags, soap powder, and food bags, in forms that provide free-standing structure and strong shelf-presence when purchased new, but disappear over time as they're used.

**Tim:** As a biologist I was at first surprised to find out how much thinking goes into packaging within the design community. However, the more I think about it, the more obvious it should have been because packaging plays an enormous role in the natural world. It's the interface between objects, the communication substrate, the attachment point for interactions. Now I can't look at any natural object without thinking of the innovative packaging functions the organism employs.

Even familiar nature packaging continues to surprise and delight. For example, the banana was recently an inspiration during IDEO's Designs On: Packaging challenge. If you've ever found an out-of-date drug on your shelf, you probably know that the drug label expiration date is usually in small print and hard to read from across the room. Here's a more intuitive, nature-inspired design solution: packaging that slowly develops spots as it ages.

A brilliant idea that everyone familiar with bananas can relate to instantly. I also have been excited by how these conversations are just starting points



The strawberry transforms its natural packaging from white to red, signaling it's ready to eat.



'Lifebox', embeds tree seeds and their symbiotic fungi in cardboard.



Ageing on natural packaging.



Nature-inspired drug packaging develops spots as it ages.



between design and biology. Only recently have scientists discovered that the brown spots on a banana actually fluoresce in the UV spectrum, supposedly to signal to organisms that see in that spectrum that the fruit is ripe. So we are continuing to learn from nature the multiple ways in which we can signal, and be contextually responsive, which adds more fuel to the fire for design inspiration and engagement.

**And the third opportunity? You mentioned that nature is informing new ways to make packaging.**

**Jane:** New technologies for making are emerging in the life sciences, specifically in synthetic biology, genetic engineering, and nanotechnology. These will change radically both how and what human beings are able to make. We're already creating and modifying the building blocks of life – so far mostly in laboratories – so it's a great time for companies to begin imagining how this new capability will shape their future artifacts and the experiences of our everyday lives. There are exciting possibilities for design with living materials that will challenge many of our current assumptions about what we want and need to create.

**Tim:** Yes, traditionally when we determine the form of the things we design, they stay that shape. We put careful effort into designing the 'final' outcome. But in the natural world, there is no final design – things are always responding, changing, and adapting to the dynamic world. It's possible that the objects of the future could be more responsive, considered and maybe more alive than we might think.

Bacteria are masters of genetic engineering in their own right, packaging and swapping DNA to enable more rapid evolution and adaptation. It isn't uncommon for different species of bacteria to share beneficial genes in order to thrive. It would be wise to look to bacteria to learn the critically important questions of why and how we should engage in genetic engineering, but it's inspiring to work with bacteria to engage their sheer enthusiasm for diversity and see how we can work together to design responsive materials and systems.

**Jane:** Our colleagues Will Carey and Adam Reineck, collaborating with synthetic biologists Wendell Lim and Reid Williams of the University of California San Francisco, imagined

a future where bacteria could be developed to respond to a specific wavelength of light and would grow as a coating around the surface of the light to shape a new vessel.

This was more than a simple way to make a cup. It was a new way of thinking about the experience we could have of making, buying and consuming nutrients and flavors: The bacteria used to grow the cup could include probiotics to aid digestion and add flavor when water is added to the vessel. This design concept challenges the idea that packaging is secondary to the product a consumer buys – here the packaging is central to the experience and its shape invites intuitive behavior – we'll 'just add water' to the cup and imbibe a healthy drink.

**Tim:** Will and Adam's provocation points to an exciting future, where packaging solutions emulate characteristics of the natural world, going beyond our traditional notions of packaging and starting to look and act a lot more like life itself. [www.ideo.com](http://www.ideo.com)

Future visions of synthetic biology.





## TO DO THINGS RIGHT OR DO THE RIGHT THING? THAT IS THE QUESTION...



PROFESSOR DR. MICHAEL BRAUNGART IS FOUNDER AND SCIENTIFIC CEO OF EPEA INTERNATIONALE UMWELTFORSCHUNG GMBH IN HAMBURG. HE IS ALSO CO-FOUNDER AND SCIENTIFIC HEAD OF MCDONOUGH BRAUNGART DESIGN CHEMISTRY, LLC (MBDC) IN CHARLOTTESVILLE, VIRGINIA (USA), AND FOUNDER AND SCIENTIFIC HEAD OF THE HAMBURGER UMWELTINSTITUT (HUI). THESE INSTITUTES SHARE VALUES EMBRACING INTELLIGENT, AESTHETIC AND ECO-EFFECTIVE DESIGN.

As environmental awareness began to increase in the 1980s, one of the more interesting concepts of the broader environmental debate was that of Cradle to Cradle®. So what is Cradle to Cradle? According to Wikipedia, it is 'a holistic economic, industrial and social framework that seeks to create systems that are not only efficient but also waste free'. Essentially, it aims to keep all materials used and reused within a cycle so they never end up as waste. Thinking holistically then, this model can be applied not only to industrial design and manufacturing – including packaging – but can be extended to entire systems, whether social or economic. As a play on the term 'cradle to grave' – a phrase coined to describe more wasteful systems – the Cradle to Cradle concept differs as it considers the well-being of future generations and the environment.

The concept asks us to go beyond traditional thinking that environmental protection is just about producing less.

Professor Michael Braungart, who first introduced Cradle to Cradle along with William McDonough, points out 'we were all focused on the idea that using less water, energy and material is all it takes. But it is so much more.'

The most important element of the concept is the idea of effectiveness, not efficiency. Braungart explains that 'efficiency is the traditional thing a company does. For example, they produce more eco-efficient products by minimizing the use of water and energy. However, Cradle to Cradle talks about effectiveness, asking what is the right thing to do, not how do we do things right.' Being effective is 'all about capturing creativity in innovation, quality and beauty', Braungart says.

### AN OPTIMISTIC AGENDA IN PRACTICE

Cradle to Cradle is clearly an optimistic agenda but one can certainly see its importance. A critical step prior to a company adopting and implementing this philosophy is the level of understanding – from purchasing to manufacturing and production. For companies to fully grasp this concept and apply it, they must acknowledge a change of mind-set at the top in order to start 'thinking in cycles'. Braungart highlights that 'once leadership understands the long-term potential of Cradle to Cradle, the rest happens naturally.'

There are three fundamental principles of Cradle to Cradle that support this change of mind-set: first, understanding that 'waste equals food' and that 'every material can become a nutrient that lasts forever'; second, the importance of using renewable energy; and third, the need to celebrate diversity. Fundamental to the concept is recognizing that each industry, country and culture has a different approach and attitude towards effective production.

Cradle to Cradle identifies and recognizes the potential of progressive 'cycle' opportunities for the environment. 'All other species support the environment: why are we the only ones trying to minimize damage?' Braungart asks. 'There are far too many

people on this planet for us to succeed in our efforts of being less bad, that is why we all traditionally think in terms of 'cradle to grave'. When something is wrong, do not try to make it perfect, otherwise you just make it perfectly wrong.'

### PACKAGING IN THE SPOTLIGHT

According to Braungart, the packaging industry has been, somewhat paradoxically, the most advanced in both Cradle to Cradle and cradle to grave thinking. 'The industry has optimized packaging to a great degree, but in a lot of cases it has optimized the wrong things', Braungart asserts. But he also maintains that the packaging industry is one that must be celebrated. 'We must remember that packaging has contributed enormously to saving lives by protecting our food. While there are still things to do, the packaging industry has evolved tremendously, first and foremost, and we need to recognize that.'

### LEARN FROM THE PAST AND MOVE TOWARDS THE FUTURE

All stakeholders in civil society – consumers, companies, government, academia and NGOs – need to move forward together, but to do so will require a fundamental shift in the collective mind-set of companies that will trigger change and initiate innovation sparked by the creativity of scientists and engineers.

For Braungart, the future of Cradle to Cradle is bright. To do things right, he believes we can achieve more if we 'partner with – not romanticize – nature' otherwise leading us to do the right things. As more people acknowledge this, Braungart believes that Cradle to Cradle will continue to be implemented across more industries, more products and more practices.

Whether an individual, a country or a company, to do the right thing requires society to stop focusing on being more efficient by using less water or resources. Rather, society must focus on reusing products more effectively within a cycle. 'It's a question of how and when will more people start thinking in terms of Cradle to Cradle, and not cradle to grave.'



# THE 100% RECYCLABLE POLYETHYLENE POUCH



THE PACKAGING FOR FROZEN FOOD PRODUCTS ARE SUBJECTED TO THE TOUGHEST OF ALL ENVIRONMENTS IN THE FOOD PACKAGING WORLD. IT NEEDS TO HAVE HIGH TEAR AND PUNCTURE RESISTANCE, SUPERB BARRIER PROPERTIES TO KEEP FOOD FRESH, GREAT OPTICS FOR EYE-CATCHING DESIGNS AND EXCELLENT TOLERANCE FOR FREEZING TEMPERATURES.

Meeting these criteria in the past has been possible only by using packaging made from films produced with multiple layers of different materials. While these packaging solutions do offer performance and functionality, they do not necessarily address the sustainability needs of consumers as it relates to post-consumer recycling requirements.

Recent innovation has led to the introduction of polyethylene-only film for frozen food pouches that offers 100 percent recyclability. This packaging solution offers all of the exacting performance properties required for frozen food products, while providing a sustainable end-of-life option.



## BOOK REVIEW

### Why Shrinkwrap a Cucumber? The Complete Guide to Environmental Packaging



WHY SHRINKWRAP A CUCUMBER? IS ONE OF THE MOST ILLUSTRATIVE PACKAGING BOOKS OF OUR TIME. THE AUTHORS, MILLER AND ALDRIDGE, TACKLE COMMON MYTHS AROUND SUSTAINABILITY, ADDRESS DESIGNERS' NEEDS ON HOW TO STEER MANUFACTURERS AND CLIENTS, ANNOUNCE NEW PACKAGING MATERIALS AND PROVIDE A WEALTH OF CASE STUDIES.

The book highlights excess packaging as one of the more common concerns in the packaging world but in reality this is only the tip of the iceberg. Miller and Aldridge start by looking at how global climate change has had an impact on packaging choices and look at a product's life cycle – from production to recycling or disposal – to stress that understanding the basics of packaging is fundamental to progress.

Whatever your involvement with packaging – a consumer, designer, producer or manufacturer – through a wealth of glossaries, images, stories and case studies, the authors offer a library of refreshing content that ultimately underlines the necessity of packaging.

This all stems from a simple cucumber: did you know that shrinkwrapping a cucumber can make it last three times longer than an unprotected cucumber?

Plastic wrapping enables the cucumber to stay fresh from harvest to delivery to the kitchen table, reduce food waste in landfills and reduce the cost of shipping and packaging.

- **Title:** Why Shrinkwrap a Cucumber?: The Complete Guide to Environmental Packaging
- **Authors:** Steven Aldridge & Laurel Miller
- **Publisher:** Laurence King Publishers (October 10, 2012)
- **ISBN-10:** 1856697576
- **ISBN-13:** 978-1856697576





The experience with the brand begins before the device is in the consumer's hands.

# The unpackaging ritual

BRANDS ARE FINDING IT INCREASINGLY NECESSARY TO ENCOURAGE CUSTOMER LOYALTY THROUGH ASPECTS THAT GO ABOVE AND BEYOND JUST THE PRODUCT. INCREASINGLY, COMPANIES ARE AWARE THAT THE EXPERIENCE WITH THE BRAND BEGINS BEFORE THE PRODUCT IS ACTUALLY IN THE CONSUMER'S HANDS.

In the consumer retail environment today, packaging has become a commodity in itself and the 'magical' ritual of unpacking is no longer overlooked. Testament to consumer fascination with packaging is the internet phenomenon of 'unboxing' videos – essentially a film of a product being unpacked from the package it has been delivered in, each layer discovered and appreciated almost as much as the product within. When it comes to impressive and legendary unboxing experiences, technology aficionados agree: nobody surpasses Apple or Leica. There are unboxing videos of Apple MacBooks or iPads with more than 700,000 clicks.

Jonathan Ives, Apple's lead designer, explains that 'you design a ritual of unpacking to make the product feel special. Packaging can be theater, it can create a story.' It is the story behind the brand and its essence. In his book **Inside Apple**, Adam Lashinsky points out that Steve Jobs was well aware of this fact, 'that's why he created a dedicated room, where packaging designers went through hundreds of iterations of package design.'

Lor Gold, Global Chief Creative Officer at SGK a global brand development company, explains that packaging must embrace the product itself. 'So much of the story can be encapsulated on the packaging,' he adds. 'If you think about it, the packaging is a type of outdoor board: it's not just the brand that's inside, but when it sits on your table at home, what story are you telling? Sometimes that alone is an allure to the brand and the product in the box. The package should really be seen as gift wrapping, encasing something really special.'

While Apple and Leica surpass most brands when it comes to providing an experience that is more than just the product, all brands in some way retain that connection through their peripheral branding activities utilized from the beginning.

There is more and more evidence of this shift in philosophy to enable a packaging experience that corresponds with an overall brand strategy and drives consumer loyalty.





# Packaging: Performance on the Shelf

LOR GOLD, GLOBAL CHIEF CREATIVE OFFICER, OVERSEES CREATIVE DEVELOPMENT FOR SGK, A LEADING GLOBAL BRAND DEVELOPMENT, ACTIVATION AND DEPLOYMENT COMPANY THAT DRIVES BRAND PERFORMANCE.

A big part of what Gold does for clients is create compelling emotional bonds with consumers via packaging. Here Gold discusses the three elements needed to create an emotional link with the consumer: great creative talent and a solid design strategy; an in-depth understanding of the brand and its values; and the brand's commitment to want to create the bond. Gold discusses what it takes for packaging to 'jump the fence', to take the leap beyond functional packaging – and how some packaging ends up on every shelf globally.

You have been quoted as saying 'a shopper wants to be informed and motivated by packaging': to what extent does this impact the selling power of a product?

Transactions happen in two places: online and in the store. All signs must point people towards these two areas. Packaging becomes crucial at that 'moment of truth', the decision point at the shelf. As decision-making is both rational and emotional, packaging must appeal to both impulses.

Packaging has come along in leaps and bounds over the last 30 years, but a huge number of things can still be done with packaging, a concept which is moving to the forefront of agency thinking, covering innovation, artistic sensibility and talent. Packaging is no longer just down to the designers – both designers and those with the creative ideas should be working in tandem from the outset.

To what extent is packaging the key decider in a consumer's purchasing choice?

Packaging is much more important than ever before and its impact needs to be stronger than ever before. Where previously mass advertising could massively influence someone's purchasing decisions, media approaches have changed so much that the shelf of the store may be the only place where a consumer comes into contact with the brand.

How and why is it important to create a compelling and consistent brand experience through packaging?

The 'compelling' is obvious – it is about making emotional and rational connections and creating brand desirability.

Let's now look at the 'consistent': human behavior is such that we must receive a message more than once in order for it to stick. Consistency is therefore vital.

We refer to these two elements as elevating and then amplifying the brand. We elevate the brand so that it becomes the most compelling it can be, and build as much desire through the packaging for that brand as possible. Amplification

of the brand is about the consistency of the messaging and how often you can disseminate that message (through appropriate channels). We call this 'shelf out'. Essentially the package becomes the most important aspect of our messaging. We should embrace the packaging, understand it and be clear about what it needs to do: it should inform all other forms of marketing and communications. It can then become part of the elevation and amplification of a brand which is both compelling and consistent.

What tools do you utilize to create the brand experience through packaging?

Firstly, we use several kinds of brand strategy which inform us and allow for the magic to be created. Although we embrace this as creatives, it doesn't let us off the hook. We don't simply execute creative ideas around strategy. Instead, we elevate strategy to a fresh, magical perspective, which is beyond doubt something that will grab attention and create desire at the shelf when there is limited decision-making time. Effective packaging should be something that consumers want to reach for and take home.

What is the relationship between return on investment (ROI) and sustainable packaging for brand owners?

ROI and sustainable packaging must go hand in hand – today, ROI is extremely dependent on sustainability decisions and the gap between the two is disappearing, and rightly so! Brand owners must move in this direction in order to succeed. Our largest clients are now thinking about what happens to packaging after it has served its purpose. Does it have another use? Should we be thinking about another purpose? Packaging must either be reused in different ways or disappear from the face of the earth as sustainably as possible.

What is the impact of mobile technologies on the overall experience?

Mobile technologies are the gateway to online sales and support the essence of transactions. They are also very much a part of in-store sales, acting as a linchpin for guiding consumers to either one of those decision-making points.

I can't stress enough the importance of mobile communications – they are the future: one cannot market to consumers or support a brand without them.

What part does packaging play in the performance of a brand?

Packaging plays a huge role. In fact, if no other forms of marketing and communications could be afforded, packaging would be the key part of the thinking behind brand strategy and performance.

Performance is at the center of our thinking, and this relates to packaging first and foremost – every part of our strategy and creative is in place to allow the brand to perform.

Packaging is probably the biggest performance initiative any brand can have, and it must be thought about at the highest levels. Not just rationally, not just as a functional part of what the brand stands for, but as **everything** that the brand stands for. This is the key to achieve the utmost in performance.

#### TOP THREE PACKAGING DESIGN TRENDS IN PACKAGING & ITS RELATIONSHIP WITH CONSUMERS



**1) Built-in Technology** – We are just at the beginning of smart technology embedded in packaging. As time goes on, this will become increasingly sophisticated and useful with continued research by smart technology companies.

**2) Industrial Design** – Shape is enduring and says so much about the brand. This is where industrial design is taking over and opportunities for talented designers are available. It is less expensive and easier to execute than it once was, allowing more small design firms to take part, to a higher level, than ever before.

**3) A New Way of Thinking** – the industry is rethinking itself. Other areas of marketing and communications are growing in importance, packaging being one of them. There is a move away from just mass marketing. The emerging talent is unique and thinking about packaging in ways we haven't even conceived of yet!





# At the heart of shopping

IT SOMETIMES GOES UNNOTICED BUT, OUR INDIVIDUAL BEHAVIOR DIFFERS SIGNIFICANTLY WHEN WE CONSUME AND WHEN WE SHOP. THIS IS A STUDIED FACT THAT MARKETING SPECIALISTS ARE WELL AWARE OF. 'WHEN YOU ARE IN THE SHOWER AND USE SHAMPOO, YOU ARE A CONSUMER. WHEN THE SHAMPOO RUNS OUT AND YOU NEED TO RESTOCK, YOU'RE IN SHOPPING MODE AND BECOME A SHOPPER. THAT IS WHEN THE EMOTIONAL DRIVERS KICK IN,' SAYS DINA HOWELL, SHOPPER MARKETING PIONEER AND WORLDWIDE CEO OF GLOBAL SHOPPER MARKETING NETWORK, SAATCHI & SAATCHI X, A PART OF THE SAATCHI & SAATCHI ADVERTISING AGENCY NETWORK.



## Interview with Dina Howell, shopper marketing pioneer and worldwide CEO of global shopper marketing network, Saatchi & Saatchi X.

### DINA HOWELL'S SIX TIPS FOR BRANDS TO MAKE A DIFFERENCE

1. Fully understand your shoppers. Research behavior, understand motives and appreciate purchasing barriers.
2. Understand the product. How disruptive is it? Is it an innovation or a common product that everyone understands?
3. Is an explanation necessary? If it's hard to explain, explain it on the primary package, use cues or secondary packaging to reiterate the benefits, the 'claim', or something that will attract shoppers' attention.
4. Interact with the shopper. The moment of interaction between a consumer and a product on a shelf is very small: grasp it!
5. Make your brand irresistible. Make shoppers imagine they can't live without your brand.
6. Include store marketing into strategy and business plans, to fully understand what is important from the outset.

### THE SIMPLE TRUTH BEHIND DECISIONS

Understanding what lies behind our choices as shoppers, is essential for brands to remain successful. Howell highlights the importance of building brand equity through advertising to establish an image in people's minds before they go into a store.

'The best work that we do is when our clients have us look at their research or do unique research and really seek to understand what primary purchase barriers are,' Howell says. 'If businesses understand the real purchasing barriers, they can tailor their message and capture the shopper's heart. Of course, before purchasing other factors such as price enter the equation. But by and large, if you can openly address how your brand will help consumers overcoming those barriers, all of the other noise just falls away,' she adds.

Howell thinks the secret lies in understanding fundamental truths. 'Let's take diapers, for example. Parents around the world want the same: a better life for their child. If you appreciate that you can make a child's life better by having a drier night, allowing them to sleep through the night, then you understand a fundamental truth and what truly lies inside shoppers' hearts.'

### UPCOMING TRENDS

Howell describes three major trends emerging over the next five years that brands will need to monitor to stay in the game.

e-commerce will continue to grow. Driven primarily by the millennial generation (today's 18 to 30 year olds who have grown up with the internet), the next generation of digital natives will continue to expand e-commerce, as will the middle class explosion in rapidly developing economies of Asia.

Relationships between a shopper and a brand will become highly personal and tailored, through extremely targeted discounts and loyalty programs, increasingly delivered via smartphones. We will also see the rise of tactile environments both online and offline to give consumers assurance on the product they are purchasing. 'It will become just like a relationship between two people,' Howell asserts.

The shopper will experience, and come to expect, more transparency. Online reviews are an example of this, where purchasing decisions are much more informed by ratings received by products and services openly discussed online. 'Embracing and understanding transparency is absolutely a good thing. It will also raise consumer expectations and thereby increase the quality of brands. Brand changes that are not well received are very quickly changed.'

An example of this last point was how an orange juice brand attempted to change its packaging, but following online complaints that shoppers could not find the newly packaged product on supermarket shelves, quickly reverted to the original design.

Packaging's role in helping products stand out in the highly competitive mix is fundamental; as Howell points out, 'newest research indicates that 76 percent of all purchasing decisions are finalized or made in the aisle – that means in the three to seven seconds that the shopper spends in that area with all of the competitors on the shelf'. Packaging plays a crucial role in the shopping experience and also needs to function as a point-of-sale tool. It must grab attention, stand out, and properly portray the brand.





# Subconsciously shopping

INTERVIEW WITH PAUL HARRISON



PAUL HARRISON IS A CONSUMER BEHAVIOR AND MARKETING EXPERT BASED AT DEAKIN UNIVERSITY, MELBOURNE, AUSTRALIA. AS A SPECIALIST IN SOCIAL PSYCHOLOGY, HARRISON HAS CONDUCTED EXTENSIVE RESEARCH ON CONSUMER POLICY. HE ALSO ADVISES GOVERNMENT AND NON-GOVERNMENTAL ORGANIZATIONS (NGOs) ON SOCIAL MARKETING AND SOCIAL CHANGE PROGRAMS.

## QUESTION

How does supermarket design influence the way we shop?

## ANSWER

Those behind supermarket design must have a deep understanding of the less obvious elements of the human character. We assume we are very rational decision-makers, when in fact we are highly influenced by our emotions, automatic responses and the external stimuli that we are exposed to.

Consumers are 'habitual' and do not consciously engage in the supermarket, rather, behaviors tend to be automatic. This raises an interesting dilemma for brand owners. On the one hand, they want shoppers to continue to act habitually. However, as a business how do you attract new customers by influencing behavior with external stimuli?

These automatic behaviors and goals can be influenced, for example, through a certain music type, prominently displayed food product or a PA announcement. It is human nature to look for cues to guide our decisions, including colors (red to grab attention), the word 'special', and positioning in supermarkets.

## QUESTION

Is this shopping experience replicated globally? Are there any major cultural differences between consumers/designs globally?

## ANSWER

Consumers are influenced subconsciously by emotional psychology, which does not vary drastically from continent to continent. While many elements of behavior are cultural and learned, at a high psychological level, most humans have the same basic goals.

Supermarket planning follows a rather homogenous formula globally. On the whole, supermarkets differ most prominently regionally. Although local supermarket managers may have a wealth of insight and research behind them from the central testing labs, they also benefit from intuitive knowledge about what will or won't work for their specific market.



## DID YOU KNOW?

in

- On average, a counter-clockwise trip around the shop floor equates to around US\$1.8 additional spend per trip. A shopping trip lasting ten minutes or less also equates to a bigger spend per minute.
- A human's short-term memory is inherently flawed leading to 'just in case' purchases on a whim – tins of tomatoes, chickpeas, herbs. A perfect example of consumers who are not actively engaging with the act of shopping.
- The prime position on a shelf is between 10° upwards and 45° downwards from the line of sight. Positions within the center of the aisle – the natural gravitational point – and at the end of the aisle are also placement contract hot spots for big brand owners.
- Framing a message in a positive manner is more impactful than a threatening message. Harrison is currently researching the effect of positive message framing on consumer choice and decision-making.

## QUESTION

How does color and supermarket layout help drive consumers to make healthier decisions?

## ANSWER

As we have already established, most purchasing decisions are not taken on a rational level. The fruit and vegetable section is a perfect illustration of tactics used to influence consumers.

Positioned at the entrance of the store, it instills a sense of well-being upon arrival. The section is set up to provide a social experience, with lots of people milling around, and an emotional connection with the product on display, in this case fruit and vegetables.

Produce experts, employed by the store to work in the section, are on hand to offer advice as well as to create a social model which inspires customers to escape their usual product choice comfort zone – inspiring them to try something new.

Even something as minor as the floorcovering can have a significant influence on consumers' willingness to buy a product in the supermarket.

## QUESTION

How has supermarket design changed over time? What's the influence of new, particularly mobile, technology?

## ANSWER

It is unavoidable that mobile technology will change the way we work. However, brand owners cannot lose sight of the importance of keeping customers at the center of all decision-making.

Markets are segmented by different needs and shopping habits – take the example of the working population who regularly travel and are looking for a simple way to obtain weekly groceries. An innovative smartphone app has filled this void, giving the option for collection of shopping at the airport.

It is absolutely crucial to think about your different market segments – what makes them unique and what motivates them? It is also important to stay on top of and identify emerging consumer trends. This allows potential opportunities and risks to be identified early. Consumers are looking for a process which is as easy as possible and with minimal risks – if something goes wrong, they want to know the problem can be solved easily.

## QUESTION

What trends will we see next? Is this psychology also applied to online supermarkets?

## ANSWER

When compared to technology, on the whole, humans have not evolved much over the last 2,000 years! Our short-term memory is inherently flawed and we are still susceptible to social and emotional influencers.

It will be crucial for brand owners to analyze how online tools can facilitate what makes us human – meaning, taking into account human aspects first, then looking at available technology and how best it can work alongside human nature.

We will see a few emerging trends. A more flexible and convenient shopping experience will be sought by consumers; additional self-service technology will be installed in supermarkets; and clever packaging will become the norm as consumers are looking for new and exciting experiences. Packaging should emerge as a form of differentiation between products, with aesthetics key in the design process. Consumers will be looking for both utility combined with a level of brand connection delivered by product packaging in an otherwise homogenous environment. People are looking for packaging which is both beautiful and aesthetically pleasing as well as being easy to use.



# How does culture shape packaging?



## Interview with Professor Ruud Heijblom, International Management & Marketing

CROSS-CULTURAL IMPLICATIONS ON PACKAGING ARE BECOMING AN INCREASING FOCUS OF MANY PACKAGING DESIGNERS AND MANUFACTURERS TODAY. PROFESSOR DR. RUUD HEIJBLUM HAS BEEN RESEARCHING AND LECTURING ON INTERNATIONAL MARKETING AROUND THE WORLD FOR OVER 30 YEARS. WE SPOKE TO HIM TO GET HIS EXPERT INSIGHTS INTO HOW PRODUCT PACKAGING DEPENDS ON CULTURAL TASTE.

### How long have you been researching and advising companies on cross-cultural marketing?

I was first fascinated by what went wrong in international marketing during the 80s. In 1988, I published a book, **The Miscalculations in International Marketing**, together with Professor Tevfik Dalgic, which was the result of different research projects on cross-cultural marketing that I did alongside my students. After a couple of years we had collected more than 200 cases on miscalculations in international marketing. This was the starting point for my focus on cross-cultural marketing.

### What is the impact of globalization on packaging in different cultures?

Packaging is clearly moving to a stronger global focus on sustainability under the pressure of a more sustainable society. In terms of marketing, sustainability is evolving into an important unique selling point for companies.

The alternative to the global approach is the multi-domestic approach where companies adapt their messaging to specific markets and regions. But the trend – especially for international brands – is moving towards the ‘Chiquita banana’ approach where companies tend to have one packaging for all regions.

### Do you feel that cultural tastes are becoming aligned due to globalization or other global trends?

The difference of cultural tastes is still important in some areas. For instance, you will find different regional labels of alcoholic drinks tailored to cultural tastes. However, this does not apply to big global brands such as Heineken that are not interested in being seen as regional brands. Other companies like Unilever go for the middle ground. While they use regional design on the front packaging, they introduce their global brand name on the back to bring the brand front of mind of the consumer.

But essentially, there is the one factor that still remains an important trend for packaging in all markets and sectors – and that is sustainability.

### What are the biggest differences with customer expectations in different cultures when it comes to packaging?

Companies really have to watch the aesthetics of packaging – they shouldn’t underestimate aesthetics. American packaging is certainly different to the packaging you find in the Middle or

Far East in terms of smell and colors.

Just to give you one example: in the Western world it is quite normal to find cookies in white packages. This would not be a good idea for the Japanese market though, where white is associated with death.

### Are there any areas where packaging does not depend on cultural taste, and where it does not matter how the product is packaged?

You will find many examples in the electronics industry where the packaging is not tailored to cultural taste. And there is one good reason for this: these are companies that position themselves as international brands. They are not trying to become a regional brand, nobody expects them to be a regional brand, and their packaging design does not depend on regional cultural taste.

### What cultures will dominate packaging developments?

Europe and North America are the biggest producing and consuming markets, these are still the dominating markets for packaging.

### Can you give us a synopsis of your perception of the cultural impact on packaging in some key markets?

In a nutshell I would say:

- In Europe sustainability is key.
- Asia-Pacific is a big region with many cultural differences within. Therefore, packaging is rather regionally oriented.
- Latin America is very much impacted by the development of trade and the developing supermarket infrastructure in Latin America. The Latin American market orientates a lot around the North American market.
- In North America the variety of packaging and products is important.



# MILK

Milk is a basic food and a key nutritional element of the human diet. Once extracted from the cow's udder, milk, as a liquid, must be stored in secure and protective packaging. The increasing demand for milk in urban areas heralded the development of suitable containers for transporting milk in the 1860s. Today milk packaging comes in various shapes, sizes and materials dependent on local trends and cultural preferences.





LOOKING COOL





## WHAT DOES YOUR FRIDGE SAY ABOUT GLOBAL PACKAGING?

ALONG WITH THE FRIDGE, HIGH-PERFORMANCE PACKAGING HAS REVOLUTIONIZED THE STORAGE OF FOOD. PRODUCE NOW STAYS FRESHER LONGER AS A RESULT OF PACKAGING. WITH THE INVENTION OF RESEALABLE PACKS AND PERSONAL SIZE SACHETS, CONSUMERS HAVE THE OPPORTUNITY TO BUY AND USE ONLY WHAT THEY NEED AT ANY GIVEN TIME. LET'S TAKE A LOOK AT A SNAPSHOT OF PACKAGING FOUND IN MOST FRIDGES ACROSS THE GLOBE.





**SALAD DRESSING**

Brand owners are catching onto the benefits of plastic pouches with increasing applications for products such as yogurt, baby food, condiments and salad dressings. They are lighter in weight, flexible and a more sustainable choice.



**SALAD**

A meal on its own or a perfect side dish. Today, bagged salad stays fresher for longer due to Equilibrium Modified Atmosphere Packaging which alters the atmosphere to prolong shelf life.





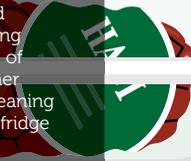
**CHEESE**

The first vacuum packaging for cheese was invented in 1955 and since then packaging has evolved in leaps and bounds. Today, resealable cheese packaging is a major focus for brands due to growing consumer demand. In fact, consumers listed resealable packs one of the top three most useful packaging innovations! Resealable packs reduce food waste, keep the cheese fresh and reduce packaging waste as they negate the need for cling film and foil.



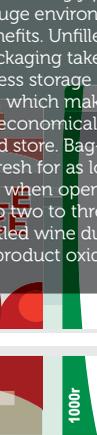
**MEAT**

Case-ready modified atmosphere packaging extends the shelf life of ground beef and other meats to 14 days, meaning fresher food in your fridge and less food waste.



**\* PEACH WINE Juice**

Once dismissed by wine connoisseurs, boxed wines are becoming increasingly popular due to the huge environmental and cost benefits. Unfilled bags from the packaging take up to 88 percent less storage space than bottles, which makes them more economical to transport and store. Bag-in-box wine stays fresh for as long as six weeks when opened compared to two to three days for bottled wine due to minimal product oxidation.



**MILK**

A product that is now found in almost every fridge, the milk carton was invented in 1915 but didn't become widely used until the 50s. According to the fourth diary index report, in 2012, 51 percent of milk consumed in developing countries was bought loose and 49 percent in packages. In 2014, sales of milk in packages is expected to rise to 55 percent.



# Waste not, want not...

FOR GENERATIONS, PARENTS HAVE BRIBED THEIR CHILDREN TO EAT UP EVERYTHING ON THEIR PLATES, USUALLY CITING THE STARVING MILLIONS ACROSS THE GLOBE. MOST PEOPLE WOULD AGREE THAT OUR INTENTIONS ARE GOOD: WE DON'T MEAN TO WASTE FOOD, BUT RATHER – FOOD WASTE IS OFTEN MORE ABOUT ABSENCE OF MIND THAN DELIBERATE PROFLIGACY: IT'S THE HALF-SANDWICH YOU WANT TO EAT LATER, THE BLACKENING BANANA SITTING IN THE FRUIT BASKET OR THE DINNER LEFTOVERS THAT SOMEHOW LOOK SO LESS APPETIZING THE NEXT DAY.

But actually how much wasted food would you expect your trash bin to contain? You might be surprised. At a time when producing food is becoming more and more challenging, alarming figures about waste continue to be reported every year.

While one billion people suffer from hunger and malnutrition, on average we waste up to 50 percent of our food, according to recent global research by the Institution of Mechanical Engineers. This is becoming a global issue in light of the growing world population that is expected to count nine billion people by 2050 – two billion people more than today.

## WHY DO WE WASTE FOOD?

The reasons for food loss and food waste differ very much between industrialized and developing countries. In richer countries, most food waste occurs at the retail and consumer level. An FAO report concluded consumers in countries with high incomes waste almost as much as the entire net food production of sub-Saharan Africa. In developing countries, food tends to be lost in the process of harvesting, transporting and storing. At all stages of the supply chain though, appropriate safe storage and packaging of food is crucial to tackling food waste at the post-harvesting, transporting and the retail level, and especially once the food has arrived in the consumer's home.

Some foods are fairly robust when pulled from nature, like rice and potatoes, so packaging is less essential for protection. On the other hand, other foods are quite fragile. Fruit in particular requires protection to ensure its safe transport from field to retailer to consumer. For transportation to the retailer, packaging solutions such as barrier technology and efficient filling systems can help protect the food and thus extend the shelf life of fruit. Resistant and vacuum packaging can help preserve fresh foods such as cheese or meat at the retailer, extending their expiration date. Today, case-ready modified atmosphere packaging (MAP) can extend the shelf life of ground beef and other meat products to 14 days. One of the key reasons for food waste at the consumer level has been too large portion sizes. Packaging increasingly found in supermarkets today is designed to control portions, allowing consumers to use some of the product and reseal after use.

Despite innovations in food packaging to help reduce food waste, we are still facing an enormous amount of waste, dominated by consumer waste in high-income countries. However, emerging markets like China are seeing similar trends emerge, as household incomes, urban populations and overall food consumption continue to rise. 'Currently over 200 billion Yuan's worth of food (US\$32bn/€25bn EUR) is thrown away annually nationwide' – China's National Food Bureau Chief, Ren Zhengxiao.

## STANDING STILL IS NOT AN OPTION

Governments and institutions are aware of the problem. The UN has initiated various awareness campaigns such as its 'Fresher for Longer' and 'Save Food' campaigns, and governments and major cities like Beijing and New York are also taking action. Beijing started implementing garbage sorting and food scrap recycling in 2000, and in March 2012 the Beijing municipal Garbage Management Ordinance came into force. This initiative encourages communities and households to participate in kitchen waste recycling.

On the plus side, these measures and campaigns target not only consumers but also restaurants and canteens, key sources of food waste. In the US, 15 percent of all food waste is created by restaurants, according to Jean Schwab, senior analyst in the waste division at the Environmental Protection Agency. Researchers at the China Agricultural University found that in Chinese university canteens one-third of the food purchased was wasted, enough to feed an additional ten million people for one year.

These figures should make consumers think about their responsibilities both as restaurant customers and at home. Interestingly, consumers in some threshold countries have a greater awareness of this problem than those in Europe.

A study conducted by the Unilever consumer goods group in 2012 shows that only 77 percent of Germans see the disposal of food in restaurants as a problem, compared to 91 percent of Chinese and 96 percent of Brazilians.

It appears that a general principle of food waste is 'the more we have, the more we throw away'. Innovative packaging technology is one way to help reduce this trend – but public awareness of the problem and serious attempts to tackle it on an individual level need to happen in tandem.

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GLOBAL FOOD WASTE PER CONSUMER PER YEAR:

Europe

**60-110 kg**

(130-240 lbs)

in

GLOBAL FOOD WASTE PER CONSUMER PER YEAR:

USA

**95-115 kg**

(210-250 lbs)

in

GLOBAL FOOD WASTE PER CONSUMER PER YEAR:

Developing countries

**6-11 kg**

(13-24 lbs)

Source: Food and Agriculture Organization of the United Nations (FAO)



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DID YOU KNOW?



THERE IS A DIFFERENCE BETWEEN 'USE BY' AND 'BEST BEFORE':

'Use by' means that the food is only safe for consumption until the indicated day.

'Best before' indicates the date until when products will retain their best quality.



# Clean plates

Food waste in restaurants is recognized by the industry, associations and the public as an increasingly important issue. Here are four examples of attempts to tackle it.

## \* China: 'Clear your plate initiative'

Restaurant waste in China equates to nearly ten percent of the country's annual crop production, or enough to feed 200 million people for a year, according to a study by China Agricultural University, which examined data from 2006 to 2008. With the

grassroots Clean Plate Initiative, China is aiming for zero food waste when dining out. Yuan Longping, an agricultural scientist at the Chinese Academy of Engineering, even publicly endorsed the implementation of fines for food waste, treating it as a crime.



## \* Japan: The fine against food waste

Failing to finish your dish at seafood restaurant Hachikyo in Sapporo, Japan, might result in an expensive outing. Clearly stated on the menu is the provision that patrons who fail to finish their signature dish – tsuko meshi – will be required to offer a donation. Does this sound over the top? The restaurant explains on the menu that 'the working conditions for fishermen are harsh and so dangerous that it's not unknown for lives to be lost. To show our gratitude and appreciation for the food they provide, it is forbidden to leave even one grain of rice in your bowl. Customers who do not finish their tsuko meshi must make a donation.'

Could this concept work well in other environments to avoid food waste?

DID YOU KNOW?



A 2011 report by the UN's Food and Agriculture Organization (FAO), estimates that global food waste is around 1.3 billion tons. The SRA Too Good to Waste report estimates that if restaurants reduced food waste by just 20 percent, this could equate to reducing waste by 4 tonnes per year per restaurant.

# Solutions



## \* UK: Too Good to Waste

Restaurants in the UK waste around five times more food than UK households. They each throw away around 21 tons of food per year – almost half a kilo per diner! In an attempt to tackle this growing problem, the Sustainable Restaurant Association (SRA) launched in October 2011 the Too Good to Waste campaign, which aims to raise awareness of the issue among restaurateurs and consumers. On the campaign website restaurants and diners can sign up to the campaign and receive tips on how to reduce food waste. Simple but effective measures include serving smaller portions and providing doggy bags for diners to take their leftovers home.

More information at:  
[www.toogood-towaste.co.uk](http://www.toogood-towaste.co.uk)



## \* Brazil and Dubai: Pay-by-weight

While in Brazil the pay-by-weight concept is a growing trend, particularly among the lunch crowd in São Paulo, it is a new concept in Dubai for those aiming to reduce food waste. Since last year, one restaurant in Dubai has been trying to promote moderation among diners.

Developed by Lootah Hotel Management, this concept was introduced as a response to the all-you-can-eat restaurants where many dishes are left unfinished.



# Get smart about food waste



**GET SMART ABOUT FOOD WASTE**  
Smartphones provide us with practical, mobile help in any situation. They help us to communicate better, plan our days, and to educate ourselves. With food waste becoming an increasing problem globally, there are now various mobile applications that help us in minimizing our own food waste: from digital shopping lists and food sharing tools to analysis applications.



**CHANGE BEGINS WITH AWARENESS**  
The Food Waste Diary, available for iPhone and Android, allows consumers to keep a record of the food they throw away. Users can add the reason, put a price to it and take a picture. This app not only raises our awareness on how much we throw away but – in a disciplinary way – helps us better understand our food waste habits and therefore change them.

More information in the iTunes or GooglePlay App Store.



**SHARING IS CARING**  
There are multiple mobile applications and websites that are focused on the principle of 'food sharing'. Tools like the Flashfood or Leloca mobile apps or the German website Foodsharing.de help food service businesses, food recovery organizations, local community centers, and volunteers collaborate and diminish food waste. As a user, you just need to

provide information on the type of food you have left, how much of it is left, and where people can pick it up easily for free or at a discount.

More information at  
[www.flashfoodrecovery.com](http://www.flashfoodrecovery.com);  
[www.foodsharing.de](http://www.foodsharing.de).

## PLAN AND COOK

Practical planners help efficiently plot food purchases and uses. They are now available on mobile apps for iPhone and Android. Examples include Love Food Hate Waste, My Freezer Organizer and Shopy, and feature platforms that provide good tools to plan shopping trips, keep 'use by' reminders and find recipe ideas for food that is about to expire.

More information in the iTunes or GooglePlay App Store.

## DID YOU KNOW?



TEN PERCENT OF PROSPEROUS COUNTRIES' GREENHOUSE GAS EMISSIONS COME FROM GROWING FOOD THAT IS NEVER EATEN.

Source: Tristram Stuart, the Sustainable Restaurant Association, Waste Resources Action Programme

**1** PLAN YOUR SHOPPING

Before going food shopping, think about what you really need to buy and write up a shopping list. More importantly, stick to your list and try to resist the luring temptation of food you see on the supermarket shelves. Don't buy more food than you can eat.

**2** NEVER SHOP HUNGRY

It seems counterintuitive, but going food shopping on an empty stomach incites us to buy much more food than we need – we are actually eating with our eyes! Ensuring you are not ravenously hungry when you hit the supermarket will help you limit your purchases to what you really need.

**3** CHECK THE DATES

Before purchasing food, look for the 'sell by', 'use by' and 'best before' date indicated on the packages. And remember that 'best before' and 'sell by' are not the same as 'use by': the latter means you should not eat the product after that date, the former are an indication of the product's maximal quality!

# 6 TIPS

## on how to reduce your food waste

**4** IMPROVE FOOD STORAGE

Reclose opened packages to make sure your food does not dry out. Functional packaging features such as split packs and resealable packaging help consumers keep food at its best. If the package is not resealable, store the food in a washable plastic container or use

handy zip-lock bags. Also consider canning fruits and vegetables, or blanching vegetables and then freezing them. To keep your fridge healthy, check its seals and temperature setting. Keep in mind that food should be stored between one and five degrees Celsius for maximum freshness and longevity.

**5** USE UP YOUR LEFTOVERS

You've cooked more than you can eat? No need to throw it into the bin – have it for lunch the next day or freeze it for another time. At a restaurant, just ask for a doggy bag so you can take the leftovers of your delicious (and already paid for) meal with you. There is nothing to be embarrassed about. Real professionals might even keep washable doggy bags with them, ready to take any leftovers home!

**6** COMPOST

Instead of throwing any remaining food waste into the bin, why not set up a compost bin for fruit and vegetables? In a few months you will end up with rich, valuable compost for your plants and the garden.



## IMPRESSIVE APPROACHES

**DEVELOPING PACKAGING**

Rising incomes in developing countries is leading to increased consumption in those regions. A recent research paper published by the UN Food and Agriculture Organization (FAO) sheds light on some of the challenges around food waste that this increased consumption will engender – and also some of the sustainable packaging solutions available to help tackle food waste and loss in these countries.

With creativity, innovation and sustainability in mind, the report explores varied approaches to minimize food waste in developing countries, such as allowing the use of recycled packaging materials for dried foods as an example, when they pose no problem of contamination.

The research was conducted in the context of 'Save Food', the FAO's international food waste awareness campaign launched in 2011. You can

read more about some of the exciting developments in sustainable packaging detailed in the report, such as bags developed from fruit waste in Malaysia, edible food packaging in Turkey or indigenous packaging of olive oil in Egypt, at [www.fao.org](http://www.fao.org).

**DID YOU KNOW?**

in

**FOOD WASTE AT THE CONSUMER LEVEL IN INDUSTRIALIZED COUNTRIES IS ALMOST AS HIGH AS THE TOTAL NET FOOD PRODUCTION OF SUB-SAHARAN AFRICA.**

Source: United Nations Food and Agriculture Organization (FAO)



## The Global Initiative on Food Loss and Waste Reduction – SAVE FOOD

FAO and Messe Düsseldorf are collaborating with donors, bi- and multi-lateral agencies and financial institutions and private sector partners (the food packaging industry and others) to develop and implement the programme on food loss and waste reduction.



The programme is composed of four elements:

- **Awareness raising** on the impact of, and solutions for food loss and waste. This will be achieved by a global *communication and media campaign*, the *dissemination* of Save Food programme findings and results, and the organization of *Regional SAVE FOOD Congresses*. Important goals are increased knowledge and changed behaviour of actors and consumers in the food chains, and promotion of the SAVE FOOD initiative to attract partners.
- **Collaboration** and coordination of world-wide initiatives on food loss and waste reduction. SAVE FOOD is establishing a global *partnership* of public and private sector organizations and companies, that are active in the fight against food loss and waste. In order to develop, plan and implement interventions and use resources most efficiently, it is essential that all these initiatives are being coordinated well, so that everybody knows what is happening world-wide, that information, problems and solutions can be shared, and that methodologies, strategies and approaches will be harmonised.
- **Policy, strategy and programme development** for food loss and waste reduction. This includes a series of **field studies** on a national-regional basis, combining a food chain approach to loss assessments with cost-benefit analyses to determine which food loss reduction interventions provide the best returns on investment. Further, the Initiative undertakes studies to the socio-economic impacts of food loss and waste, and the political and regulatory framework that affects food loss and waste.
- Support to **investment programmes and projects**, implemented by private and public sectors. This includes technical and managerial support for, as well as capacity building (training) of food supply chain actors and organizations involved in food loss and waste reduction, either at the food subsector level or policy level.

FAO welcomes partners – private or public – to join the Save Food Initiative and support its programme.

To join the SAVE FOOD initiative, go to [fao.org/save-food/get-involved/en/](http://fao.org/save-food/get-involved/en/)



Q&A with Robert van Otterdijk, FAO:

# UN initiatives on food packaging in developing countries

Robert van Otterdijk is team leader of the 'Save Food' initiative at the Food and Agriculture Organization (FAO) of the United Nations.



FAO



FAO

**The FAO is carrying out research in India and Kenya. What will this focus on?**

We are trying to find out more about what the exact causes of food loss are and what solutions could be appropriate. This means economically feasible, environmentally friendly and socially acceptable.

**What are the biggest opportunities and challenges for developing countries when it comes to packaging?**

Developing countries offer huge potential for food packaging and the packaging industry. But the industry needs to make investments. Therein lies the challenge: we need to create the environment that will encourage the private sector to make the necessary investments. It is up to us together with national governments to reduce risks and facilitate investments in these countries.

**What can developed countries learn from developing countries in terms of food packaging?**

In poor countries, people don't waste resources, as they cannot afford to. Industrialized countries can learn from them by being more respectful of available resources because their supply is not endless.

Find out more about the FAO's food waste awareness programs and studies at [www.fao.org](http://www.fao.org).

## DID YOU KNOW?



AN ESTIMATED 14 PERCENT OF THE WORLD'S CO<sub>2</sub> EMISSIONS ARE CAUSED BY FOOD WASTE.

Source: Denmark's Environmental Think Tank CONCITO







# Think differently

PROFESSOR MÁXIMO MARULL HOLDS A DEGREE IN GRAPHIC DESIGN FROM THE UNIVERSITY OF BUENOS AIRES AND IN MARKETING ANALYSIS FROM THE AMERICAN OPEN UNIVERSITY. WITH OVER 23 YEARS' EXPERIENCE IN PROJECT DESIGN, HE TEACHES PACKAGING AT THE SCHOOL OF DESIGN OF ROSARIO, ARGENTINA. HE IS ALSO THE FOUNDER OF CAFFEINE BRAND CONSULTING (WWW.CAFEINA-CI.COM).

## QUESTION

What is the first step in packaging design when it comes to usability?

## ANSWER

When thinking about packaging design and usability we must first define exactly the category we are referring to. Usability can refer to a multitude of elements from handling and ergonomics, to designing spaces or the design of usable packaging with a range of people, of all different ages and abilities, in mind.

Well-developed design thinking is key to innovation and to developing new structures, new materials and functionalities.

## QUESTION

What new trends are impacting design?

## ANSWER

Due to new social and population trends, there is a constant need to redesign the way we package products. For example, there are an increasing number of people living alone which requires more food to be packaged in single portions. The aging population is also ever-growing. Packaging needs must be catered for, both in terms of food and medical products.

## QUESTION

What is the essential component of innovation?

## ANSWER

When it comes to innovation, it's essential that containers create a better user-experience, that designers constantly adjust packaging to improve the consumer experience.

However, there still remains a lot of packaging that could be improved in terms of ease of use which could hugely improve handling and usability across the board. A prime example is medical packaging. Various, potentially life-threatening, hazards could be diminished by improvements in packaging design. Packaging improvements could avoid incorrect dosage and problems with communication with the patient.

## QUESTION

How are technology developments helping you?

## ANSWER

'We have several technological developments which are helping us to adjust to consumers' special needs. Braille printers can be used to mark the packaging of various products and laser printers can be used on fruit skin. In addition, existing technologies such as smartphones can communicate via a special chip on a package (thanks to radio frequency identification) – via this technology consumers are able to receive spoken information about products, similarly to the way you can give voice commands to smartphones.

For those with difficulties handling packaging (the elderly, arthritis sufferers), new materials are the solution. These materials are lightweight, shock resistant and easier to open than jars or glass bottles for weaker hands, for example, seal bags, Doypacks and pouches.

## DID YOU KNOW?



BRILLE PRINTERS CAN BE USED TO MARK THE PACKAGING OF VARIOUS PRODUCTS AND LASER PRINTERS CAN BE USED ON FRUIT SKIN.





## What is inclusive design?

According to the British Standards Institute, inclusive design can be defined as 'the design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible...without the need for special adaptation or specialized design'. It should be: user centered; population aware; and, business focused.

Design can either include or exclude consumers. All packaging should strive to be inclusive, taking into account the consumers' capabilities, needs and aspirations. Usability, design and sustainability should work in parallel. In turn, this contributes to a products success on the market, creates a better product experience and fosters packaging innovation. This should be embedded in the development process as inclusive design is better design.



# OPENABILITY: A NEW PERSPECTIVE

Interview with Claire Dumbreck

PR PROFESSIONAL, CLAIRE DUMBRECK, WAS DIAGNOSED WITH INFLAMMATORY ARTHRITIS IN HER MID-THIRTIES. HERE SHE DISCUSSES LIVING WITH THE CONDITION AND HER NEW PERSPECTIVE ON DAY-TO-DAY ACTIVITIES.

My initial reaction was gosh, this is what it must be like to be 90 years old. People should know there are really easy things that can be done to make life easier for old people. Life with arthritis can be really hard and certain packaging opening maneuvers are impossible due to the strength or dexterity required. Like people half my age I have stood there screaming at the designers of a carton of orange juice as I wonder if the plucky duo

of my tendonitis-ridden thumb and underpowered forefinger will win the battle to crack open the seal on a miniscule cap.

What are consumer brands doing with packaging to cater for the growing ageing population? Surely all brands want all customers to be able to access their products and find the experience so easy that they flood back in their droves to do it all again?

In my research, I expected to hear about how packaging for the elderly and infirm was the next big thing. I was to be disappointed. Apparently with such huge investments in the manufacturing process alone required to execute

packaging changes, a guaranteed uplift in product sales needs to be demonstrated first. It is hard to persuade brand owners to take bold steps and part with millions. No one wants to be the first mover.

I am not alone in wondering if 'openability', as it's called in the trade, is somewhere on the big brands' radar and the topic is starting to pop up time and time again.

Poor openability is an unwelcome reminder of what I can't do. It's humiliating. I go from feeling like a capable, healthy woman to someone with severe palsy. Why should anyone care? Because I am prepared to pay for products that don't make me feel like this.

When brands spend so much on research to fine tune products and packaging to reposition a brand, they are ignoring swathes of consumers who have long since written off their products or are screaming in anger at it. I'm pretty sure I am not alone in making everyday product choices based on ease of openability, or avoiding products that I've subconsciously deemed as just too difficult.

## DID YOU KNOW?



AGE UK RESEARCH HIGHLIGHTS THAT EASY TO OPEN PACKAGING IS ONE OF THE TOP FACTORS IN THE PURCHASING DECISION FOR MORE THAN HALF OF CONSUMERS OVER 50.





Monica Lopez and Gloria Kelly



Beatriz Peixoto



Gloria Kelly

## Designing with the mind

DR. ALASTER YOXALL IS PRINCIPAL RESEARCH FELLOW AT SHEFFIELD HALLAM UNIVERSITY'S ART AND DESIGN RESEARCH CENTRE. HIS AREAS OF EXPERTISE ARE IN DESIGN AND ERGONOMICS WITH REGARD TO PACKAGING DESIGN FOR AN AGING POPULATION. HIS WORK WITH LEADING COMPANIES ON DEVELOPING NEW PACKAGING FORMATS HAS EARNED HIM THE TITLE OF 'THOUGHT-LEADER IN PACKAGING'.

**How can design help provide better product usability for your target audience?**

As we age we face significant changes in strength, dexterity and cognition. Designing with this in mind we can change features to facilitate ease of gripping, reduce the strength needed to tear or twist for example, and improve the instructions so we more readily understand what we have to do to gain access.

**Have you seen significant evidence that people are now choosing products for their ease of access and moving away from those products (be it medical or food packaging) that are difficult to get into?**

Certainly ease of access changes behavior. We've seen examples of people living on ready meals as they

are easy to use and single portion. We've also seen people avoid certain drink and soup cartons and tinned meats.

Medical packaging is more complex. Bottles with CRCs are often left decanted as people struggle to get into them. However, most medicines are now in unit-dose packs. The trouble is they all look the same and when you're on multiple medications it can be difficult to remember what you've taken. There are things to help people but it really could all be designed better; however, creating change is all wrapped up in legislation so it's hard.

**Would you say big brands are now starting to take this issue more seriously?**

Yes. A quick trip round the supermarket shows examples of 'easy access' pasta, cereals, jams and enhanced ring-pull designs. However, it's not consistent; some brands make no effort whatsoever, some make valiant attempts that don't quite work in practice and some work really well.

**If you could redesign one specific product, how and what would you do differently?**

Any form of drink, bottle or carton. We've recently done some work on malnutrition in hospitals in Australia and hydration – malnutrition linked to packaging access is a big problem. Packaging is a major issue. My hunch is that it's likely to be the case elsewhere too (indeed I've seen bottled water used in the UK). If I had the resources I'd change this tomorrow.

## Bright Young Minds

STUDENTS FROM ELISAVA BARCELONA SCHOOL OF DESIGN AND ENGINEERING SHED LIGHT ON PACKAGING INNOVATIONS TO ENHANCE USABILITY.

**How can design help provide better product usability for your target audience?**

The usability of packaging can be improved through design, from ergonomics and the extent of packaging, to the ease of opening and closing for product preservation or optimizing the use of resources through new materials, both recyclable and recycled.

The projects that excite us the most are the ones which seek a solution to new needs created by a change in buying habits or consumption trends. For example, in recent years buying products by weight in supermarkets and takeaway meals have become more popular driving the need for food containers that allow for transport, use and reuse, which has provided a new challenge for designers.

**If you could redesign one specific product, how and what would you do differently?**

Our students are asked this exact question in the Innovation & Structural Packaging workshop – of all the modules offered in the Master of Packaging course at Elisava, this is the one that generates the most exciting projects! Students are given the opportunity to redesign both the graphics and structure of the packaging in order to improve usability. We specifically focus on healthcare products and improvements have been proposed for cotton wool packaging, cotton wool buds, talcum powder and depilatory wax.



Monica Lopez and Ana Pterro



Carolina Caycedo and Denise de Carmen



Monica Lopez and Ana Pterro



Monica Lopez and Ana Pterro



Clona Kelly

# DESIGN IN PHARMACEUTICALS

IF EVER THERE WAS AN AREA WHERE USABILITY OF PACKAGING WAS OF KEY IMPORTANCE, THE PHARMACEUTICAL INDUSTRY IS IT – IN FACT, IN NO OTHER SECTOR CAN BADLY DESIGNED PACKAGING HAVE FATAL CONSEQUENCES.

Well-designed pharmaceutical packaging must be designed with the user in mind, meaning the elderly, those with debilitating illnesses or conditions, and healthcare workers. Good design of pharmaceutical packaging offers both usability (meaning opening and closing) as well as readability. Simplicity is key. Clear graphical design must be used to ensure details on the packaging can be both read and understood (including how and when to take medicine and the dosage). Both elements are critical for usability and safety. Another key question is how to balance ease of use for those in need of the medicine while creating packaging which is also safe for children?

There is a call for regulation to have a more prominent role in governing how packaging must take more notice of user needs (specifically in terms of markings on packaging). This is a big step towards combining usability with safety in order to create more user friendly packaging.

Several projects have also been set up to research this issue. One of these is the HELP project (Finland), led by VTT and funded by the Finnish Funding Agency for Technology and Innovation Tekes. The HELP project was implemented to develop testing methods for pharmaceutical packaging design as well as to compare different designs.

Despite its importance, pharmaceutical packaging has seen very little change over the last few decades. With an aging population and changing regulations, pharmaceutical companies will have to start innovating in the private sector to avoid being left out in the cold.

## A FEW IDEAS...

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**BLISTER PACK FOILS:** Printed with days of the week or numbers in order to help patients remember to take tablets. Compliance rate is greatly increased with these measures.

**COLOR-CODING:** Graphic design on packaging to incorporate color coding to demonstrate the correct dosage.

**MACHINE-READABLE CODES:** With ever-increasing use of smartphones comes the possibility of incorporating machine-readable codes onto packaging which correlates to an app alerting patients on timing and correct dosage of medicine.

**SMART PACKAGING:** Packaging which measures the amount of liquid or solid medication in a bottle using the same technology as used in touch screens (capacitance) – they can accurately measure down to one pill or one milliliter of liquid. This can be transmitted to patients through 3G and enhances a patient's adherence and compliance to correct dosage.





# e-commerce wrapped up

TEN YEARS AGO, DOWNLOADING A SONG FROM A DIAL-UP INTERNET CONNECTION TOOK TWELVE-AND-A-HALF MINUTES. TODAY, IT TAKES JUST 18 SECONDS. WITH INCREASING INTERNET SPEEDS AND ACCESS, 3G AND 4G SPECTRA AND THE PROLIFERATION OF SMART DEVICES, ALL ASPECTS OF OUR LIVES HAVE ADJUSTED TO THE SO-CALLED MOBILE SOCIETY. SHOPPING TOO.

## QUALITY IS KING

Gone are the days where shopping online was hindered by security concerns or product remoteness. e-commerce is now a quality experience, operating with maximum security and sophisticated software, giving consumers as realistic a shopping experience as possible, short of physically going in-store. Whether buying online instead of offline, consumers demand the highest quality, and online purchasers expect to receive their products in mint condition. The only way to ensure this is with effective packaging. But how does packaging fulfill that responsibility?

## THE ROLES OF PACKAGING

Most clicks-and-mortars have quite sophisticated and differentiated packaging solutions for their different types of customers. Indeed, the three

tiers of packaging – primary, secondary and tertiary – respond to very different needs. At store level tertiary packaging (used in transportation and logistics) and secondary packaging (the outer pack), are discarded in the back room and never reach the consumer's hands. In e-commerce, however, secondary packaging is the first thing consumers see when they receive the product, making it almost as important as the primary packaging.

The roles of primary packaging in home delivery reflect similar attributes to those needed in-store. These include the need to physically protect the product, provide legal and informative instructions to the consumer and be strong enough to withstand manual and automated handling. It does not, however, need to be aesthetically pleasing enough to be used as a point-of-sale tool like it would in-store.

While primary packaging is prominent in stores, when it comes to e-commerce, secondary packaging is the real star. The requirements of the outer pack are multiple and diverse. Chief among these are ensuring safe delivery and product quality. The pack itself may need to include a number of goods of different shapes and sizes, and it will have to comply with national and/or international courier and postal service requirements. But most importantly, it has to provide fundamental protection through complex and unpredictable delivery systems, and prevent the product package within from shifting during transport.

Lastly, it must meet consumer expectations. Shoppers want a package that is easy to open, and that does not use an excessive amount of materials. And when they need to return products to the vendor – frequent in clothing and

apparel online purchases – they want the box to be fully and easily reusable. On that subject, it is interesting to note that as reasons for e-commerce returns, a mere 3 percent are due to transit damage, which is testament to the fundamental role of quality packaging in growing the e-commerce business sector.

## SUSTAINABLE PACKAGING

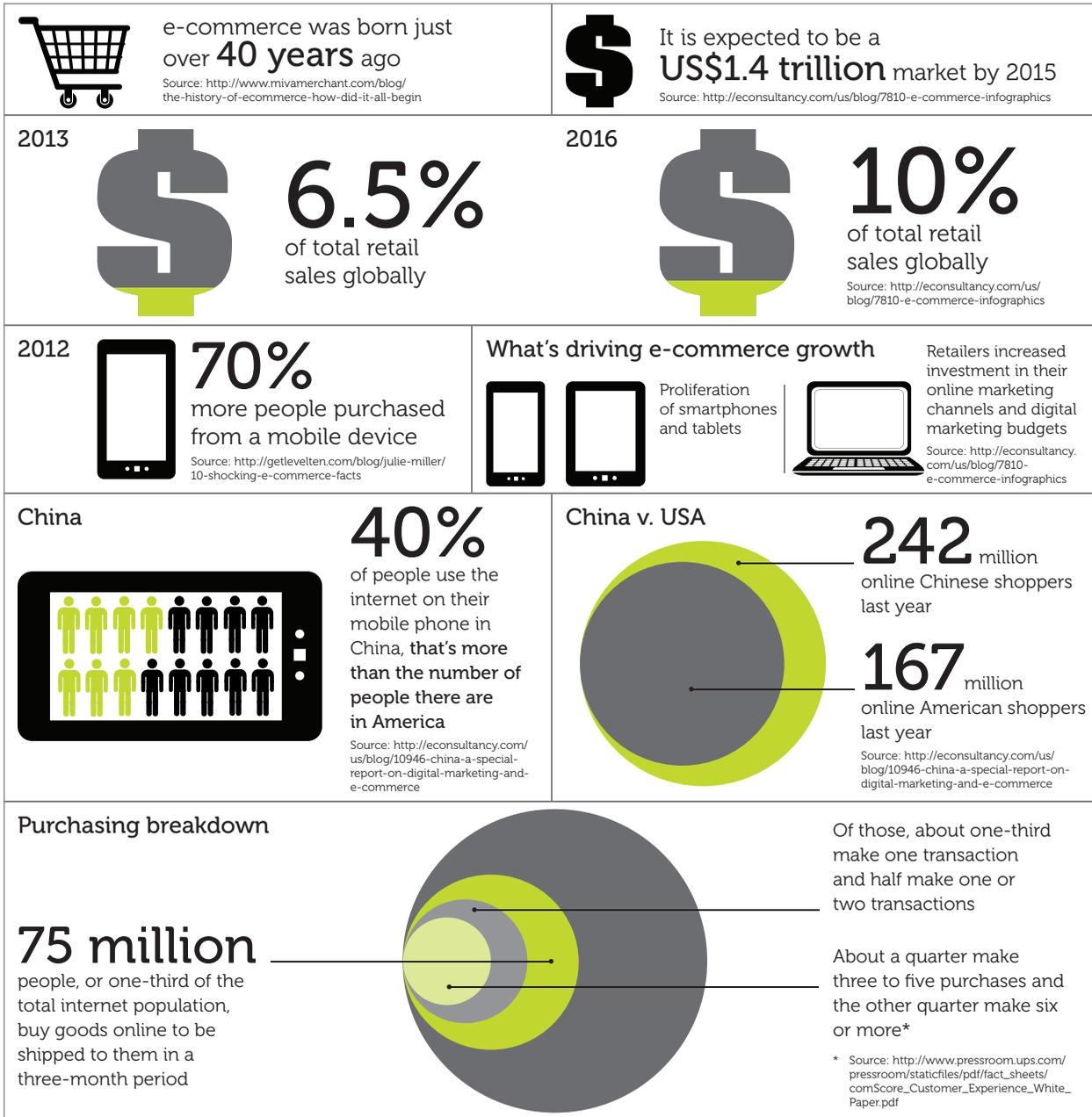
Sustainability is now high on the agenda of e-commerce players. Frequent complaints on excess packaging are driving businesses to seek alternative solutions and technologies. For example, global online retailer Amazon has launched 'Frustration-Free packaging' a certification that they say 'works with manufacturers to box products in Certified Frustration-Free Packages, which reduces the overall amount of packing materials used'. New packaging technologies are being developed that better fit products inside by taking accurate measurements of the product and molding a box around it, better securing the product and providing packaging that takes up less space in transport vehicles. In addition, unnecessary bubble wrap and plastic pellets to protect the primary package are also being removed.

e-commerce has been strong in many developed markets of Europe, North America and Australasia for a number of years, and is already exploding in south and east Asia, particularly in India and China. With this explosion in e-commerce consumption comes ever-more sophisticated consumer demands, also in terms of packaging. Consumers will increasingly demand high-quality but low-impact packaging. Whether, and how, the packaging industry will proactively respond to this trend will be the one to watch. Stay tuned.



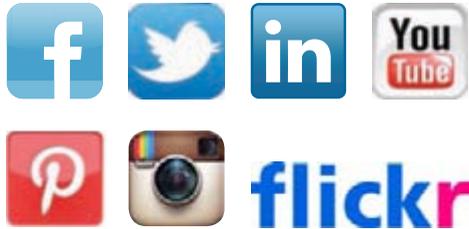
# e-commerce: Did you know?

## e-commerce globally:



## Online experience: consumer satisfaction with online shopping is high overall (86%) but consumers are:





## 5 REASONS WHY SOCIAL MEDIA AND PACKAGING GO HAND-IN-HAND

### PACKAGING TO ENGAGE AND PROLONG

Nowadays packages come with a myriad of digital information: QR codes, websites, handles, links to competitions, games, online shopping outlets and so much more. Packaging design today not only needs to attract the consumer from the shelf but it needs to prolong the consumer engagement experience – which is where social media steps in. Packaging can provide the right access point for a prolonged customer experience if enticing enough.

### NOT JUST A CONSUMER, A PACKAGING DESIGNER TOO

Social media gives consumers ever-greater leverage in influencing package design. When branding is being reviewed and reconsidered in a company, then so is packaging design. More and more companies tend to crowdsource, inviting customers to rate designs, vote for their favorites and create captivating captions that will help take their brand to the next level. Some more successfully than others, but nevertheless, packaging design can benefit from this basic market research through social media.

### PACKAGE PROMOTION VIA SOCIAL MEDIA

Big or small, companies around the globe promote their activities through social media channels. With a solid number of likes for a page or an impressive number of followers, brands nowadays have a variety of easy-to-use platforms that they use to announce new packaging design, features or benefits directly – and immediately – to the consumer. Facebook probably takes the lead here, but slowly Pinterest is bringing ‘pinnable’ packaging to life.

### SOMETHING TO COMPLAIN ABOUT

You only have to type ‘packaging’ into Twitter to see just how many people want to complain about the amount of packaging they receive in their deliveries. It goes without saying that companies don’t want to see negative publicity about their brand or package. They just need to decide how they will constructively deal with such complaints and take them as positive motivation to change their packaging attitudes.

### SOMETHING TO TALK ABOUT

More important than complaints is the buzz and instant vibe around new packaging that can be generated via social media, supporting the real-time success and publicity that any packaging director and designer would die for.





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