

One Size Fits All

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A graphic designer may work like an artist, but once production gets involved, she has to assume the role of an engineer. Whatever the artistic quality or political intention of a graphic design work may be, its form will have to comply with printing specs, browsers specs, and other industry-imposed conditions. The vast majority of graphic design work has to be made reproducible for global trade and communication using standards.

The history of standardization walks parallel to the history of economy. Pre-capitalist economies made use of bespoke measurements that fit local circumstances. These were often 'human' in more than one way. The body was used as a measuring instrument (thumb, elbow, foot) and local systems had cultural and social meanings that reflected the social life of small-scale exchange. Systems that were used over centuries were considered social and even sacred. Metal or stone casts of weights and measuring units were kept secure in city halls and temples as if they were idols.

Measurement systems grew from specific local conditions. Farmers would often use different measurements depending on the soil, crop, location, sun, and slope. It made no sense to equate an acre of sandy, unfertile soil to an acre of the most productive patch of land. This is why for instance labor time was used as a land measurement, such as the French *Journal* (a day) was the amount of land that could be plowed in a single day. (Witold, 1986) Cultures in far reaching areas like the Sahara had developed detailed measurement systems for long distances, as miscalculation would have dire consequences. The Ashanti in Ghana developed refined measuring tools for weighing gold dust, on which their economy depended. (Ibid.)

These examples of pre-capitalist measurements systems reveal that economy is a social activity in which value is exchanged between people, creating cultural traditions and narratives in the process. Today's design systems have been both the result of industrialization and the dominance of economic efficiency, through the success of scientific and rational methods from the European Enlightenment. By virtue of such relations, power structures have emerged of Western Europe, dictating their measurements onto much of the world in the process of statecraft and capitalist trade.

This essay takes the metric system, the A-formats of paper, the shipping container, and the bar code as examples of capitalist industrial standards. By examining their histories, we can better understand the relationship between graphic design and capitalism.

One 40-millionth of the earth

A pivotal moment in the history of standardization happened in France in 1790, when a commission was asked to come up with a system of standards for measures and weights. At the time, over seven hundred measurements were used within in France, and much time and effort was spent calculating the exchange of goods. The first reason for the metric system was to simply put a more efficient national trade in place. Secondly, differences in land measurements stood in the way of a national tax code. Anthropologist James C. Scott

explains in *Seeing Like a State* (1998) that local measurement practices were culturally rich and social, but not ‘legible’ for the state, and therefore needed to be standardized in order to be taxed.

The French nation state was a forerunner in the centralization and standardization of bureaucracy and society, as the revolutionary slogan ‘one king, one law, one weight, and one measure’ illustrates (Ibid.). The meter proved a monumental shift, as it was decided by mathematical calculation as $1/40,000,000^{\text{th}}$ of the earth’s diameter. This scientific approach literally shifted the scale of trade from a regional to a planetary scale. Although the metric system was emancipatory in its ideals—it lessened the power of aristocracy—most farmers saw it as something that was conjured up by bureaucrats, who knew nothing of local contexts.

The French republic fared well with the standardization of measurements. Since the state decided how land was measured, and how crops were weighed, it could exert precise control over trade and taxes. Standardization was a way to prioritize economic efficiency over regional cultural and social relations.

From Rags to Ratio

Paper sizes are very determinate for the work of graphic designers. Before the invention of the A-formats, a great number of paper formats flourished in Western Europe. Sizes were derived from the available technology and material limitations. Parchment, which was made from animal hides, was limited to the size of the skin of sheep and goats. When the first paper mills appeared in Europe, the size of the sheets depended on the reach of the arms of a worker holding the mould loaded with pulp (Kinross, 2009). Handmade paper sizes were approximate and were not known by their exact measurements. They would simply be known by names like ‘Royale’ or ‘Imperiale’, and the sizes of two sheets of ‘Royale’ would differ by today’s standards.

It was again in France where a scientific system for paper sizes was devised in line with the metric system. It was a rational, mathematical invention based on a ratio of $1:\sqrt{2}$, as the width of two sheets would form the length of the bigger size sheet. This invention was perfected and standardized in Germany as part of the *Deutsches Institut für Normung* (German industry norms) in 1922. The DIN system was initiated in 1917 by the manufacturers for artillery to streamline the efforts to support the war industry during the First World War. Out of the many DIN industry standards still in use today, the most well-known are the paper formats which were adopted as a world standard as ISO 216 in 1975, the most used paper size system in the world; the A-formats.

In recent decades, the steady decline of printed matter has given rise to online printing services. Websites like *Flyeralarm*—the largest online printer in Germany—have decimated smaller print businesses. The companies’ success comes from limiting choices using preselected formats; A6 for a postcard, A5 for a flyer, and A4 for folders. They have stepped into the shoes of the designer by choosing the paper size and stock for them. Standardization by online printers has led to downward-spiralling prices for printed material, which makes it almost impossible for graphic designers to argue for quality print work in custom sizes at local print shops. If a client is not flush with money, a designer may find herself limited to the formats that cheap bulk printers offer. Secondly, the low cost makes large print runs more attractive than small print runs, leading to outsourcing and more paper waste. Printed matter

is used as a cheap standardized surface to steamroll other forms of communication by its sheer volume.

The War Box

Another revolution in standardization that accelerated global capitalist trade was the shipping container. Through its ubiquity, it has become a symbol of world trade and efficient transportation of cheap goods — well before it became the standard for temporary hipster locations like pop-up coffee bars and festivals. Ninety percent of the world trade is now handled through shipping, and the low price of the transport of goods can be attributed — together with the cheap extraction of resources — to the invention of the shipping container. Even the volume of shipping trade itself is measured in TEU (twenty-foot equivalent), the cargo capacity of a 20-foot-long container.

Ports looked very different before the container industry. Large crews of longshoremen were needed to pack cargoes into ships, workers that lived close to the harbor. The implementation of the container in the 1960s made the large shipyard crews obsolete, turning harbors into parking lots for cranes and trucks. In the fifteen years after the shipping container was implemented, 90% of dockworkers in New York were laid off.

The container had been in use since the 1900s on trains and boats for coal transport. It was the Vietnam war (1955–1975) that sped up its global distribution (Hardt & Negri, 2017). At the height of the war, more than half a million US troops were deployed in Vietnam, which required a massive logistics operation. South Vietnam did not have an international shipping infrastructure at the time, and the US military had difficulty supplying its troops. They hired Sealand—the first container shipping line—to take care of the transport using square containers nicknamed CONEX boxes.

Container shipping for the US military accounted for half of the company's turnover in 1970. Pacific shipping routes carrying weapons and military material for the Vietnam war laid the groundwork for the trade of goods between Asia and the US. Sealand itself was sold to Maersk in 1999 to form the world's largest container shipping company.

Sea freight has strict guidelines for packaging, wrapping, bulk weights and sizes. The measurements of containers dictate the shape of boxes and packages, and the use of materials to make products suitable for long sea journeys. The low cost of shipping has outsourced a large part of the printing industry to low-wage countries, making printing thousands of miles away cheaper than printing locally.

The black and white stripes

In packaging design the bar code has been a very influential standard. Now found on every imaginable product, the bar code was an invention of engineer Joe Woodland when he was a graduate student in 1952. Woodland was inspired by Morse code, and once, as he was sitting on Miami Beach, he drew his fingers in the sand and came up with the idea that the strips could be thick or thin (Weightman, 2015). Bar codes use optical scanning, measuring the different white spaces which correspond to a unique product.

It wasn't until the mid-1970s in the midst of the oil crisis, labour unrest, and recession, that the bar code was implemented on a mass scale (Parenti, 2003). The biggest US supermarket chains held a meeting to standardize product codes. The bar code was selected

out of several proposals to reverse the plummeting sales. Despite initial costs of installing bar code scanners, the profits soon outweighed the costs. The return on investment turned out to be a staggering 41,5%.

While economic efficiency is undoubtedly the main achievement of the bar code, the collection of consumer data is its most important legacy. Real-time sales information meant faster logistics and better insights in customer behaviour. Advertising and product development could respond to consumer demand almost immediately, with a minimum of under- or overstocking. In terms of engineering, the bar code has successfully devised a visual system that can be applied everywhere in the world independently of social contexts.

Through its ability to track consumer data, the bar code has entered all areas of life, even newborn babies are scanned at hospitals using bar codes. You can put a bar code on anything and it can be tracked, traced, and valued using computation and algorithmic efficiency. This is how the bar code has succeeded in becoming the logo of international trade.

Against standard living

If we look at the history of the metric system, the A-format paper sizes, the container, and the barcode, we find that these forms of standardization are also forms of simplification, where information about the social context of work and production is lost in the process. As each item in industrial production needs to be identical to all the others, traces of labour and human interaction are made invisible, which prevents those working to assemble or produce the object any emotional or personal connection.

The measurement systems that were used before the metric system reveal that pre-capitalist knowledge held tremendous value and knowledge about local contexts. Informal knowledge is still produced every day, but usually not recognized as legitimate. Communication is always social and in flux. Allowing more informal forms of knowledge to be used in graphic design can challenge the industrial monopoly on communication and focus more on its social function than merely be a vehicle to create profit.

With paper we see that graphic design is a creative profession that is limited by the standards that the industry has set. Choices in colours, sizes, materials, and shapes are provided by manufacturers of industrial production, whether physical or digital. By using *Flyeralarm* formats instead of working with a local printer to create a custom design, the designer accepts a lower quality and diminishes social relations. Printers close, graphic services are outsourced and monopolized. A socially aware graphic design should be able to look beyond industrial pre-sets.

The quest for lower production costs and profits has driven innovations like the container and the barcode. Just two examples in a range of technologies which are devised to streamline logistics for optimal economic efficiency. Efficiency which is based on cheap fossil fuels, because what is efficient about a book being designed in Europe, printed in China, and sold in North America? Expansion and outsourcing can only exist because of standardization. If wages become too high in South East Asia, production can be moved immediately to East Africa with little change to the entire operation. If we seriously want to address graphic design's involvement in creating waste and inequality, then perhaps mass-

production should not be its primary goal. Questioning standardization should be a part of that.

Beyond doubt, industrial innovation is necessary, convenient, and makes a lot of processes go easier, especially when working with large groups of people. It is not really useful nor better to create a new paper format or a new typographic measurement for each new design, or to use a different paper size for everything. But we should remember that global industry standards have allowed for global mass production cycles and outsourcing to take place. This has created a lot of wealth but also alienated workflow, promoted exploitation of labor and a climate crisis that demands us to produce less, more local, and in a more socially meaningful manner.

The possibility of design systems that question its capitalist foundations, start with the realization that economy is essentially a social activity in which value is exchanged between people. A move towards a non-capitalist practice of design will therefore have to question the very basics of how design is practiced without necessarily going back to pre-industrial production. Other forms of knowledge-production can emerge from questioning standards and measurements, from the search for alternatives to ways of working that strengthen social bonds and relations, not break them.

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