

Innovation diversity and impact-based IP strategy

Recent developments in the United States – as well as new innovation approaches – call for a complete rethink of the way in which businesses see patents

By Jason Lye

Is it possible to patent-protect human sensory experiences? How can IP strategy be deployed to encompass and protect the various modes of innovation? How can patents be drafted to protect an invention's impact instead of just the product configuration? Can protection encompassing a broader range of product and services innovation modes present opportunities to mitigate against design around and changes in patent law? These and other challenging questions are typical of what the Georgia State University IP Think Tank might ponder while working on IP strategy development.

Innovation: successful commercialisation of inventions

If you were to ask 10 people on the street what 'innovation' means to them, you would most likely receive 10 different answers. The term is used so carelessly and so often that its meaning has become quite dilute. However, from a business perspective, it is important to distinguish true innovation from invention and from idea creation. First, any patent attorney worth their salt will tell you that an invention comprises two parts: an idea and a way to reduce the idea to practice. Only if that invention is then successfully commercialised does it become an innovation.

Innovation leader Lisa C King – vice president of consumer and market insights, American Standard Brands Inc and former vice president of insights and innovation for Newell Rubbermaid Inc – points out that to be a business innovation, three things must be true:

- The innovation must be successful – people or the market must want it or respond to it;
- It must be commercialised – it has to make money, save money or in some other way generate value; and
- Either the product or service, or the experience must be novel.

This definition of 'innovation' is consistent with that of other industry innovation leaders and the website BusinessDictionary.com, as well as US legislation relating to the definition of 'trade secrets'. Under Section 1.4 of the Uniform Trade Secret Act, a 'trade secret' must be secret and protected, but also must be commercially implemented in order to generate value.

For an invention to become an innovation requires prior knowledge of unmet customer needs, successful scale-up to commercialisation, marketing or customer education, and distribution. So, while invention is

necessary for innovation, most inventions – and most ideas, for that matter – never become innovations. If it is not successfully commercialised, then it is not an innovation – and if it is not reduced to practice, then it was only ever an idea that was never tested.

Innovation modes

There are many places along the value chain and customer experience where innovation can be implemented. The introduction of new commercial products and services with new or enhanced features is perhaps the most obvious mode of innovation. However, most practitioners and innovation experts acknowledge many other forms of innovation. Without wishing to endorse one particular way of classifying innovation modes over another, Doblin – Deloitte's design and innovation practice – has concluded that there are 10 types of innovation spanning the product value chain and the customer experience. Interestingly, only two of those 10 are central to the product offering (the product system and the product performance).

Indeed, four out of Doblin's 10 types relate to the internal business systems of the innovating organisation or configuration. While these systems are typically hidden from direct external observation, they may be leveraged for value with judicious IP strategy. The first four types are:

- profit model – how value is realised;
- network – how you connect with other organisations to build value;
- structure – how your talent and assets are organised and aligned; and
- process – how you use unique methods to do your work.

The final four relate to the end-user experience and user access, and include customer-facing enterprise business systems:

- service – how you support and amplify the value of your offerings;
- channel – how you deliver your offerings to customers and users;
- brand – how you represent your offerings and business; and
- customer engagement – how you foster compelling interactions.

If innovation were a luxury cruise liner, the configuration modes would be the engines, the propeller, the galley and the navigation systems. The offering would correspond to the destination and the planned activities,

while the consumer experience would be the relaxed feeling, the suntan, the smell of salty air and the feeling of being rested and refreshed.

Innovation and IP strategy

Given the breadth of possible innovation modes, how does an IP practitioner craft an IP strategy that contemplates more than just a physical product or its performance? A good IP strategy contemplates protecting all innovation modes, including the customer experience, the business model, product construction, performance and the supply chain – although it does not always rely on patent protection.

Patenting business processes

First considering the configuration innovation modes set out in Figure 2, what we are really talking about here are internal business methods. While the European Patent Office has specifically excluded abstract business methods from patentability, the situation in the United States is less clear cut. At a recent breakfast meeting, think tank member and one of Georgia's top IP strategists Jeff Kuester, partner at Taylor English Duma, talked passionately about the evolution of what is and what might not be patentable under US patent law from the perspective of circuit and Supreme Court rulings. In particular, he provided an informative primer on some of the key patent cases heard before the US Supreme Court, including *Bilski v Kappos*, *Myriad v Molecular Biology*, and *Alice v CLS Bank*. These cases have all significantly affected the patentability of inventions relating to methods, including business methods. Referring back to the Dublin innovation framework, these would mostly fall into the profit model, network, structure and process aspects of commercialisation.

Myriad v Molecular Pathology and *Mayo v Prometheus*

marked a shift in US Patent and Trademark Office (USPTO) practices, and began to reframe and restrict what methods could be patented. Utah enterprise Myriad Genetics Inc isolated several genetic sequences that, if detected in a human, indicate an inherited genetic predisposition to certain forms of breast and ovarian cancer. Myriad filed patents on the gene base pair sequence which it had succeeded in isolating and received patents for them. Myriad's patents were then challenged in court.

At around the same time, a method patent central to the *Mayo v Prometheus* case was also being considered by the US Supreme Court. The conclusion of *Prometheus* was that the method of giving a drug to a patient, measuring the concentration of drug metabolites and then deciding whether to increase or decrease the dose of the drug was not patentable subject matter. Later decisions regarding Myriad Genetics Inc's patents continued this trend of restricting what is patentable from a method perspective. Myriad's gene sequence patents were invalidated when the US Supreme Court ruled that a DNA sequence is a naturally occurring product of nature and therefore cannot be patented, even after isolation. The court argued that no novel methods were claimed with respect to searching and identifying the naturally occurring base pair sequences, and that it was not patentable to test for those genes alone using already known methods.

It was *State Street Bank* that first opened the door to the patentability of software and business methods in the United States. Since then, the strength of most business method patents has been eroded significantly. Section 101 of USC Title 35 (statutory subject matter) defines what can be patented, before the Section 102 (novelty) and 103 (non-obviousness) requirements are examined. Statutory matter includes machines, processes and manufactured articles.

Georgia State University IP Think Tank

The Georgia State University IP Think Tank was first launched in 2013 with the vision of creating a local forum of southeast-based IP thought leaders. As a community of IP experts, strategists and practitioners, the mission is to develop professional collaboration in order to shed light on topics concerning the future of IP management. The intention of our discussions is to provide our unique views, opinions and options for further and broader consideration by the global IP community. In this way, the Georgia IP Think Tank's contribution is to provide ongoing leadership and guidance for future IP strategies, policies and practices.

Since its inception, the IP Think Tank has convened at Georgia State University in Atlanta. The members comprise a broad range of IP professionals with varied roles and responsibilities. Because of Atlanta's diverse business environment, our team members are responsible for some of the world's most successful businesses, which cover a wide range of industry groups. Atlanta's business strength and diversity make it exceptionally qualified to host the IP Think Tank, which represents Fortune 100 and 500 companies, small entrepreneurial start-ups, government research organisations and institutions of higher learning. Additionally, IP practitioners representing private law firms and service

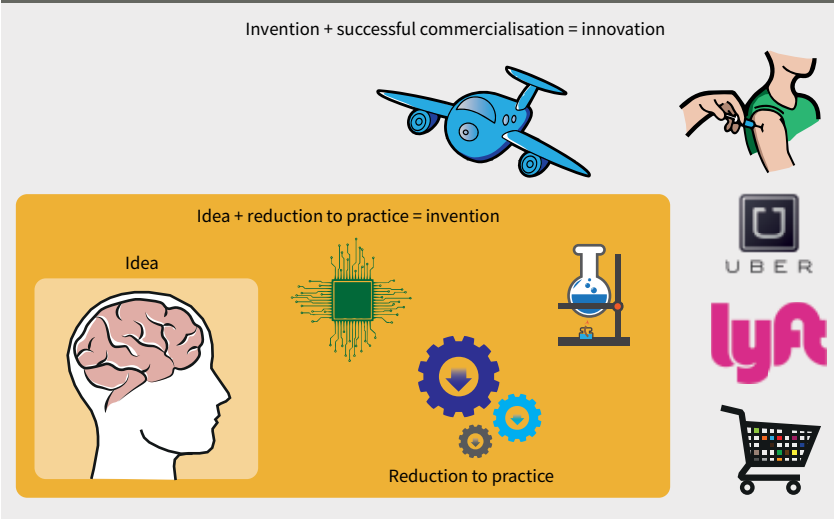
providers are among the region's and world's most recognised.

Past think tanks have been the host to world-renowned IP experts. In 2014 Jim Malackowski – chairman and CEO of Ocean Tomo – facilitated the topic of integrating IP strategy with institutional mission. Chairman of Consor Wes Anson directed a day of IP strategy work last year and, most recently in 2016, Sam Khoury – president of Inavisic Inc, world leader in IP valuation and intellectual asset strategies – spoke on IP strategies – envisioning the future.

Sponsorship has grown for the annual event, with funding and continuous support coming from Georgia State University, colleges of law and business, Georgia Tech College of Business, the State Bar of Georgia, the Atlanta Bar Association and the Licensing Executives Society. More recently sponsorship has come from the private sector, including Lyco Works Incorporated, AT&T, Merchant & Gould, Cantor Colburn, Finnegan Henderson, Dragonfly Growth Partners, Perception Partners, Fitzpatrick, Cella, Harper & Scinto, Kilpatrick Townsend & Stockton, Lee & Hayes, Murgitroyd & Co, Sutherland Asbill & Brennan and Anaqua, among others.

Contributed by Corrine Sukiennik, president of C-Synergies LLC

FIGURE 1. Invention = idea and reduction to practice; innovation = invention and successful commercialisation



At first, the US federal circuit court ruled in *Bilski v Kappos* that patented material can be patentable subject matter only if it meets the machine or transformation test. The US Supreme Court then modified the circuit court ruling, effectively removing the term ‘only’ from the test, thereby cracking the door open once again to allow some, but not all business method patents to be upheld.

However, when ruling in *Alice v CLS Bank*, the Supreme Court contemplated the patentability of an abstract idea, in addition to the machine or transformation test of *Bilski*. The court ruled that only business methods that go further than patenting just an abstract idea are patentable. However, the definition of ‘abstract idea’ has also been left open ended, with no clear line drawn between an abstract idea and its implementation. Indeed, according to Lex Machina’s 2014 Patent Litigation Report, statutory matter patent invalidations have skyrocketed in the United States since the ruling.

Jeff summarised the overall state of the business methods patent issue (at least in the United States) by saying that if the patent is directed at a method of conducting commerce in some way or other, then it is unlikely to be patentable under today’s standards. For this reason, perhaps innovation classed in the first four innovation categories should be best protected by as a trade secret.

Thus, referring back to Doblin’s 10 types of innovation framework, the IP strategy for protecting the first four modes of innovation ought perhaps to focus on maintaining the secrecy of these commercial business methods. From a corporate security standpoint, a trade secret audit is recommended to identify security vulnerabilities and improve process integrity. Such a review should include, among other things:

- a review of employee agreements;
- exit interview procedures for employees who are leaving;
- codification, documentation and docketing of kept trade secrets; and
- understanding who has access to which processes.

Patenting observer experiences

Referring back to Doblin’s 10 types of innovation framework, what are examples of patenting human observer experiences? Patent attorneys may correctly point out that under Section 101 of USC Title 35 (statutory subject matter), technically it is not possible to patent an experience. However, it should be possible to patent a series of quantified measurements, which may directly correspond to a unique human (consumer) experience. Indeed, examples of such issued patents abound.

Visual human (consumer) experiences

Being the primary sense, human vision has been researched extensively. One hypothesis for the neuro-physiology of colour vision was proposed by Elliot Adams in 1923, who suggested that humans experience colour in terms of the difference between pairs of opposing colours: red-green, yellow-blue and white-black. This – coupled with direct physical measurements of the electrical responses of the red, green and blue light-

FIGURE 2. 10 types of innovation, proposed by Doblin

Profit Model		Structure		Product performance		Service		Brand	
The way in which you make money		Alignment of your talent assets		Distinguishing features and functionality		Support and enhancements that surround your offerings		Representation of your offerings and business	
Profit model	Network	Structure	Process	Product performance	Product system	Service	Channel	Brand	Customer engagement
Configuration				Offering		Experience			
Network Connections with others to create value		Process Signature of superior methods for doing your work		Product system Complimentary products and services		Channel How your offerings are delivered to customers and users		Customer engagement Distinctive interactions you foster	

Four configuration innovation modes, shown in blue (examples include: Skype, ooVoo, Target, Dell, Seibel, Whole Foods and Zara)

Two offering innovation modes, shown in orange (examples include: Intel, Apple, Amazon, Oxo and Nike)

Four consumer experience innovation modes, shown in red. (examples include: Lexus, Zappos, Virgin, Apple, Uber, Lyft and Wii)

sensitive retinal cells – formed a mathematical platform which could specify colour sensations numerically. Early colour space models evolved leading to the generation of the $L^*a^*b^*$ idealised uniform colour space by the International Commission on Illumination in 1976.

Further mathematical refinements to the model corrected most of the non-uniformity, while solid state instrumentation has brought the colourimeter into the budgetary reach of most organisations that might need one. Provided that the lighting and viewing conditions are carefully controlled, every human colour sensation may now be accurately specified using three numbers. As illustrated in Figure 3, the Cartesian colour space is defined in terms of a set of three complementary colours arranged on orthogonal axes. L^* denotes a luminosity axis, with $L^*=0$ for pure black, $L^*=50$ for mid-grey and $L^*=100$ for pure white; while a^* and b^* designate red-green and yellow-blue axes of the space respectively (there is, after all, no such colour as reddish green or yellowish blue). The closer the colour is to the centre of the space, the less desaturated it is said to be – or in other words, the more grey it contains. For instance, an orange colour is more saturated than a brown colour, so the brown colour would be located closer to the L^* axis, while the brighter orange would be located closer to the edge of the sphere.

As colour is merely a sensation and not a property of light, there are multiple ways to induce the same colour sensation experience. For instance, the blue colour of the sky is the result of atmospheric light scattering – although the same colour sensation may also be induced by a television screen, a cinema projector, a painting on a canvas or an ink jet printer.

For this reason, patenting a specific unique colour specification is much more powerful than patenting a recipe to make a colour because the specification relates to the sensation rather than the recipe. For instance, a recipe for an army-khaki colour, comprising a brown pigment and a dark green pigment in specific ratios, could be designed around by mixing specific ratios of yellow with cyan and magenta pigments together to make a matching colour.

Procter & Gamble's US Patent 8163132 incorporates colour physics and a numerical $L^*a^*b^*$ colour

specification to describe the colouristic relationship between the various decorative marks on a paper towel product. The patent specifies that adding one or more spot colours to a four-colour printing press used for printing this particular product increases the range or gamut of printed colours that can be rendered. This patent is of additional interest as it not only effectively protects a visual consumer experience, but also appears to claim a negative condition. The claims of the patent appear to define the scope as the condition in which the numerical colour coordinates of decorative indicia do not conform to a specific mathematical relationship.

Another example from Procter & Gamble, US Patent 8220632, describes a packaged consumer product article, wherein the package includes a transparent window with a specific gloss and transparency. Once again, the focus of this patent is to provide dimensionable proxies to the human visual experience – that is, the 'shininess' of the packaging and the ease with which a product located within packaging can be identified.

Visual psychology – as well as the way in which consumers assimilate information – is studied in depth by consumer products companies. As mathematical models of visual phenomena have evolved, opportunities to effectively exclude others from producing products with specific visual attributes have emerged.

Kimberly-Clark Patent 5286543 is an early example of an innovative claim construction which includes a description of a visual impression, protecting the differentiating features of premium products. '543 relates to an article component containing a registered, complete graphic which may be incorporated on an absorbent article – that is, the graphic (eg, a smiling face) is placed in a specific area of the article. The alternative to this premium visual impression is that the graphic repeats continuously, meaning that there is a good chance that some of the images will be bisected by a cut as the article is assembled. Kimberly-Clark's patent is a clever way to maintain the top-tier product impression above and beyond patenting the method by which the articles are assembled.

Similar to visual sensations, patenting a product configuration on a shelf also presents an innovative way to keep your competitors' patent teams up late at night: US Patents 6648864 and 6763944 (both owned

FIGURE 3. CIE 1976 $L^*a^*b^*$ idealised uniform colour space



FIGURE 4. From Kimberly-Clark USPN 5286543 on graphic placement

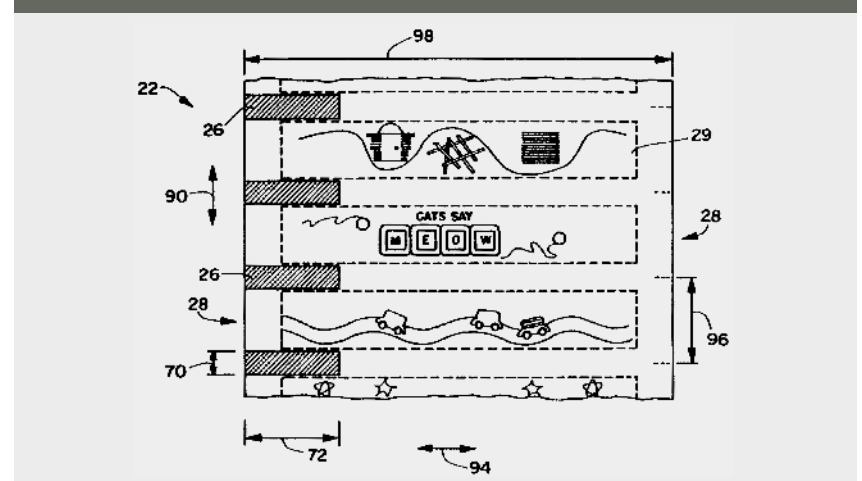


FIGURE 5. USPN 6648864 on ordered arrays of products. Now, imagine the shopper experience of seeing these products stacked on a store shelf

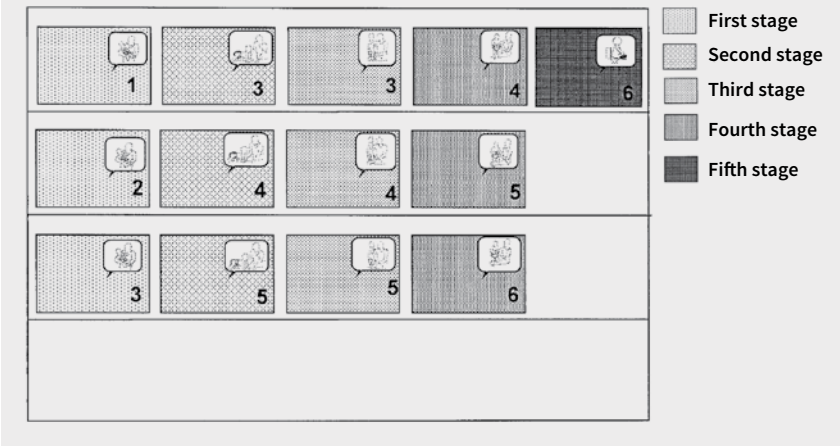
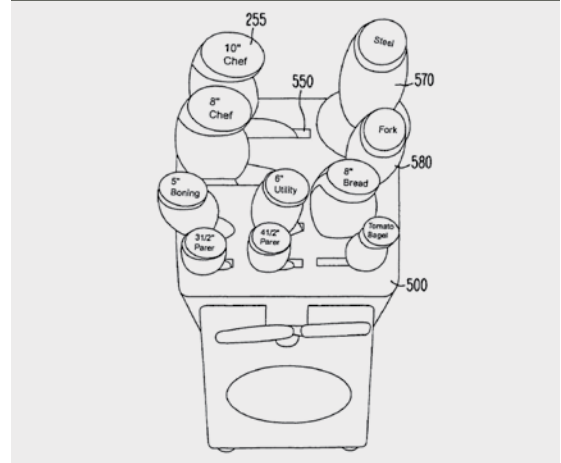


FIGURE 6. An example of a patent-protected consumer experience from Newell Rubbermaid



by Procter & Gamble) describe a specific configuration of a range of its products on the store shelf. The patent teaches that organisation of the products on the shelf allows the shopping consumer to easily find consecutive absorbent products as the infant grows from a baby through to a toddler and a child. In doing so, Procter & Gamble has potentially found a way to protect the shopper’s experience in a store.

Calphalon (owned by Newell Brands Inc) is the only company known to produce and sell kitchen knives with a blade length indication on the base of the handle, a practice that is protected by Patent 7228632. The insight is that, without labelling the knife in this way, the consumer cannot tell which knife is which without first pulling it from the wood block and looking at it. The clever patent attorney effectively prosecuted the protection of a consumer experience of the knives kept in a knife-block, which could otherwise have been induced using a number of methods as opposed to one individual article.

Apple’s patent attorneys have also been busy looking to protect the look and feel of their products, in addition to the inner workings. US Patent 8111505 relates to a laptop computer outer casing and claims that: “the seamless housing shaped to create an appearance of a single continuous shape with the movable top cover closed.”

Before we depart from our discussion on visual human experiences, let us also consider the judicious use of design patents as part of an IP strategy to protect human experience innovation types. It is commonly held that design patents are not a strong form of IP protection. I would challenge this position and indeed several court cases have awarded damages which support a contrary holding. Automotive manufacturing companies have successfully leveraged a design patent strategy to protect various aspects of their cars (eg, rear and headlights,

front grill and wing mirror) from imported non-original equipment manufacturer aftermarket replacements. Indeed, they have been so successful that legislation is now in committee hearings in the US Congress. Also known as the Parts Act, such legislation proposes limiting the lifetime of certain automotive parts design patents from 14 to two-and-a-half years. The bill was introduced to Congress in February 2015 and would amend the US Code to include an exception from infringement for certain component parts of motor vehicles after two-and-a-half years.

In more design patent news, Samsung recently paid out over \$1 billion to Apple for infringement of a series of design and utility patents relating to features of the latter’s iPhone (ie, the location of the button, the edge of the phone and the rounded square shapes of the icons). When judiciously deployed, design patents confer a valuable right to exclude others.

Olfactory – patents for taste and smell

What about patenting a consumer’s taste sensation? Composition of matter patents claiming compounds with certain taste properties abound. Taste-masking of pharmaceuticals is also easily found – for instance Adare Pharmaceuticals’ US Patent 9233105, which specifies a formulation that is not bitter tasting due to the inclusion of an additive. The claim is notable in that it is qualitative rather than quantitative.

However, just as colour sensations can be induced in a number of different ways, taste sensations may also be contrived using various combinations of different ingredients.

Searching issued US patents which claimed a numerical correspondence to a particular taste sensation was not fruitful. However, the groundwork of relating numerically measurable physical phenomena to organoleptic sensations is well underway, laying a foundation for future patents directed at protecting specific taste sensations (ie, the human consumer experience). Senomyx Inc in La Jolla CA appears to be a significant patent contributor to this foundational body of work in relating taste sensations to numerically quantifiable biomarker concentrations – specifically, ‘bitter’ (US Patent 9170254), ‘umami’ (US Patent

“Apple’s patent attorneys have also been busy looking to protect the look and feel of their products, in addition to the inner workings”

9176130) and 'sweet' (US Patent 9091686) taste sensations. Other players include the Coca-Cola Company and North Carolina State University. Like Senomyx, Coca-Cola's US Patent 9128079 describes cell lines that express certain measurable compounds within the cell when it is in the presence of bitter-tasting materials. Anjinomoto Co was recently awarded US Patent 9222944 relating to a method for screening a salty taste-modulating substance by monitoring the concentration of marker proteins expressed by certain cells when they are exposed to the food.

If the taste technology trajectory is analogous to the visual sensation technology trajectory, then we might see taste patents emerge that relate to foods which induce certain numerical concentration ranges of indicator compounds, just as we do with visual phenomena that can be measured. Could these patents form a foundation of knowledge that could be used to patent protect taste sensations?

Here is how it could work: say we make a special new gravy and want to patent protect the recipe. We could specify the quantity ranges of certain ingredients (eg, caramelised onion, celery, salt, tomatoes, Worcestershire sauce, meat juices or vegetable stock, and a blend of herbs). Alternatively, we could add a drop of gravy to biological systems and then measure the concentration of biomarkers expressed in response. In that way, we can relate a series of concentration ranges of measurable indicator compounds which have already been related to the salt, sour, sweet, bitter and umami sensations through organoleptic mapping. As there are likely several ways to induce a similar taste sensation, the latter approach may be more powerful – and cause more headaches for our gravy competitors.

Clearly, a great deal of additional effort, testing and expense is necessary to pursue a patent with claims such as this. However, there are numerous advantages to such an approach. First, it raises the bar technically out of the realm of simply a mixture of ingredients and into a biological system characterisation which relates to the flavour sensation. Second, while sophistication is required to design around the resulting patent, it is policeable. Third, whereas a gravy recipe could be reverse engineered to taste very similar to our gravy recipe, as a proxy to the resultant taste sensation is patented as opposed to the recipe, it will not matter so much that the recipe is different – the unique taste signature is what is protected, not the recipe.

Tactile sensations

Most semi-durable manufactured articles incorporate moulded thermoplastic resin as part of the design. The finish of the plastic has a strong bearing on how the article feels to the user when touched, as well as its durability, washability and resistance to scratches. A contradiction arises when manufacturers attempt to use materials that feel soft to the touch as opposed to those that are hard and durable, in that softer polymers (which are more comfortable to handle) may be more prone to wear and tear than their harder cousins.

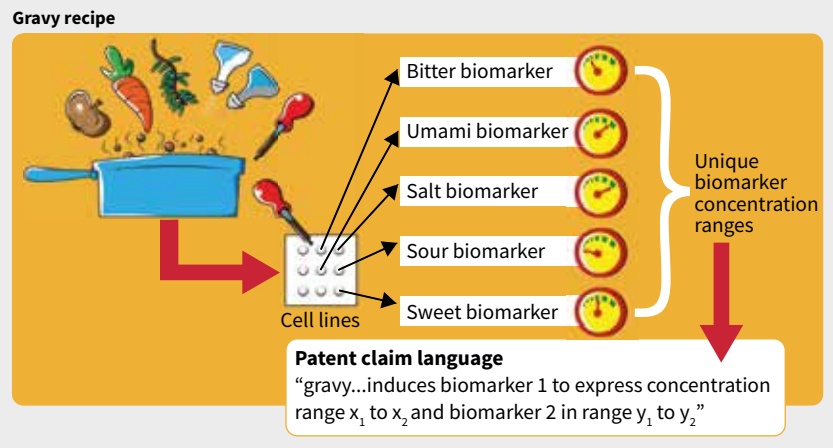
Surprisingly, the human tactile sensation can be fooled by surface micro-texture. Nissan Motors has researched the surface factors that correspond to soft and hard, rough and smooth, warm and cool, and moist and dry sensations when touched and or stroked by the hand. It reports that the closer the softness of a material to the

softness of the human finger pad, the softer the material will feel. A similar sensation is achieved when the surface contact area between a finger pad and the material is larger for a given contact pressure. In addition, Nissan Motors teaches that moist sensations arise when liquids penetrate deep in the fingerprint microscopic valleys at low contact pressure. Thus, if the surface relief at a microscopic level allows greater ingress of the material into the depths of the fingerprint relief, then the dry, hard material feels moist to touch.

Those are both tactile responses to the placement of a digit onto the surface of material. Nissan reports that when stroking a surface, the closer the surface texture is to a human fingerprint in roughness, the more comfortable it feels.

As a result of these studies, Nissan has been able to manufacture hard-wearing plastics with a proprietary finish which produces the tactile illusion of feeling soft and warm. Although its processes are trade secrets, Nissan's US Patent 7070221 teaches the production of an arm-rest containing tactile materials. These materials are used in the automotive products and have been offered in the past for licence in non-competing fields of use.

FIGURE 7. Diagram showing how specific cell lines and biomarker analysis could potentially be used to analyse the taste of gravy, then output a marker concentration, which could then be used in a patent claim



Technologies that enhance the driver's tactile experience abound in automotive interiors

Action plan



When forming an IP strategy to protect your products, be sure to examine all of the various modes of innovation throughout your creation process and value chain, and into human experience:

- IP considerations may include appropriate trade secret protection of business practices that help you to realise value, patent or trade secret protection of your product system configuration, and patent and brand protection of the consumer experience.
- When attempting to establish patent protection for unique end-user experiences, begin by first understanding the most important end-user sensations and experiences. Next, identify sensations and experiences that are unique to your products. This could include the use of focus groups.
- Do not forget also to consider the overall impact of your product. Think about the purpose of the product – for instance, perhaps your toy product reduces the chances of transmission of

bacteria between children. Think about how you might show that your product is measurably and uniquely better or different in regard to its primary purpose.

- The tough job is in developing a test or series of tests that produce numerical data which quantifies some aspect of the unique sensation or unique impact of your product. Consider each of the five senses and or combinations of senses, as well as the overall impact of the product.
- Use technical resources to help translate sensations and or impact into performance data which can be claimed as unique.
- In terms of protecting trade secrets, be sure that your employees are fully aware of their duties and obligations in this regard – exit interviews can be used to reinforce the message as employees leave. Other tactics may include subdividing processes and manufacturing steps in such a way that each employee sees only a part of a manufacturing process, as opposed to the whole.

Other auto-manufacturers and suppliers can also generate tactile sensations. The chemical and coatings supplier BASF has presented methods for increasing the tactile acceptability of hard moulded plastics using an in-mould coating method presumably covered by its publication WO 2012/089827, which it claims is being used in BMW, as well as certain Cadillac, Buick, VW, Audi and Nissan cars. To make the door handles of the BMW MySetta, a laser is used to engrave the desired micro-structure into the surface of a silicone matrix before the application of a poly(urethane) coating.

Other automotive manufacturers and parts suppliers have also successfully patented ways to generate tactile sensations through the judicious use of both hardness and chemical composition. Hardness or softness can be measured in the laboratory using an instrument called a durometer. US Patent 5298306 (owned by Molmec), US Patent 5968431 (owned by Chrysler) and US Patent 6180212 (owned by Visteon) are all examples that teach ranges of durometer readings, along with other mechanical and or chemical properties which correspond to the human tactile sensation of soft. Evidently, this technology is directed at making internal car door handles.

US Patent Application 20120196065 teaches a slightly different approach to invoking a soft tactile response applied to a film. Etsani Inc characterises a protective film for use on touchscreens and specifies that in order to produce a soft feel, the protective layer should have a compressible depth of between two numerical parameters when a specified force is applied.

Aural sensations

Despite the known mathematical relationships between the notes in a harmonic tune or chords as opposed

to dissonance (or, perhaps, in light of *Myriad* and the potential for the mathematical relationship between the notes to be naturally occurring), no patents have been identified that relate to a specific combination of sound frequencies or melodies. This makes sense, as historically musical intellectual property has been protected by copyright. However, auditory sensations have been trademarked – for instance, the Apple and Windows characteristic start-up noises.

Musical and harmonic relationships aside, sound – like touch – has also been the subject of study by the automotive industry. A review of US patents does indeed include patent claims (by Mitsui, Toyota and General Motors) that relate to designs of car doors which close without excessive noise. While these are examples of how the human experience can potentially be protected, it seems that there could be future opportunities to fully characterise sound and noise, in terms of volume, frequency distribution, harmonic content, timbre and waveform.

Towards a more holistic IP strategy

Most patents focus on the specifics of the product configuration or the product system, including components, product by process and methods of making. However, a robust IP strategy also considers trade secret protection of the patent holder's business methods and more importantly, patent protection of product performance and the human experience.

While requiring greater effort, there are several potential benefits to patenting in the human experience innovation space. First, it raises technical and legal barriers to competition. The degree of sophistication needed to develop test protocols and carry out the testing and confirmation is higher than that required to patent a product configuration. Further, the design of experiment and testing which will illuminate measurable physical attributes that relate specifically to end-user experience requires scientific training and discipline. However, it is this step that moves the consumer experience outside the abstract idea and into an area that is more patentable under Section 101. Access to specialist instrumentation and trained operators may also be needed. In addition, the degree of technical sophistication needed to interpret claims and product attributes, as well as to communicate with the USPTO, is higher.

Second, it provides a more diverse protection plan. With the devastation of many software and business method patent estates since *Bilski* and *Alice*, we have to wonder what other steps could have been enacted to mitigate the value lost. Could a more holistic IP strategy have been deployed to protect the human experience resulting from software code execution, in addition to the software code methodology? Would such a policy have mitigated the value impact of *Alice*? It is certainly food for thought. **iam**

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