A patient waiter is no loser!
Some notes on dots and their
reception.
By David Bennewith

0.
Good evening. I'm compiling a
text about dots and reading;
permutations of the [read] dot
presented as text, sound and
image.

1.
[CLAP, CLAP, CLAP] / . . .
This is Morse code for 's'; the
Morse 's' constitutes the same
visual make-up as the ellipses
— a punctuation character that
denotes an intentional omission
in text.
   Letters and symbols that
can be, and are, constructed
of dots (or points) to form
(legible) characters are called
'dot-matrix'.

2.

The earliest known depiction of
toss juggling is Egyptian, from
the 15th Beni Hassan tomb of an
unknown prince, dating from the
middle kingdom period of about
1994-1781 BC.

3.
From early studies of
electricity, electrical
phenomena were found to travel
at great speeds and many
experimenters began to work on
the application of electricity
to communications over a
distance.
   In 1746 the French scientist
and abbot Jean-Antoine Nollet
gathered about two hundred
monks into a circle — of about
1.6 km in circumference —
and with pieces of iron-wire
connecting them he discharged
a battery of Leyden jars[1]
through the monks. He observed
that each monk reacted, for
the most part, at the same time
to the electric shock; showing
the speed of propagation
(transmission of electrical
current through the monks)
to be very high.

4.
The first true dot writing
system, translated directly
from French as 'Night Writing',
was invented and designed in
1815 by Charles Barbier, a
captain in the French army. The
characters of his Night Writing
— developed in response to
Napoleon's demand for a code

that soldiers could use to communicate silently and without light at night — consisted of a 6×6 grid which included most of the letters of the French alphabet, as well as frequently used digraphs and trigraphs.

As is common with many military inventions, the Night Writing system soon found a use in civil society. In 1821 Barbier brought Night Writing to the Paris Institute of the Blind, where it was temporarily adopted as a writing system.

A 12-year-old attendee of the Institute found the system too difficult to understand and he set about devising his own, using the same implement with which he had blinded himself [a stitching awl] at the age of three. Louis Braille completed his system in 1824, aged fifteen. Braille's 6-dot system was ingenious in the fact that it allowed recognition of letters with a single fingertip — apprehending all the dots at once. These dots consisted of patterns in order to keep the system easy to learn. Braille offered a blind person the ability to be able to both read and write, providing enormous benefits in comparison to other raised alphabet systems of the day.[2]

Braille later extended his system to include notation for

mathematics and music.

The first book in Braille was published in 1829 with the title Method of Writing Words, Music, and Plain Songs by Means of Dots, for Use by the Blind and Arranged for Them.

My understanding is that when someone 'reads' Braille, it is the visual cortex which is stimulated.

In 1839 Braille published details of a method he had developed for communication with sighted people (or, those who could not read Braille). Called 'Decapoint' the system used patterns of dots to approximate the shape of alphabetic characters. Louis Braille and his friend Pierre Foucault went on to develop a machine, called the 'Raphigraphe' (needle-writer), to speed up the somewhat cumbersome system. The Raphigraphe was eventually to be replaced by a typewriter. In part, Decapoint and the Raphigraphe present a distillation, shift and cross-pollenation in the construction, production and recognition of characters in the Latin alphabet system — and also precludes the dot-matrix faces we see used today.

5.

Not long after the advent of Braille, early telegraphy — the long-distance transmission of written messages without physical transport of letters — was being developed.

The first telegraphs came in the form of optical telegraphs, including the use of smoke signals, beacons or reflected light. These 'telegraphs' have existed since ancient times.

In 1833, in Göttingen, Germany, Carl Friedrich Gauss and Wilhelm Weber built and used the first electro-magnetic telegraph for regular communication. The telegraph connected the observatory with the Institute for Physics in Göttingen.

The first commercial electrical telegraph was constructed in Great Britain by Sir William Fothergill Cooke. Cooke and Charles Wheatstone (a British scientist) patented it in May 1837 as an alarm system. The telegraph came into operation on 9 July 1839 on the Great Western Railway in Britain. It ran for 21 km from Paddington station to West Drayton.

Simultaneously an electrical telegraph was being independently developed and patented in the United States. In 1837 Samuel F. B. Morse and his assistant Alfred Vail developed the Morse code signalling alphabet — a code in which letters are represented by long and short signals of light or sound — visually the equivalent of a dash (long) and a dot (short) on a thin strip of paper. America's first telegram was sent by Morse on 6 January 1838 across 3 km of wire at Speedwell Ironworks near Morristown, New Jersey. The message read: 'A patient waiter is no loser'.

For its commercial debut in America, on 24 May 1844, Morse sent the message 'What hath God wrought' (quoting Numbers 23:23 from the Bible) from the Old Supreme Court Chamber in Washington DC, to the old Mt. Clare Depot in Baltimore. This dramatic message was chosen by Annie Ellsworth of Lafayette, Indiana — the daughter of Patent Commissioner Henry Leavitt Ellsworth. The Morse/ Vail telegraph was quickly deployed in the following two decades, and the overland telegraph connected the West coast to the East coast of the continent by 24 October 1861, bringing an end to the Pony Express.

When Morse code was later adapted to radio, the dots and dashes were sent as short and long pulses. It was later found that people become more proficient at receiving Morse

code when it is taught as a
language that is heard, instead
of one read from a page. To
reflect the sound of Morse
code, practitioners began to
vocalise a dot as "dit" and
a dash as "dah".

  On 12 December 1901, Guglielmo
Marconi transmitted the tele-
graphic signal of the [Morse
code] letter 's' [• • • / dit
dit dit] across the Atlantic
Ocean from Poldhu in Cornwall,
England, to St. John's,
Newfoundland. The first
transatlantic wireless test
signal was the letter 's'
repeated over and over.

  Telegraphy has played a
strong part in — and has led
to — the internet and email
technologies we know and
use today.

6.
'Did I feel such a tumultuous
sensation before, as when, all
alone in the still room, I heard
the needles click, and as I
spelled the words, I felt all
the magnitude of the invention
pronounced to be practicable
beyond cavil or dispute.'
— Charles Wheatstone

7.

The most balls juggled is 10, by
Italian juggler Enrico Rastelli
(1896–1931).

8.
LED [Light-Emitting Diode]: Oleg
Losev was a Russian scientist
and inventor. In the course of
his work as a radio technician
he noticed that diodes used in
radio receivers emitted light
when current was passed
through them. In 1927, Losev
published details in a Russian
journal of the first-ever light-
emitting diode. Just over 4
decades later the evil American
company Monsanto became the
first organisation to mass-
produce visible LEDs — using
gallium arsenide phosphide
in 1968 to produce red LEDs
suitable for indicators. These
were first introduced in hand-
held calculators designed by
Hewlett Packard.

9.
'… it requires light to
illuminate not the text itself,
but the space around the text.'

'.... it requires light to illuminate the text itself, not the space around the text.'

10.

La jongleuse.

Paul Nougé was a Belgian poet, instigator and theorist of the Surrealist movement in Belgium. Between December 1929 and February 1930 Nougé created nineteen photographs which were finally published in 1968 with the title 'Subversion of the Images'. The image 'A new way of juggling' forms a part of this series. Juggled on a flat surface, black dots of diminishing sizes appear like punctuation marks.

11.
'One of the difficulties facing a typographer was the aesthetic effect of placing the dots over [Times Roman] letters which were not designed for this purpose [to produce Times Gaelic]. For easy reading all dots would need to be on the same visual line. Secondly the dots on a number of lines of

caps printed consecutively would not be typographically pleasing. As you are aware the letters 't' and 'f' are not in alignment with the x-height and needed to be redesigned to conform to the Roman font and to carry the dot at the same visual level as the other letters.'
– William Britton, reproduced in 'Simply a dot' by Dermot McGuinne, Visible Language 31.1, 1997

12.
'Periods have life of their own, a necessity of their own, a feeling of their own, a time of their own. And that feeling, that life, that necessity, that time, can express itself in an infinite variety – that is the reason I have always remained true to periods.'
– Gertrude Stein

13.
'All these attempts were based on the idea of unifying graphics and photography, so that lettering and pictures would become one whole.'
– Unknown source

14.
'Formally they're made up of dots; they even have this kind

of dotty printed matrix thing
about them. You know, the ease
with which language is made
up of these points.'
— Cerith Wyn Evans,
www.necronauts.org, 2002

15.
A dot matrix printer, or impact
matrix printer, is a type of
computer printer with a print-
head that runs back and forth
or in an up-and-down motion on
the page. It prints by impact,
striking an ink-soaked cloth
ribbon against the paper, much
like a typewriter. However,
unlike a typewriter or daisy
wheel printer, letters are drawn
out of a dot matrix, and thus,
varied fonts and arbitrary
graphics can be produced.
Because the printing involves
mechanical pressure, these
printers can create carbon
copies and carbonless copies.
   Each dot is produced by a tiny
metal rod, also called a 'wire'
or 'pin', which is driven forward
by the power of a tiny electro-
magnet or solenoid, either
directly or through small
levers [pawls]. Facing the
ribbon and the paper is a small
guide plate (often made of
an artificial jewel such as
sapphire or ruby) pierced with
holes to serve as guides for
the pins. The moving portion
of the printer is called the

print- head and generally —
when running the printer as
a generic text device — prints
one line of text at a time.
Most dot matrix printers have
a single vertical line of dot-
making equipment on their
print-heads; others have a
few interleaved rows in order
to improve dot density.

The first dot matrix printers
were introduced pretty much
simulteaneously.
   1.
The LA30 was a 30-character-
per-second dot matrix printer
introduced in 1970 by Digital
Equipment Corporation of
Maynard, Massachusetts.
It printed 80 columns of
uppercase-only 5×7 dot matrix
characters across a unique-
sized paper.
   2.
The Centronics Model 101 was
introduced at the 1970 National
Computer Conference. The
print-head used an innovative
seven-wire solenoid impact
system. Based on this
particular design Centronics
later made the claim to have
developed the first dot matrix
impact printer.

16.
Or, as suggested by a lover,
these early digital letter-
formations — letter

transformations — could be
regarded as the technological
catalyst, or a reconciliation,
to the present-day digitisation
of typefaces for use in
all modern processing and
viewing devices.

17.
'When dot matrix printers first
came out, my dad picked one
up for our home computer.
We figured out we could print
a million dots (5000 dots per
page onto 200 pages) and put
the print-outs all over the
walls of his classroom, so that
his students could get an idea
of what a million was. This was
a big idea at the time — to
actually be able to visually
see, or hold in your hand,
a million of something.'
— Gabrielle Blair
www.designmum.com

18.
'One way representation has
entered design is through the
gradual stylisation of designs
until they become almost
abstract, and may come to be
regarded as purely patterns
which have lost their original
symbolic meaning.'
— Anthony Hyman,
The Computer in Design, 1973

19.
In our present arsenal of forms
one finds many corresponding
expressions — the clearest
[expression of them] in
contemporary architecture
— all based on the principle
of many small units, together
shaping the form. For example:
the honey-comb, certain archi-
tectural studies by Conrad
Wachsmann, the geodesic domes
of Buckminster Fuller, and
Habitat at the Montreal Expo.
No matter which computer aided
system one applies, the cell
principle seems to me a correct
starting point, just as was the
papyrus stamp, the goose quill,
or the engraver's tool.
   Although the cell form is
important for the arrangement
of patterns, I use the expres-
sion 'dots' as an example for
convenience sake. If we compose
a classical letterform with
these dots, you will notice that
there is something happening.
The letter cannot be dotted,
cannot be screened; that
is incompatible with its
appearance. In principle
nothing has changed when
one takes 4000 dots to the
centimeter (cm.) instead of
20. Apparently everything is
in order, but the screening
has been done. It remains a
concealed affront! It is against
the classical letterform.
— Wim Crouwel

'Type Design for the Computer
Age', 1969 [Reproduced in
Visible Language, Volume 4,
Number 1 (Winter), 1970]

20.
A few months ago I swapped a
book for THIS typeface — but
my interest in the typeface
preceded the exchange by
a year or so.
   Having wanted the typeface
for a while [even trying to
sneak it into commissioned
work], naturally, I was quite
excited. This typeface is called
'Dot Matrix - Text', and it was
designed by Cornel Windlin
in 1999.
   To quote Windlin:
   "I set it as a challenge to
myself to create a matrix font
that had a grid that is a bit
more complex than the usual
strict dot matrix grid. The idea
was to create a font that had
a bit more personality than the
usual results of such
experiments, and that would
be more easily readable."

21.
'New media and new techniques
of reproducing the visible
word are providing new
opportunities for alphabetic
communication as well as
imposing changes in the design
of signs we employ. The recon-

sideration of our alphabet is,
therefore, no longer merely
a theoretical exercise but
an activity which, on practical
grounds, it is today both
desirable and opportune
to pursue with vigour.'
— Herbert Spencer
The Visible Word, 1969

22.
In more recent times a budding
type-designer's first typeface
is quite likely to be a dot-
matrix. This is the case with
the Dutch type-designer Martin
Majoor for example. A printed
receipt with dot matrix
characters brought home by his
father one evening — showing
the results of his evening's
chess game — fascinated Majoor
with the realisation that, by
using only a few dots, you could
produce a letter. Not being
allowed, after asking, to have
the receipt from his father (it
was for his personal archive),
young Martin borrowed the
receipt and traced it letter
for letter — compiling his first
digital typeface.

23.
'You know what I love? Beautiful
type. Gorgeous books,
letterpress, ink and the swish
of the pen. The flow of thought
communicated through the way

words are placed on a page,
and the artistry and design
intent hidden behind a
functional form.
   You know what I work with?
Yep, that's right. Grids and
dots. LCD displays and CRT
monitors.'
— Unknown source

24.
Dot dash
dot dash
dot dash
dot dash
dot dash
dot dash, dip flash
dip flash
dip flash
dip flash
dip flash
dip flash, don't crash
don't crash
don't crash
don't crash
don't crash
don't crash.
— Wire,
'Dot Dash', from On Returning,
1979

25.
These letters might have also
been produced by fire, or by
stones placed in an intelligible
way on the ground: 'S.O.S.'!

   Either a planet,
   a sun or a star,

a stain,
the button,
the wheel,
a coin,
the doughnut's hole,
remnants of a push-pin,
pupil of an eye,
a row of boulders,
a ball,
a drop of blood,
a particle,
a pimple,
a pellet,
a frightened caterpillar or
shielded armadillo,
etc.

26.
'What a spectacle, on some
clear, dark nightfall, from the
edge of Hamstead Hill, when in
a moment, in the twinkling of
an eye, the design of the
monstrous city flashes into
vision — a glittering hieroglyph
many square miles in extent;
and when, to borrow and debase
an image, all the evening
streetlamps burst together
into song!'
— Robert Louis Stevenson,
'A Plea for Gaslamps', in
Virginibus Puerisque, c. 1881

27.
'Distances between points,
relative distances represent
a minimal fact which does not
carry meaning within itself.

It is unpretentious material, but one may do a lot with it as we have seen. The meaningful portrait is built of the most meaningless of elements. [...] I use the least associative and least meaningful elements I know of — the space between dots. Generally visual images can be conjured by either densely grouping or thinning out of dots. The dots themselves do not refer to an outside reality. As a designer I am fascinated by the similarity of some of the dots with a particular thing, thus gener- ating a specific meaning.'
— Peter Struycken

28.
On Staten Island at the Hudson-Fulton pageant in New York [1909] a thousand lightbulbs spelled out WELCOME in 20-foot-high letters. The Hudson-Fulton Celebration, as well as being a representation of the discovery of America and its industrial development, gave the public a spectacular taste of what an electrified landscape might be like.
— Extracted from chapters 6 and 7, David E. Nye, American Technological Sublime, 1994, MIT Press

29.
Presided-over by them. Those dirty dots. Frenetic electri- city from behind with light projecting your own [standard] message. In this place it says: 'WEALTH TIES QUAKE VICTIMS TO CHCH'; with no exclamation, it just loops.
So.
What does it say on your street?

30.
'Digital face: shadows that flicker in halves of 0.02 seconds'
— Max Bruinsma,
'The Reader's Terms', 1998

31.
When thinking about these dot characters, certain economies of form — and the reproduction of that form — are visible. Compared to the varied 'skeleton' structures normally required for alphabetic characters — those most familiar to us in daily writing and reading — a shift and an alternative in the construction of dot characters is apparent. This shifting suggests substitute opportunities for the making and viewing of these characters and there- fore slightly adjusts the

transmission and reception
of their messages.

Concerning typefaces: A dot
character's assembly usually
relies on the duplication of
a single form within a grid
structure — a structure that
is either created or prescribed.
This assembly, when compared
to skeleton characters — and
the embellishments that they
are subjected to when formed
into typefaces [a consequence
of reference, expression,
aesthetics, decoration,
function, intention and
exclusivity] — means the formal
connotations intrinsic to dot
characters are greatly
minimised. The dots simply
concatenate to uniform
characters.

Further, as carriers and
transmitters of information,
dot characters might wander
closer in meaning and intention
to something like an ideogram —
symbolising the idea of a thing
without indicating the sounds
used to say it. This is because
the production and reception of
dot characters are bound up in
relatively recent technologies:
they carry a tactility,
tangibility and a certain sense
of implied abstraction that is
as familiar as it is ubiquitous.
This familiarity mimics — and,
in a strange way, performs —
quickly changing ideas and
relationships towards reading

and writing technology in our
daily lives.

Generally, these are the
characters that became a
conveyance of information or
instructions in daily society:
Destinations, services,
warnings, encouragements,
temptations, time and
temperature, economic
weaponry... implying themselves
forthright, dot characters
operate without theory — their
presence is accepted as an
empirical fact.

And yet, over the generations
since their introduction into
objects and systems, the dot
characters are being refined
to the point of invisibility to
the human eye. To those objects
that already exist and continue
to show messages up to the
present day, like containers
turning into repositories,
a sensation of ambiguous
immateriality becomes bestowed
to their characters. Glowing
even into the daylight, their
uncomplicated, functional,
ultra-binary-ness — which goes
rudimentarily unnoticed — must
affect reading. Reading words
constructed of dots is different
from reading words that are
constructed of lines.

ENDNOTES:
1. A Dutch invention that stores static electricity between two electrodes on the inside and outside of a jar.
2. Notably, Haüy's raised letter method and Johann Wilhelm Klein's Sting writing system.

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