

Chapter 2

QR Codes and the Dialogue Between Analogue and Digital

QR Codes are an innovative extension of the standard barcode found on almost every manufactured product on the planet, as well as on foods, books and tickets. There are key differences that will be revealed through this chapter. But the most important advantage is that the QR Code can carry more information in a smaller space, because they can be read vertically and horizontally. Further, they can be read at multiple angles, with the algorithm used to create them enabling a higher margin of error (between 7 and 30 %) (Fig. 2.1).¹

QR Codes (Quick Response Codes) were developed in Japan by Denso Wave, a subsidiary of Toyota, to track vehicle components. The original purpose of the QR Code was for inventory (Hoy 2011), but its potential and use extends far beyond this originating function.² This type of code contains much more information than the usual barcode, which presents information and is read horizontally. The more information it contains, the longer and wider it must be. QR Codes are read both horizontally *and* vertically and can therefore contain much more information in a more compact space (Zax 2012). Because they are read simultaneously in two directions, they are referred to as two-dimensional or 2-D barcodes. Denso has allowed unrestricted worldwide access for the creation of commercialized QR Codes, with no charge or restrictions. Importantly, they can be created with free software, often pre-installed in smartphones, and can be reproduced through a conventional printer (Dou and Li 2008).

QR Codes can also be framed within a wider production and consumption system: Kanban culture (Soon 2001). Developed in the late 1940s, it is a just-in-time inventory system that maintains high levels of production with reduced waste. The focus is actual consumption rather than predicted consumption (Lunesu 2013). Kanban ensures that signals are sent to produce goods when they are consumed.

¹ “Are QR codes better than barcodes,” Mobile QR Codes.org, 2013, <http://www.mobile-qr-codes.org/qr-codes-vs-barcodes.html>.

² Intriguingly, this ‘inventory’ function is discovering new uses in reinventing ‘lost and found’ services and branding cattle.

Fig. 2.1 Commonly used barcode



Fig. 2.2 QR Code (2-D barcode)



However, this book extends and stretches this paradigm beyond inventory, and into the creation of new relationships between producers and consumers (Fig. 2.2).

QR Codes are, as Jason Coleman described them, ‘essentially pictographic hyperlinks that can be embedded in the physical environment’ (Coleman 2011). QR Codes are frequently used beyond Japan, particularly in Europe and the United States, as well as in Australia and New Zealand. Indeed, the U.S. has now overtaken Europe for the use of QR Codes.³ The ability to scan QR Codes requires ownership of a mobile phone with an Internet connection, a camera and a phone application that will recognize and decode QR Codes. Almost all ‘smartphones’ currently manufactured have this ability.

In December 2011, marketing and advertising research company Nielsen released its *State of the Media: The Mobile Media Report*. Key findings included:

- The majority of 25–34 and 18–24-year olds now own smartphones (64 and 53 % respectively)
- The number of smartphone subscribers using the mobile Internet has grown 45 % since 2010.⁴

Up until 2013, comScore reported that smartphone adoption in the U.S. continued to trail European markets. By 2013, smartphone ownership reached 60 % of mobile phone users.⁵

Mobile phone users can encounter QR Codes virtually anywhere, but the most common locations include at home, inside stores and other businesses, on foot-paths and sidewalks through posters, billboards and store windows, while traveling on public transportation and at work. They can form luggage tags (Fig. 2.3).

³ “US Ahead of Western Europe in QR Code Usage,” EMarketer, January 28, 2013, <http://www.emarketer.com/Article/US-Ahead-of-Western-Europe-QR-Code-Usage/1009631>.

⁴ “Report: The rise of smartphones, apps, and the mobile web,” Nielsenwire, December 15, 2011, http://blog.nielsen.com/nielsenwire/online_mobile/report-the-rise-of-smartphones-apps-and-the-mobile-web/.

⁵ “Mobile majority,” Nielsen, June 6, 2013, <http://www.nielsen.com/us/en/newswire/2013/mobile-majority-u-s-smartphone-ownership-tops-60-.html>.

Fig. 2.3 QR Codes on luggage tags (Photograph by Tara Brabazon)



Fig. 2.4 QR Code greeting card (Photograph by Tara Brabazon)



A strong use of minimal space, the use of a QR code on an item of luggage summons the original use of the codes: for inventory. A more emotional and personal use comes in the form of greeting cards (Fig. 2.4).

When scanned, the image hooks into a website which reveals the message: I miss you. An emerging area of QR Codes use is through sound. Vocal-it One is an application that enables consumers to record a short message that is activated upon the scan of a QR Code (Fig. 2.5).

Through such 'talking labels', consumers download the 'Vocal-it One' application and then record a message that is activated upon the scan of the Code. Not surprisingly, such an application was quickly deployed for wine marketing (Fig. 2.6).

Fig. 2.5 Vocal-it one talking label (Photograph by Tara Brabazon)



Fig. 2.6 Vocal-it wine hangers (Photograph by Tara Brabazon)



The advertised uses for this product are already diverse. It can be used as a conventional gift card, with the sender recording a message for the receiver. However, there are further uses for wine enthusiasts. Wrapping around an empty bottle, the QR Code can store information and impressions about the wine for longer term use and reflection.

Through this proliferation of functions, the frequency of scans is increasing. According to digital marketing intelligence firm comScore,

20.1 million mobile phone owners (approximately 9 % of mobile phone owners) in the U.S. used their device to scan a QR Code in the three-month average period ending October 2011. Among these mobile users who used their phone to scan a QR Code, 59.4 % did so from home, while 44 % did so from a retail store and 26.6 % from a grocery store. Further, 21.4 % scanned a QR Code while at work, while 11.2 % did so outside or on public transportation with nearly 10 % scanning a QR Code while in a restaurant.⁶

Such data are significant when realizing that a slightly earlier study conducted in August 2011 showed that only 14 million people scanned a QR Code.⁷ In Europe, the take up is wider. comScore reported that,

In the EU5 region (including France, Germany, Italy, Spain and UK) 4.6 % of mobile users and 9.8 % of smartphone owners scanned a QR or bar code during the month of June 2011. Among those EU5 mobile users who scanned a QR or bar code on their mobile devices in June, 57.4 % did so from home, while 22.6 % scanned while at work and 20 % scanned a QR or bar code when outside or on public transport. Nearly 18 % scanned a QR Code while at a retail store, while 17.2 % did so while in a supermarket and 5.7 % scanned while in a restaurant.⁸

While these national specificities are instructive, there are other sociological variables to be assessed when considering the past, present and future of QR Codes. A June 2011 comScore study showed that approximately 60 % of those who had scanned in the recent months were male.⁹ The 25–34 age group was responsible for approximately 37 % of all scans, 35–44 for nearly 20 % and 18–24 for approximately 17 %.¹⁰ The income level group from \$50,000 to \$75,000 was responsible for 19 % of all scans, \$75–\$100,000 for 18.6 % and \$25–\$50,000 for 18 %. Top scanners were those in the \$100,000 or over bracket who were responsible for 36 % of all scans.¹¹ Therefore, products and goods that market to affluent male purchasers under the age of 44 are a key target market for QR-enabled publicity for goods. Wine is an important product for this group. So are real estate marketing, cars and new technology. This profile may—and indeed will—change, but it is important to log this current consumer base (Figs. 2.7 and 2.8).¹²

⁶ “20 million Americans scanned a QR Code in October,” comScore Data Mine, 19, December 2011, <http://www.comscoredatamine.com/2011/12/20-million-americans-scanned-a-qr-code-in-october/>.

⁷ “14 million Americans scanned QR or bar codes on their mobile phones in June 2011,” comScore, 12 August 2011, http://www.comscore.com/Press_Events/Press_Releases/2011/8/14-Million_Americans_Scanned_QR_or_Bar_Codes_on_their_Mobile_Phones_in_June_2011.

⁸ “In eu5, more than half of QR Codes are scanned while at home,” comScore Data Mine, 12 August 2011, <http://www.comscoredatamine.com/2011/08/in-eu5-more-than-half-of-qr-codes-are-scanned-while-at-home/>.

⁹ *ibid.*

¹⁰ *ibid.*

¹¹ *ibid.*

¹² There is an important parallel study of women in this age and income group. Their consumerist practices would be distinct to men in this group. While there have been no studies of this behaviour—which would have a role in selecting the appropriate use of QR Codes—there may be a focus on services such as holidays, concerts, health, beauty and wellness programmes. There may be a model for women’s use of QR Codes to be found in Groupon behaviours and practices.

Fig. 2.7 Building a relationship between media platform, audience and information

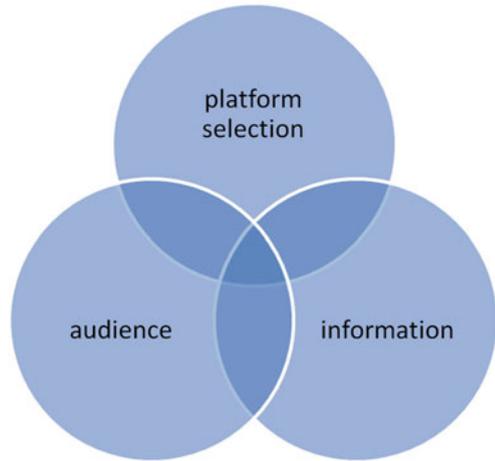
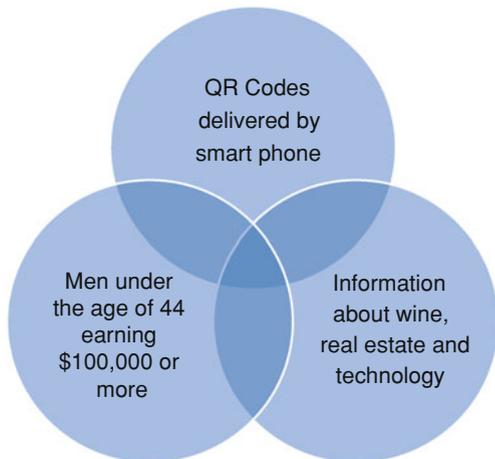


Fig. 2.8 Applying the model to QR Codes



While recognizing the match of this product and audience, the question remains: who scans, and why do they do so?

International mobile barcode company Scanbuy in its *ScanLife Mobile Barcode Q4 2011 Trend Report* stated that 2011 saw a 300 % growth in barcode scanning over 2010, and 1,000 % over 2009. *Q4 2011* saw more scans than all of 2009 and 2010 combined. Half of *ScanLife* users were between 18 and 34 years of age, with 60 % male (Trend Reports 2012). A February 2011 online survey (QR Code Survey 2011) of 415 smartphone users by marketing firm MGH in Baltimore, Maryland indicated that 53 % of scanners receive a coupon, discount or deal and 52 % scanned to get additional information. A further 33 % acted to enter a sweepstakes and 26 % signed up to receive more information. Significantly, 24 %

accessed a video and 23 % made a purchase. Another 23 % of scans were to interact with social media (QR Code Survey 2011). A *ScanLife* online survey of over 100 independent marketers reported that 50 % of marketers were currently using 2-D barcodes with 86 % planning to do so in the near future, and their top three placement choices were magazines and newspapers, direct mail and product packaging.¹³ Marketers are correct in targeting paper and cardboard-based carriers at this stage, but QR Codes can be placed in a virtually unlimited number of places. For marketing purposes, the most common locations include store windows, in-store displays, product packaging, newspapers, magazines, flyers, direct mail, websites and television screens. Film posters can use them, linking to a video, perhaps the movie trailer (Sorensen and Glassman 2011). A comScore study reported that more than 49 % of all scans were of QR Codes in printed magazines or newspapers, more than 35 % on product packaging, and websites on a computer were over 27 %. Such a result offers particular applications for food and wine. Posters, flyers and kiosks come next with more than 23 %, and business cards/brochures, storefronts and TV were all between 10 and 15 %.¹⁴ When analyzing survey results such as these, it is important to recognize that at this time there is more scanning done through certain media sources because QR Codes are created and displayed more often in these media sources. This also directly connects with *why* people scan. Results do not necessarily indicate potential, because currently people scan only those QR Codes that now exist, not the ones that *could exist* in the future. However, Andrew Wilson's question remains both relevant and generalizable: 'QR Codes in the library: are they worth the effort?' (Wilson 2012). Similarly for our project: are QR Codes on food and wine packaging worth the effort? Through this book, we evaluate the costs and the benefits, not only now, but in the future.

Conflating and triangulating these studies to date, the Top 10 Users (excluding Japan¹⁵) of mobile barcodes are:

1. The United States
2. Germany
3. Canada
4. The UK
5. Italy
6. The Netherlands
7. France

¹³ "Trend reports," op. cit.

¹⁴ "14 million Americans," op. cit.

¹⁵ Japan is excluded from most studies because it is an outlier. QR Codes were invented in Japan and that country had been using them for a number of years before they started appearing in other countries, so the percentage of people scanning QR Codes in Japan is far greater than other parts of the world.

8. Spain
9. Australia
10. Hong Kong.¹⁶

This list is important, not only in understanding who is using QRs but for international businesses and advertisers to recognize that there may be a gulf between the use of the codes in their home country and the targeted export market. For example, Aotearoa/New Zealand is not on this list, but the primary markets for their wine and primary produce are. There is a fascinating disparity emerging between the import and export market for New Zealand wine. Art Thomas realized that,

Consumers make numerous decisions about product purchases and these are influenced by internal and external factors. Manufacturer influence over some external elements can occur through packaging. In wine marketing, the packaging and labels assume an undeniable influence, forming an integral part of any wine's promotion and consumption ... New Zealand's wine industry is currently attracted to lucrative export markets and may be limiting its efforts on the home front. The home market, capable of expansion, will require a concentrated consumer research effort aimed at identifying the impact of label perceptions on consumer purchases. Such research ultimately should assist both domestic and international marketing activities (Thomas 2000).

Therefore, when decisions are made about marketing, further discussions are required about the most appropriate way to configure digitized media for the key and targeted audience. It is important to recognize that there are challenges to confront with regard not only to the recognition and literacy in QR Codes,¹⁷ but also to the potential they present.

A more precise example in the use of QR Codes is the Australian winemaker Jacob's Creek. Historically, this producer held the reputation in their home country for a wine that was cheap and plentiful but lacking in quality. Through an array of acquisitions and reorganizations, including the prestigious Orlando group,¹⁸ a transformation to the brand started to emerge. The brand now ranges from cheap

¹⁶ "Global growth in mobile barcode usage—Q3/2011," 3GVision News, 10 October 2011, <http://www.3gvision.com/pr29.html>. This statistic has been intentionally left at 2011 because this appears to be the last press release generated by the organization. Therefore, to ensure that we provide the most accurate sociological profile of QR Code users, we have triangulated an array of international studies. Most are not longitudinal. Instead, they provide a snapshot of a moment, a nation or an online survey. For our purposes in this book, we collate these disparate studies and provide a shape of past and present users. The outcomes we generate on future users are tentative, but our goal is to show trajectories and potentials.

¹⁷ For example, a street survey on QR Code awareness in Stockholm in 2010 reported that of the 108 people surveyed, "a large majority (77 %) did not recognize a QR Code, and 8 % reported seeing such a code before, but did not know it could be scanned using a mobile phone app. Only 15 % knew what the QR Code was, and that it could be read using a QR Code reader on a mobile phone." This finding was reported in S. Buttner, Z. Ahmet and H. Cramer, "QR Code awareness in Stockholm, Sweden," SICS technical report T2011:12, p. 1.

¹⁸ Jacob's Creek is part of the corporation Premium Wine Brands that was formerly known as Pernod Ricard Pacific. A range of wines, spirits and non-alcoholic grape juices are part of their range.

Fig. 2.9 Cheap and cheerful—Jacobs Creek (Photograph by Tara Brabazon)



and cheerful products through to St Hugo, Centenary Hill and Johann. One of the largest global brands in the world, it is an export-driven product and market. Jacob's Creek does matter to this story of QR Codes because they deploy them more heavily than any other winemaker from Australia. The key reason for their use is that this Australian firm has its key markets *outside* of Australia, particularly the United Kingdom (Fig. 2.9).

It is important to note the generic rather than Australian-based URL (jacobs-creek.com) and the specific UK site for responsible drinking. While their commitment to using QR Codes to market Jacob's Creek is strong, their current usage of QR Codes is not thoughtful or precisely considered. They rely on consumers to input too much information on a handset and the 'value-add' from using the code is not sufficient for the trouble. However, they are ideally placed in the market to use them—and hopefully well—considering the range and geographical spread of the product. But the digital value of the scan for consumers must be increased.

A better example comes from the Australian wine maker, Wolf Blass. With a similar international spread and a diversified range, the packaging is much more successful. Here is their higher end wine, their Silver Label Langhorne Creek (Figs. 2.10 and 2.11).

Emerging wine industries regions and the ultra-premium end of the market, such as is the case of New Zealand, can build on the example from Jacob's Creek and Wolf Blass and improve the digitized component of the scanning process. Europe matters to their international marketing. ComScore reported in January 2012 that based on a three-month average ending in October 2011, the highest percentage of QR Code users in the five countries of the EU5 region was in Germany, at nearly 15 %.¹⁹

¹⁹ "Connecting Europe: How smartphones and tablets are shifting media consumption," comScore, 23 January 2012, http://www.comscore.com/Press_Events/Presentations_Whitepapers/2012/Connected_Europe.

Fig. 2.10 Silver label
(Photograph by Tara
Brabazon)



Germany 14.9 %

The UK 13.2 %

France 12.5 %

Spain 10.0 %

Italy 9.6 %

European Average for the EU5—12.1 %

Over the month of November 2011, Internet usage research firm GlobalWebIndex surveyed Internet users in 27 countries (including Japan) on their QR Code access. Its report indicated that 29 % of Japanese Internet users were scanning QR Codes, compared to 22 % of South Koreans and 17 % of Chinese. Much lower, at 8 %, were Americans and British. Brazilians were at 6 % and Russians at 4 % (Brett 2011).

While we have reported contemporary data, a key to our study is to monitor present trajectories and how they may transform in the future. Because Japan is so advanced in the use of QR Codes in comparison to other countries, its current usage may give an indication of where QR Codes may progress elsewhere. A study from *NetAsia Research* (via *2d code*) showed:

Fig. 2.11 Integration of QR Codes into the wolf bliss label (Photograph by Tara Brabazon)



- 76 % of Japanese know that they have access to QR Codes.
- This group scans QR Codes on an average of 1.24 per week.
- Reasons for scanning include: (1) to use a coupon (31.6 %); (2) to apply for a special promotion (22.7 %) and (3) to have more information on a product (22.7 %) (Smolski 2011).

This latter category—those seeking further information—is particularly important for the wine and food industries that are the focus for this book. There is a range of display options, including promotions in bars and restaurants. Wine can be featured (and promoted) through a card positioned on a table, naming the brand, including some details, perhaps with a special offer, but also presenting a QR Code for further information. Restaurants are complex social spaces, with a plethora of trigger points for purchases. As we discuss later in this book, it is incredibly difficult to intervene in purchasing and consumption habits with wine. But using QR Codes in a tasting environment, encouraging drinkers to try something new and source new information through the Web while they are doing so, adds an innovative context to the wine experience. This is just-in-time marketing creating new relationships between the analogue and the digital.

An intriguing question is whether or not QR Codes will follow the Japanese pattern of usage: to use coupons, partake in a promotion or gain further information. To explore whether Japan remains the exception rather than the rule, it is appropriate to summon an alternative mechanism for structuring and shaping the disparate quantitative or qualitative surveys and data about QR Code usage. Gartner, a global information technology research and advisory company, publishes regular ‘Hype Cycle’ reports on new technological innovations in a variety of industries. The cycle offers some information about how innovations are accepted or rejected. It begins with the *Technology Trigger*, moves upward to the *Peak of Inflated Expectations*, down the *Trough of Disillusionment*, up to the *Slope of Enlightenment* and finally reaches the *Plateau of Productivity*.²⁰ In the July 2011 research, Gartner’s hype cycle illustration positions QR Codes moving to the *Slope of Enlightenment*.²¹ Gartner describes this stage as,

More instances of how the technology can benefit the enterprise start to crystallize and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious.

Gartner’s analysis suggests that QR Codes still have two to five years before mainstream adoption. It is clear though that—as with all technology—if they can be embedded into the behaviours and practices of daily life, then the speed of adoption and the literacy to use them well will also increase. There is great potential. With supermarkets advertising their products with the question ‘Stuck in a wine rut?’,²² the opportunity to find strategies to connect an untried product to a consumer is important in amending behavioural and purchasing patterns. Therefore, our next chapter presents the key for present and future uses of QR Codes with some comments about the best practice.

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²¹ “Hype cycles,” Gartner, undated, <http://www.gartner.com/technology/research/methodologies/hype-cycle.jsp>.

²² “A lot of bottle,” Ocado Life, Issue 3, August–October, p. 10.

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