

WHAT'S IN A NUMBER PLATE?

PAUL BATTLE
ELECTROMAGNETIC FIELD 2026



WHAT IS A NUMBER PLATE?

A plate with a number



... or letters



... and maybe a flag



... or a sticker (or two)



... or a coat of arms



... but what is a letter, anyway?



... or a digit?





WHAT IS A NUMBER PLATE *FOR*?

Motivations

- Tolls
- Taxation
- Insurance
- Bad driving

HISTORY OF PLATES IN THE UK

Motor Car Act 1903

“We facilitate the identification of the offender, we provide extra penalties and imprisonment. I believe that is the surest way for dealing with what is unquestionably a serious abuse.”

1903 scheme



1932 scheme



1950s workarounds



1950s workarounds



1963 scheme



1982 scheme



2001 scheme



Meanwhile, in Ireland



LENGTH

How many characters do you need?

- Alphanumeric minus I and O is 34 possible values
- 6 characters $\Rightarrow$ 1,544,804,416
- 7 characters $\Rightarrow$ 52,523,350,144
- 5.1 bits/symbol

Waste

- Location
- Car sales lobby
- Legacy schemes
- Recallability

Ireland vs GB



Information density

192-D-13044

- 19 year (100)
- 1 half of year (2)
- D county or city (26)
- 13044 sequence (10^5)
- $\log_2(100 \times 2 \times 26 \times 10^5) = 29.0$ bits
- $\Rightarrow 3.2$ bits/symbol

VK65 YHV

- VK location (23^2)
- 65 year 2015 + 50 for second half (100)
- YHV sequence (24^3)
- $\log_2(23^2 \times 100 \times 24^3) = 29.4$ bits
- $\Rightarrow 4.2$ bits/symbol

Russia



WHAT IS REGISTERED?

Belgium



DRIVING ABROAD

1909: Convention with Respect to the International Circulation of Motor Vehicles

- Number plate “of its own nationality”
- Country mark oval at rear
- No opinion on number plate format

1926: International Convention relative to Motor Traffic

- Registration number “allocated by the competent authority” front and rear
- Country marker at rear
- Must be lit up at night
- Still no opinion on the registration itself

1949: Geneva Convention on Road Traffic

- Registration number must be made of digits or digits and letters
- Latin alphabet
- “Arabic digits, as used in United Nations documents”
- Country on elliptical plate

1949: Geneva Convention on Road Traffic



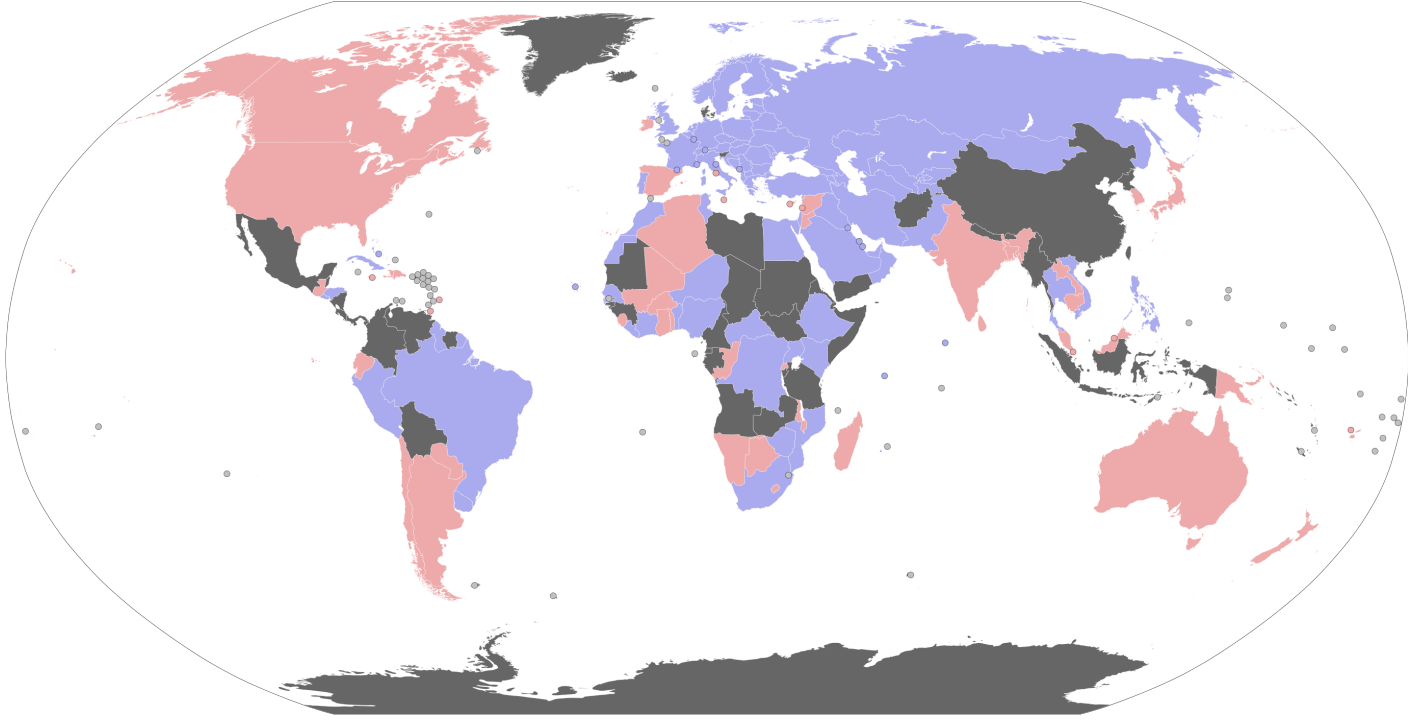
1949: Geneva Convention on Road Traffic



1968: Vienna Convention on Road Traffic

- Digits, letters, or both
- Latin letters
- “Arabic” numerals
- Bilingual plates OK if duplicated
- Optional country on plate (as long as it's front and rear)

Who's ratified what



NON-LATIN SCRIPTS

Overlapping subset

- Greece

- ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡ ΣΤΥΦΧΨΩ

- ΑΒ ΕΖΗ ΙΚ ΜΝ Ο Ρ ΤΥ Χ (14)

- Russia

- АБВГДЕЁЖЗИЙКЛМНОПРСТУФХЦЧШЩЪЫЬЭЮЯ

- А В Е К МНО РСТУ Х (12)

Biscriptal plates: Saudi Arabia



International plates: Japan



品川302
ほ 91-24

TKS302
HO 91-24

International plates: Thailand



Non-treaty countries

- TL;DR: it can be a massive hassle.
- E.g. China:
 - Foreign plates not recognised
 - Apply for temporary plate within 2 days
 - Onerous requirements

Double-plating



Illegal plates



Illegal plates



Not actually illegal plates



Not actually illegal plates



TYPOGRAPHY

Charles Wright



A B C D E F G H I
J K L M N O P Q
R S T U V W X Y Z
0 1 2 3 4 5 6 7 8 9

Mandatory/Charles Wright 2001



A B C D E F G H I

J K L M N O P Q

R S T U V W X Y Z

0 1 2 3 4 5 6 7 8 9

Motorbikes

0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9
A B C D E F G H	A B C D E F G H
J K L M N O P Q	J K L M N O P Q
R S T U V W X Y Z	R S T U V W X Y Z

Bloopers



DIN 1451



A B C D E F G H I

J K L M N O P Q

R S T U V W X Y Z

0 1 2 3 4 5 6 7 8 9

Fälschungerschwerende Schrift



A B C D E F G H I
J K L M N O P Q
R S T U V W X Y Z
0 1 2 3 4 5 6 7 8 9

FE-Schrift in use

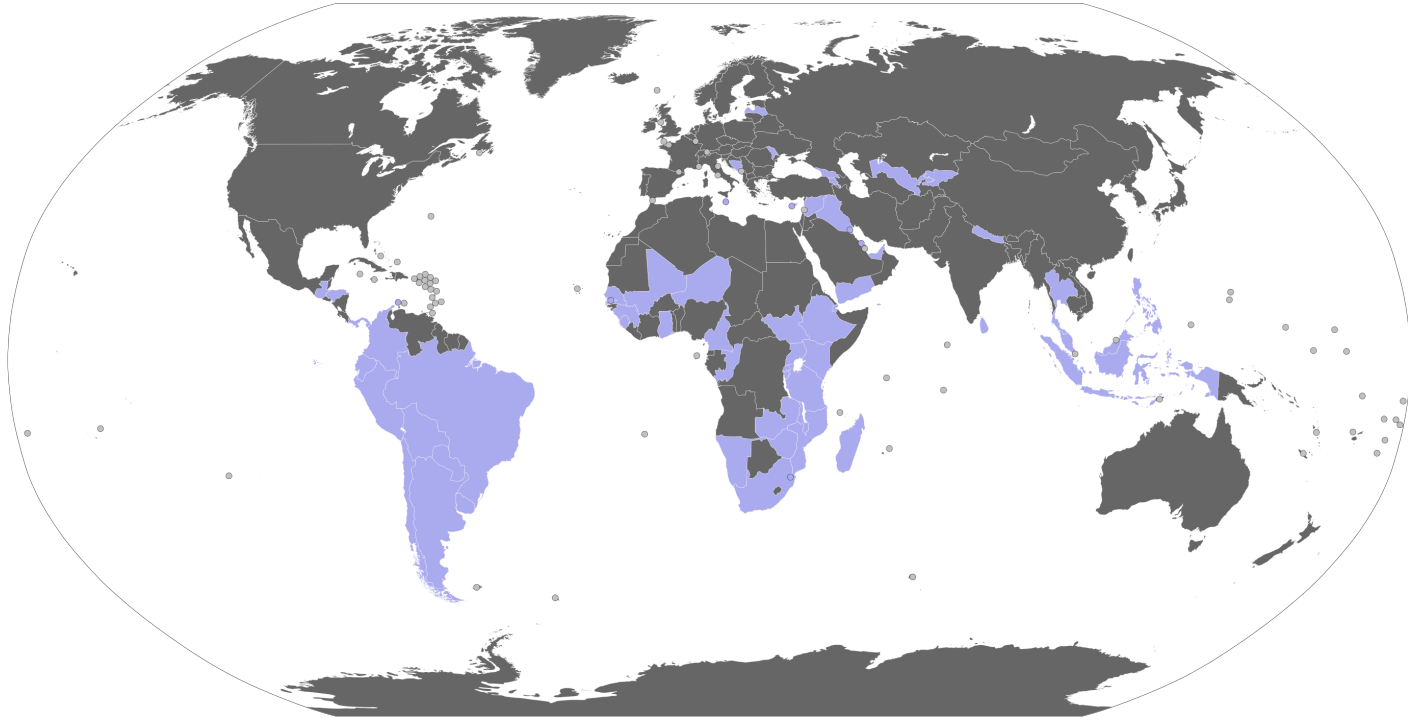
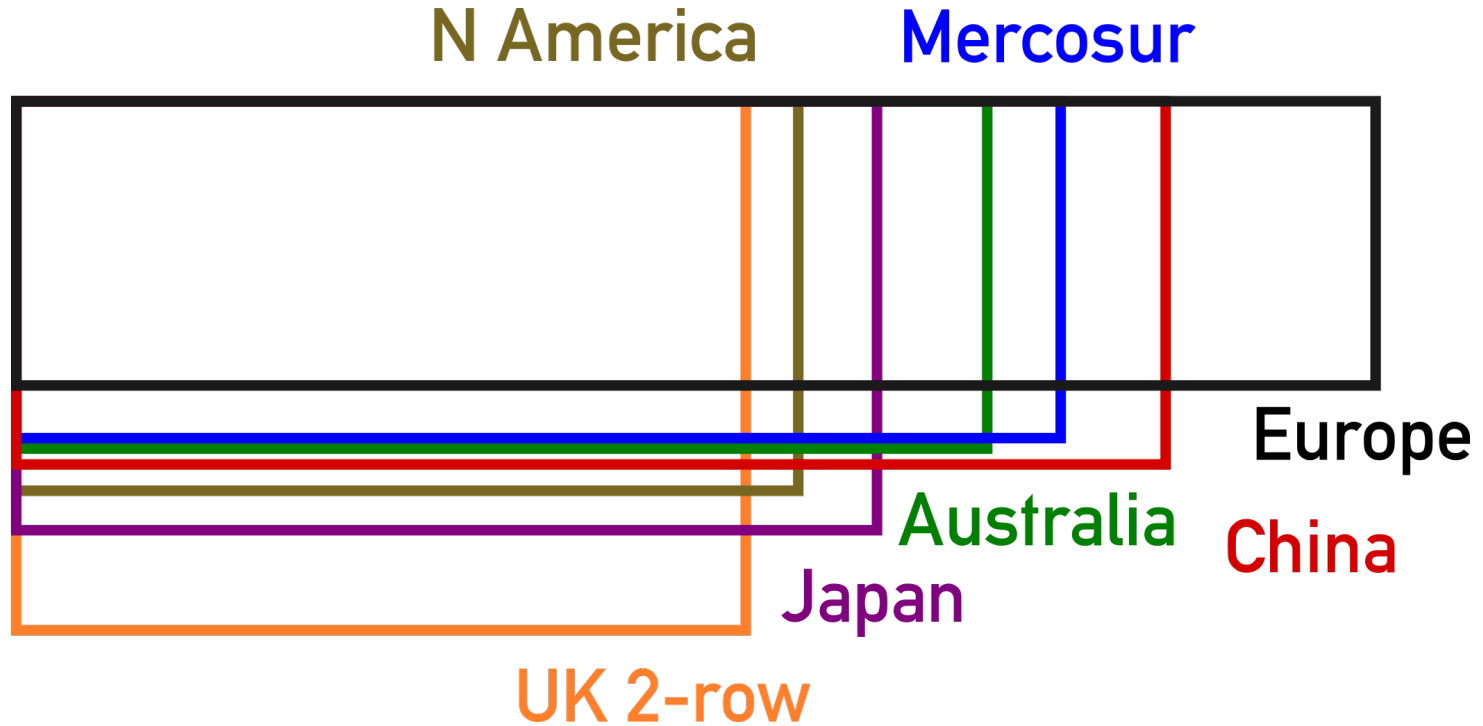


PLATE SIZES

Comparison



COLONIAL AND REGIONAL INFLUENCE

Hong Kong



Kenya



Republic of Korea (1973–2003)



POLITICS

French départements



North Kosovo Crisis



SEGREGATED ROAD SYSTEM

WHERE THE **COLOR** OF YOUR LICENSE PLATE **DICTATES** WHICH ROADS YOU CAN **DRIVE ON**.

29-521-65 **4-0039-43**

WEST BANK

PALESTINE

ISRAEL

GAZA STRIP

SEGREGATED ROAD SYSTEM

1 Accessible only to Israelis

2 Accessible to Israelis

3 Accessible to Israelis

4 Accessible to Israelis

5 Accessible to Palestinians

6 Not accessible to Palestinians

7 Restricted access to Palestinians

8 Accessible to Palestinians

9 Land expropriated by Israel on either side of major roads

10 Underpass roads between Palestinian enclaves, with access either unidirectional or gated

11 Checkpoints along road adjacent to all restricted roads

12 Fully segregated roads where no parallel one exists

13 Road blocks/interchanges where Israeli and Palestinian cars converge and diverge

14 Road-only bridges and tunnels connecting Israel and the West Bank, with no access to the separation wall

15 Accessible to Palestinians

16 Not accessible to Palestinians

17 Restricted access to Palestinians

18 Accessible to Palestinians

19 Accessible to Palestinians

20 Accessible to Palestinians

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23 Accessible to Palestinians

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209 Accessible to Palestinians

210

Number plates as praxis



RANDOM FACTS

Pedestrian slicer



Fake number plate extensions



FINALLY

What did I miss?

- North America
- Security features
- Australian vanity style
- German number plates are ambiguous
- 2 B or NOT 2B
- Where do you get plates from?
- Who makes them?

What's next

- Come and talk/infodump your own favourite number plate facts
- Hire me to check the number plates in your film/TV series/computer game
- Contact me: <https://po-ru.com/>

Find out more

Matrículas de coche de todos los países del mundo

<https://matriculasdelmundo.com/>

License Plates of the World <http://www.worldlicenseplates.com/>

Olav's License Plate Pictures <https://olavsplates.com>

License Plate Fonts of the Western World: History, Samples, and Download Info <https://www.leewardpro.com/articles/licplatefonts/licplate-fonts-intro.html>

Vehicle registration plate on Wikipedia

https://en.wikipedia.org/wiki/Vehicle_registration_plate

Jeff' Plates <https://www.jeffsplates.ca/>

References

Walter Long, House of Commons, 4 August 1903 <https://hansard.parliament.uk/Commons/1903-08-04/debates/b44a6b90-7d2a-4c37-86ea-9be70b55994f/Motor-CarsBillLords#contribution-0a264bd9-6c6e-4df2-89d5-404d71a8079c>

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Geneva Convention on Road Traffic (1949) <https://treaties.fcdо.gov.uk/data/Library2/pdf/1958-TS0049.pdf>

Vienna Convention on Road Traffic [https://en.wikisource.org/wiki/Vienna_Convention_on_Road_Traffic_\(2022\)](https://en.wikisource.org/wiki/Vienna_Convention_on_Road_Traffic_(2022))

UK ratification of Vienna Convention <https://treaties.parliament.uk/treaty/mYe3xVTt/details>

Explanatory Memorandum on the Convention on Road Traffic https://assets.publishing.service.gov.uk/media/5a7b1fca40f0b66eab99f277/EM_9570_Conv_Road_Traffic.pdf

States close seat belt law loophole <https://www.bbc.co.uk/news/live/uk-england-devon-46453945>

Car-driving Tips from Beijing Government https://english.beijing.gov.cn/livinginbeijing/transportation/202005/t20200513_1895880.html

Who was Charles Wright? <https://www.k-type.com/who-was-charles-wright/>

The German EU numberplates: a typographic road accident? https://www.fsd.it/usefuldesign/german_plates_font.htm

Kosovo-Serbia Licence Plate Dispute Proves Hard to Resolve <https://balkaninsight.com/2022/04/21/kosovo-serbia-licence-plate-dispute-proves-hard-to-resolve/bi/>

Kosovo-Serbia License Plates 'Sticker Regime' Comes Into Force <https://balkaninsight.com/2021/10/04/kosovo-serbia-license-plates-sticker-regime-comes-into-force/bi/>

The dangers of driving under Israeli apartheid <https://www.972mag.com/palestinians-driving-checkpoint/>

Luxury car sales hit by new lime green plate scheme <https://www.koreaherald.com/article/3345930>

From stigma to status symbol: Lime-green plates lose bite after a year on the road <https://www.theinvestor.co.kr/article/10511475>

Japan License Plate Generator https://mbaharip.github.io/japanLicensePlate_Generator/

Credits

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Israel’s System of Segregated Roads in the Occupied Palestinian Territories (c) Visualizing Palestine 2012 BY-NC-ND
<https://visualizingpalestine.org/visual/segregated-roads-west-bank/>

What does this green plate mean by Wild_Strawberry7986
https://www.reddit.com/r/Living_in_Korea/comments/1ac6ju4/what_does_this_green_plate_mean/

“Tacla Taid Anglesey’s Transport Museum - Motorcycles room - Ariel and BSA” by Elliott Brown, CC BY-NC-SA 2.0 <https://www.flickr.com/photos/ell-r-brown/43460528965/>