

Where Bombs Fell

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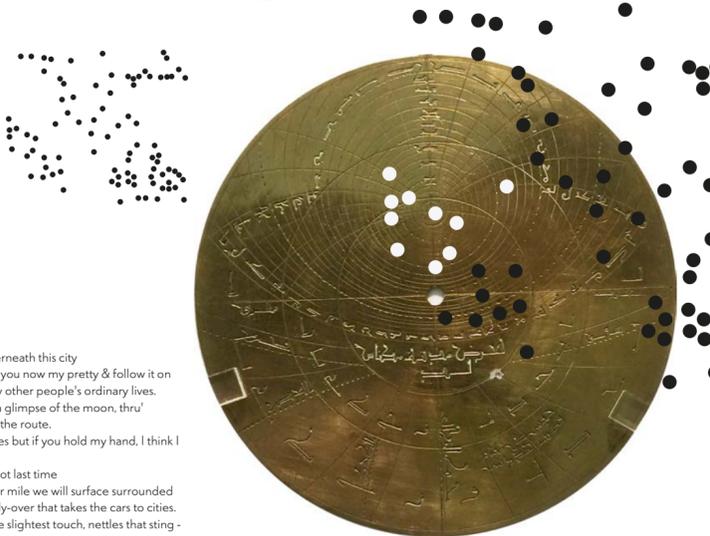
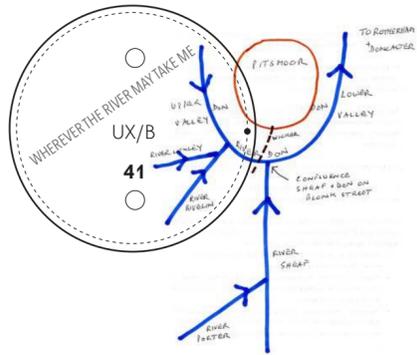
where bombs fell



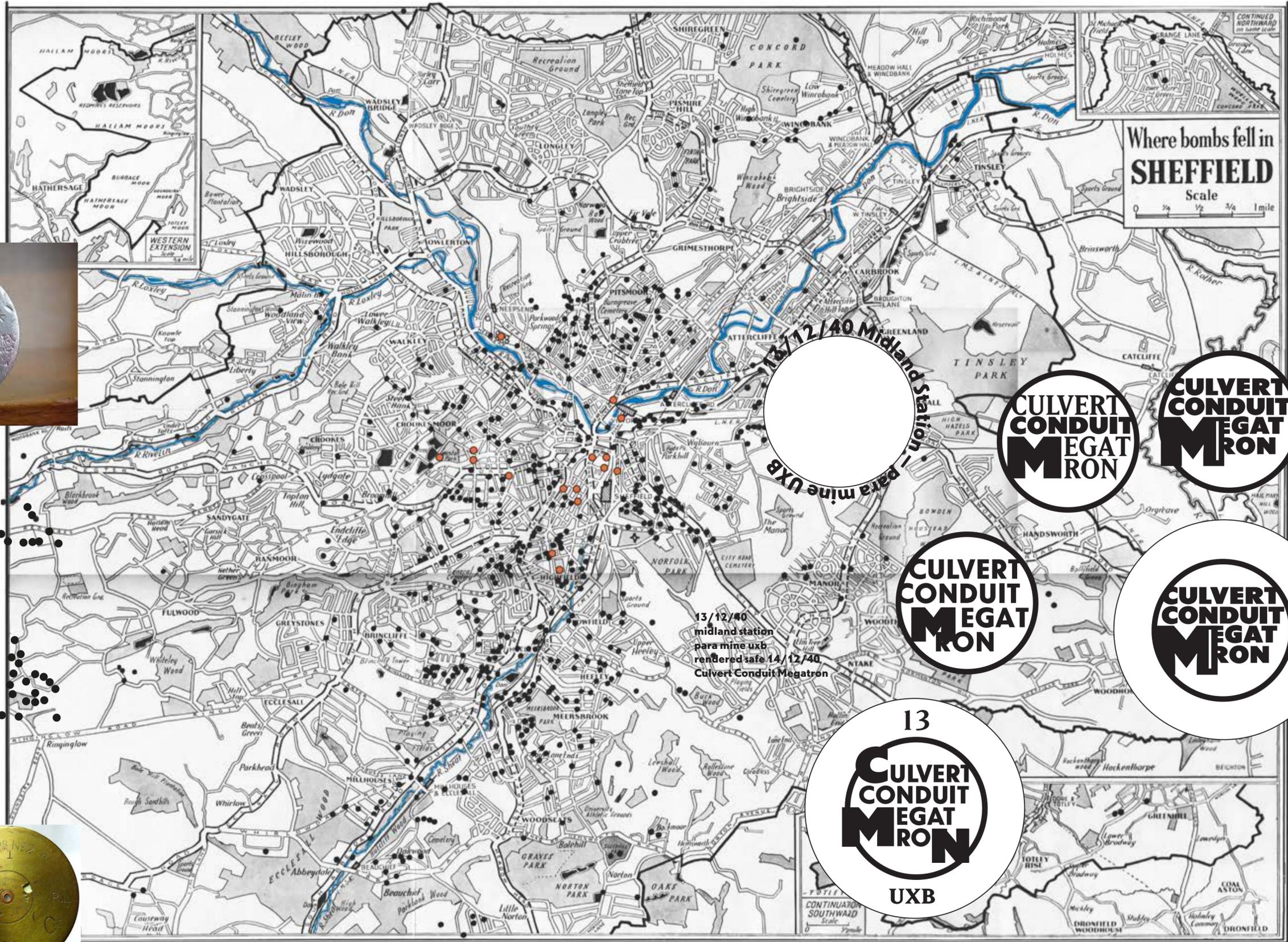
WHERE BOMBS FELL



where bombs fell



Yeah, a river flows underneath this city
 I'd like to go there with you now my pretty & follow it on
 for miles & miles, below other people's ordinary lives.
 Occasionally catching a glimpse of the moon, thru'
 man-hole covers along the route.
 Yeah, it's dark sometimes but if you hold my hand, I think I
 know the way.
 Oh, this is as far as we got last time
 But if we go just another mile we will surface surrounded
 by grass & trees & the fly-over that takes the cars to cities.
 Buds that explode at the slightest touch, nettles that sting -
 but not too much.
 I've never been past this point, what lies ahead I really
 could not say.
 I used to live just by the river, in a dis-used factory just off
 the Wicker.
 The river flowed by day after day
 "One day" I thought, "One day I will follow it" but that day
 never came
 I moved away & lost track but tonight I am thinking about
 making my way back.
 I may find you there & float on wherever the river may
 take me.
 Wherever the river may take me.
 Wherever the river may take us.
 Wherever it wants us to go.
 Wherever it wants us to go.



Where bombs fell in
SHEFFIELD
 Scale
 0 1/4 1/2 3/4 1 mile

**CULVERT
 CONDUIT
 MEGATRON**

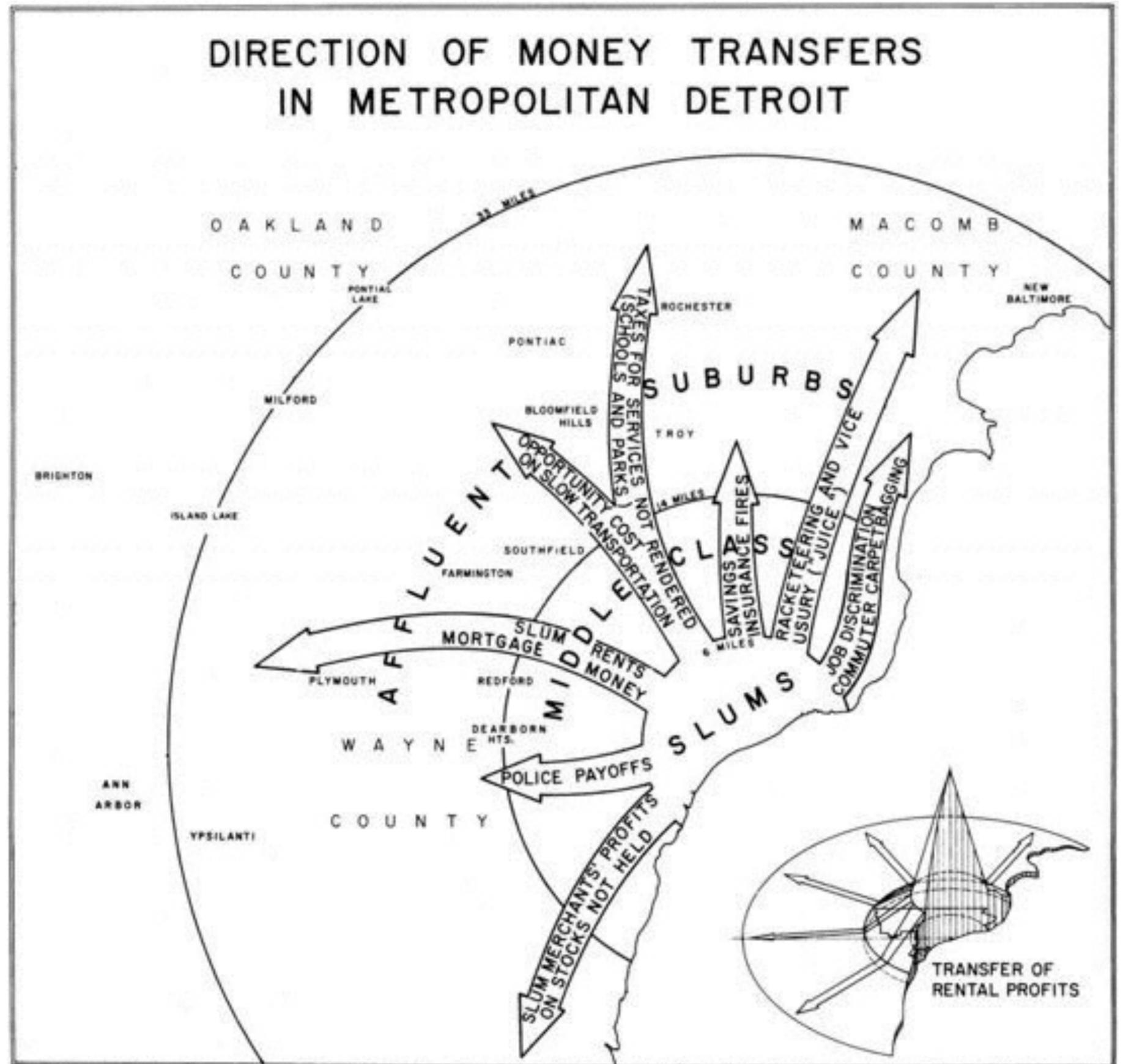
**CULVERT
 CONDUIT
 MEGATRON**

**CULVERT
 CONDUIT
 MEGATRON**

13
**CULVERT
 CONDUIT
 MEGATRON**
 UXB

13/12/40
 midland station
 para mine uxb
 rendered safe 14/12/40
 Culvert Conduit Megatron

where bombs fell

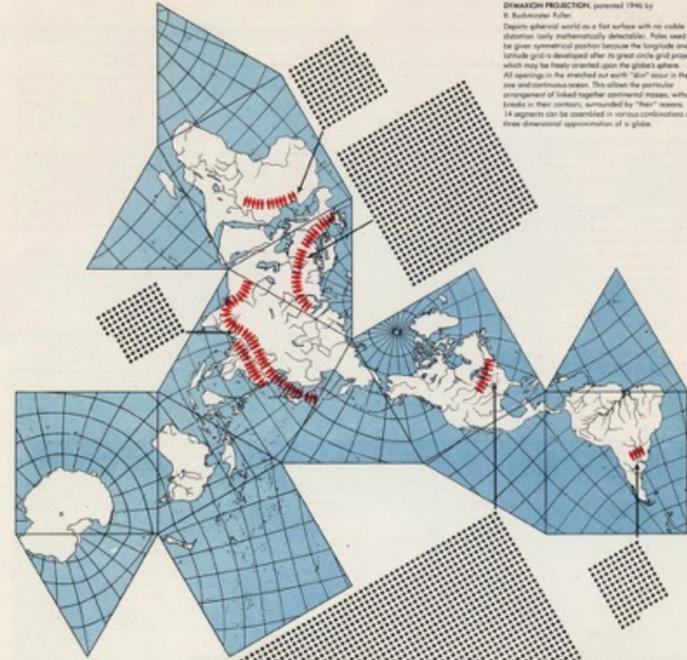


where bombs fell



Herbert Bayer
1900 (Haag am Hausruck) - 1985 (California)

where bombs fell



DYMAXION PROJECTION, patented 1946 by G. Balabanov-Fuller.
Depicts spherical world on a flat surface with no visible distortion (only mathematically detectable). Poles need not be great symmetrical patches because the longitude and latitude grid is developed after its great circle grid projection, which may be freely oriented upon the globe's sphere.
All openings in the stretched-out world "fall" near in the one and continuous ocean. This allows the particular arrangement of land together continental masses, without breaks in their centers, surrounded by "thin" oceans. 14 segments can be assembled in various combinations as three dimensional approximation of a globe.

1% OF WORLD HABITAT POPULATION
The curved arrangement of symbols indicates roughly the major population concentrations (see page 28-29).
84% OF WORLD'S HABITAT ENERGY SLAVE POPULATION
increases along with time.
IN TERMS OF HUMAN EQUIVALENTS FOUR 380%.

WORD ENERGY MAP

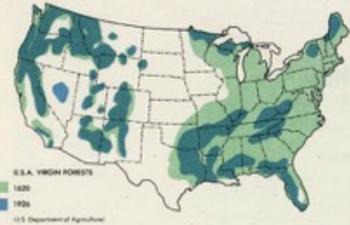
by G. Balabanov-Fuller.
Star symbols of red size represent percentage of world population living in each region. Black dots represent "energy slaves" serving these regions. "Energy slaves" are determined as follows:
One man in one 8 hour day can do approximately 100,000 foot pounds of work (one foot pound = energy required to lift one pound one foot vertically).
1950 world consumption of energy from mineral fuels and waterpower (not including atomic fission) is estimated at 85.5 billion foot pounds. Assuming that man's overall mechanical efficiency accounts only 4% of consumed energy resources (one work, the net annual profit is 3.1 billion foot pounds).
Dividing this figure by 27-1/2 million foot pounds, one man's (250 work days) energy output of one man, the result is 85-1/2 billion man year equivalent of work done by machines and structures. These equivalents we call "energy slaves" serving man.
85-1/2 billion energy slaves
2-1/4 billion world population = 38 energy slaves per capita.

Region	A. % OF WORLD POPULATION		B. ENERGY SLAVES		C. % OF WORLD'S ENERGY SLAVES		D. PROPORTIONAL % OF WORLD'S ENERGY SLAVES	
	1950	1950	1950	1950	in terms of A and C	in terms of B and D	in terms of A and C	in terms of B and D
ASIA	55	2,865,000,000	3	114	3	114	3	114
EUROPE	24	1,233,000,000	17	646	17	646	17	646
AFRICA AND MIDDLE EAST	12	616,500,000	4	152	4	152	4	152
NORTH AMERICA	8	411,500,000	73	2774	73	2774	73	2774
SOUTH AMERICA	4	205,750,000	3	114	3	114	3	114
CENTRAL AMERICA	1	51,437,500	0	0	0	0	0	0
ALL OTHERS	1	51,437,500	0	0	0	0	0	0
World Total	100%	63,850,000,000	100%	3800%	100%	3800%	100%	3800%

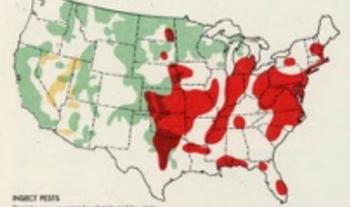
PRINCIPAL BLACK SOIL AND RELATED SOIL AREAS
after Bengtson and van Buren.
Aging grass cover has enriched soils with humus materials responsible for dark color. Very fertile as low rainfall prevents loss of valuable plant salts through leaching. Secondary long government agricultural utilization, but lacks new produce high protein wheat.



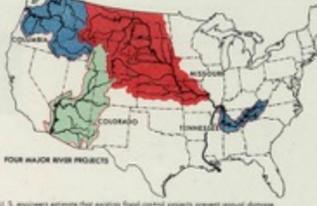
GENERALIZED MAP OF SOIL EROSION IN U.S.A.
SEVERE more than 75% of topsoil lost. May have serious effects on yield.
MODERATE 25% - 75% of topsoil lost. May have some gullies.
SLIGHT OR NONE
U.S. Soil Conservation Service 1950.



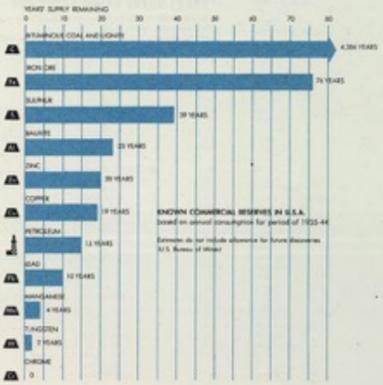
U.S.A. WORM INFESTATIONS
1920
1925
U.S. Department of Agriculture



WORM INFESTATIONS
Depicts new insecticides distributed by state and federal agencies insects currently destroy billions of dollars of crops.
GRASSHOPPER destroys grass, grain, alfalfa
CORN EAR WORM destroys corn, cotton, vegetables
ARMY WORM destroys oats, other small grains



FOUR MAJOR RIVER PROJECTS
U.S. engineers estimate that existing flood control projects prevent annual damage averaging \$343,000,000 against an average annual loss of \$466,000,000 that still is occurring. Four river projects now proposed would include navigation, irrigation, hydroelectric power as well as flood control.
COLUMBIA development would double present 3.7 million irrigated acres and quadruple annual 2.9 million kilowatts of hydroelectric power.
COLORADO plan would insure water supply for vital irrigation and quadruple present 1.3 million electric kilowatts.
Pak State plan would cut MISSOURI floods, quadruple hydroelectric power supply, double irrigated land.
TENNESSEE Valley Authority has multiplied hydroelectric power by 15, saved millions in flood damage (N.Y. Times).



World Geo-Graphical Atlas
Bayer, Rosenzweig,
Gardiner & Nakagawa, 1953

where bombs fell

196 United Kingdom British Commonwealth
CIA, see also p. 195

AGRICULTURE

- MOORLANDS
- MODERATE PASTURE
- LARGELY CULTIVATED
- CATTLE
- HORSES
- CATTLE
- WHEAT
- DAIRY
- FISHING
- SHACK PORTS

INDUSTRIES AND MINERALS

- COAL
- IRON
- TEXTILE INDUSTRIES
- STEEL
- METAL INDUSTRIES
- MACHINERY
- MICROELECTRONICS
- CHEMICALS
- POTTERIES
- FOOD INDUSTRIES
- SHIPBUILDING
- CONCENTRATION OF INDUSTRY

PRODUCE 1949 MET. TONS

WHEAT	9,759,000
POTATOES	9,380,000
FISH	1,140,000
SHEEP	14,310,000 HEAD
WOOL	85,800,000 LBS
COAL	218,600,000
IRON	4,000,000
STEEL	15,800,000
COTTON GOODS	1,800,000
SHIP BLDG	1,207,000
HEAT PROD.	900,000
WOODEN GOODS	230,000
TIN	38,800 (SHRT.)
VEHICLES	638,667 UNITS

EXPORTS \$4 BILL.

- VEHICLES
- MACHINERY
- COTTON GOODS
- WOODEN GOODS
- IRON
- STEEL
- COAL
- SHIP BLDG
- HEAT PROD.
- WHEAT
- WHEAT FLOUR
- WHEAT
- WHEAT FLOUR
- WHEAT
- WHEAT FLOUR

IMPORTS \$4 BILL.

- WHEAT
- WHEAT FLOUR

BRITISH COMMONWEALTH OF NATIONS was built during last four centuries, in greater part of aggregation. Today marks transition from concept of imperialism to one of equal partnership. Composed of Colonies (former partners) and Dominions (former partners). Dominions are sovereign states, completely independent, but bound together by sentiment, tradition and trade privileges. Colonies are still responsible to United Kingdom. Commonwealth contains within its 10,000,000 sq. miles of world-wide surface 1/3 of mankind and large proportion of world's raw materials and wealth. Rising nationalism is increasing nervousness and uneasiness of U.K. Half effect future of Commonwealth.

BRITISH COMMONWEALTH

- U. K. and MEMBER NATIONS
- COLONIES and DEPENDENCIES
- SHACK TRADE ROUTES

WORLD GEO-GRAPHICAL ATLAS CONTAINER CORPORATION OF AMERICA

SCANDINAVIA
Scandinavian countries of Denmark, Finland, Norway and Sweden, grouped around great closed sea, have regional unity from similarities of race, language, religion, social northern climate, from rugged topography covered by great masses of green ice age. Capable people of northward habits similar to that of Alaska also have in common a scarcity of resources, harsh environmental conditions, must use ingenuity to maintain high living standard. Limited agricultural agriculture allow primarily for grazing, because forests cover to 90% of North, supplying timber for variety of wood products. Nature's gifts, mainly water, timber, fish, animal products plus manufacturing skills in selected fields are mainstay of Scandinavia's stable economy. Historically known as engineers, carpenters, silversmiths, Scandinavians have in recent years won international reputation and respect for advancement of social ideas of home, where they live in peace and fight the elements.
Norway and Finland see p. 195.

SWEDEN
Kingdom
Area 171,422 Sq. M.
Population 2,277,000
Capital Stockholm
Language Swedish, Norwegian

Larger and richer of Scandinavian countries, has limited by unfavorable environment. World's teacher of aquatic, timber cropping. Two major sources of economic distinction: high grade iron ore from Kiruna and Luleå and diamond chips shipped through specialized ports (formerly nearby to Germany), manufacturing industry, utilizing electrical power to manufacture arms and machinery sold mostly to U.S.S.R. Since domination of Baltic countries and Poland by U.S.S.R., Sweden is no longer strategic Baltic nation.

PRODUCE 1949 MET. TONS

POTATOES	1,604,000
CATTLE	811,000
FISH	200,000
IRON	8,205,000
WOOD PROD.	2,870,000
CHEAT	1,844,000
STEEL	1,371,000
PAPER	1,075,000
SHIP BLDG	220,000

EXPORTS \$1 BILL.

- WOOD PROD.
- MACHINERY
- VEHICLES TO U.S.
- VEHICLES TO U.S.
- IRON
- COAL

IMPORTS \$1 BILL.

- WHEAT
- WHEAT FLOUR

DENMARK
Kingdom
Area 18,376 Sq. M.
Population 4,237,000
Capital Copenhagen
Language Danish

Larger and richer of Scandinavian countries, has limited by unfavorable environment. World's teacher of aquatic, timber cropping. Two major sources of economic distinction: high grade iron ore from Kiruna and Luleå and diamond chips shipped through specialized ports (formerly nearby to Germany), manufacturing industry, utilizing electrical power to manufacture arms and machinery sold mostly to U.S.S.R. Since domination of Baltic countries and Poland by U.S.S.R., Sweden is no longer strategic Baltic nation.

PRODUCE 1949 MET. TONS

POTATOES	1,784,000
SHEEP	1,371,000
CATTLE	2,800,000 HEAD
POULTRY	14,800,000 HEAD

EXPORTS \$1 BILL.

- WHEAT
- WHEAT FLOUR

IMPORTS \$1 BILL.

- WHEAT
- WHEAT FLOUR

ICELAND
Republic
Area 39,200 Sq. M.
Population 143,000
Capital Reykjavik
Language Icelandic

It is of island in west, some mountains, most low fields, without vegetation, considered unhabitable. In coastal valleys, farms use some little more than hay and potatoes. Tough, hardy, sturdy, independent, making mechanical civilization all but impossible. Fishery is main occupation. Waterfalls supply large area of hydroelectricity. Numerous hot springs are exploited to heat homes, with steam, in mid 19th century, Iceland's first factory (1824) in Denmark, and first cotton mill (1850) in Iceland. Base of population rapid rise in early 19th century. Later suffered great depression from volcanic eruption. Despite its limited topography and location remote from major centers of commerce, Iceland has in modern times developed into progressive nation.

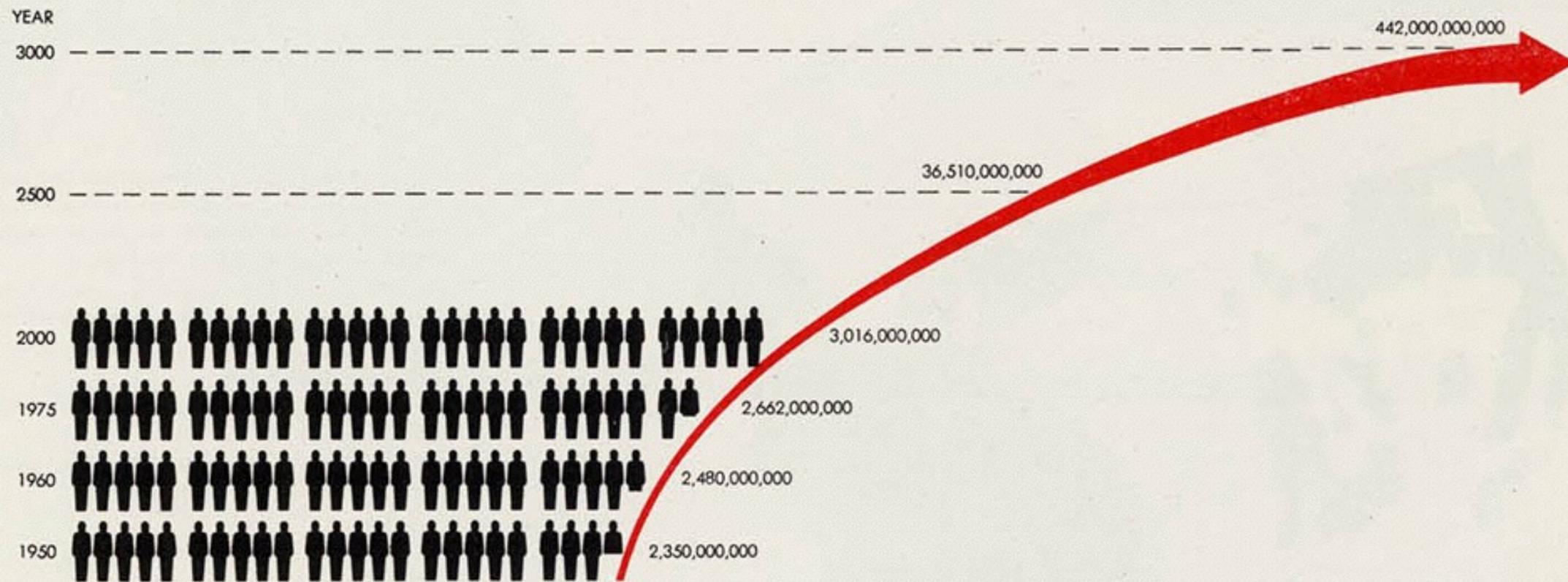
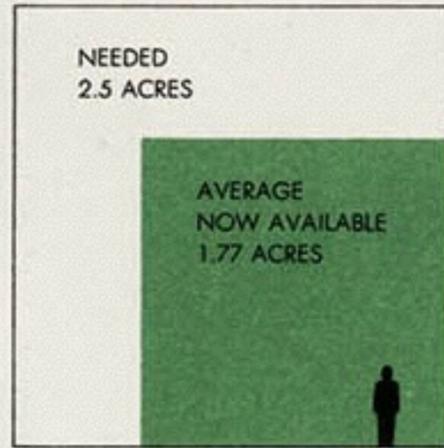
PRODUCE 1949 MET. TONS

WHEAT	394,000
SHEEP	434,000 HEAD

World Geo-Graphical Atlas
Bayer, Rosenzweig,
Gardiner & Nakagawa, 1953

where bombs fell

ACREAGE OF ARABLE LAND
NEEDED TO FEED AND CLOTHE
ONE PERSON ADEQUATELY



FUTURE WORLD POPULATIONS (after E. C. Rhodes, University of London)
based on 0.50% annual increase.
(World increase for 1937-47 was estimated to be just under 0.75%)

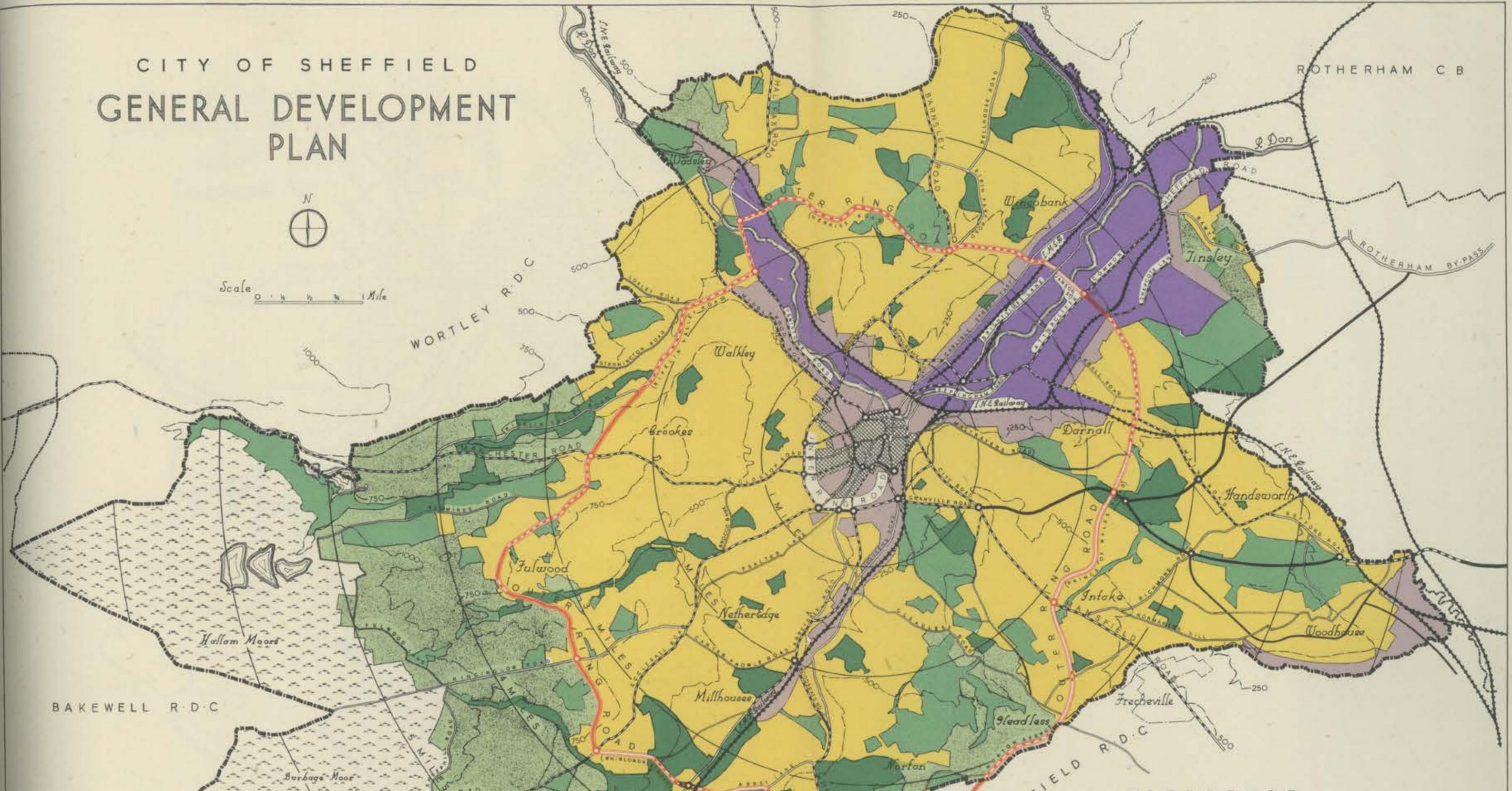
World Geo-Graphical Atlas
Bayer, Rosenzweig,
Gardiner & Nakagawa, 1953

where bombs fell

CITY OF SHEFFIELD GENERAL DEVELOPMENT PLAN



Scale 0 1/4 1/2 1 Mile



where bombs fell

‘All that is solid melts into air, all that is holy is profaned’

Marx & Engels, 1848 (From chapter 1 of the Communist Manifesto)

where bombs fell

**Cloud-puffball, torn tufts, tossed pillows flaunt forth, then chevy on an air-
Built thoroughfare: heaven-roysterers, in gay-gangs they throng; they glitter in marches.
Down roughcast, down dazzling whitewash, wherever an elm arches,
Shivelights and shadowtackle in long lashes lace, lance, and pair.
Delightfully the bright wind boisterous ropes, wrestles, beats earth bare
Of yestertempest's creases; in pool and rut peel parches
Squandering ooze to squeezed dough, crust, dust; stanches, starches
Squadroned masks and manmarks treadmire toil there
Footfretted in it. Million-fuelèd, nature's bonfire burns on.**

'That Nature is a Heraclitean Fire and of the Comfort of the Resurrection' Gerard Manley Hopkins, 1888.

where bombs fell

‘London/Britain Can Take It!’

GPO Film Unit, dir. Harry Watt & Humphrey Jennings, 1940

‘Listen to Britain’

Crown Film Unit, dir. Humphrey Jennings, 1942

‘Fires were started’

Crown Film Unit, dir. Humphrey Jennings, 1943

Fires Were Started
Humphrey Jennings, 1943

“FIRES WERE
STARTED...”

Crown Film Unit,
Jennings (1943)

where bombs fell



London Olympic Opening Ceremony
Dir: Danny Boyle, Wr: Frank Cottrell Boyce

Frank Cottrell Boyce: what's the point of culture in Brexit Britain?

Four years ago the writer helped put together the Olympics opening ceremony. In this exclusive preview of his Proms Lecture he reflects on its cultural legacy in the wake of the referendum



'Strangers would thank me for helping them feel proud to be British' ... the 2012 London Olympic Games opening ceremony. Photograph: Julian Simmonds/Rex/Shutterstock

I love being a writer. Never wanted to be anything else.

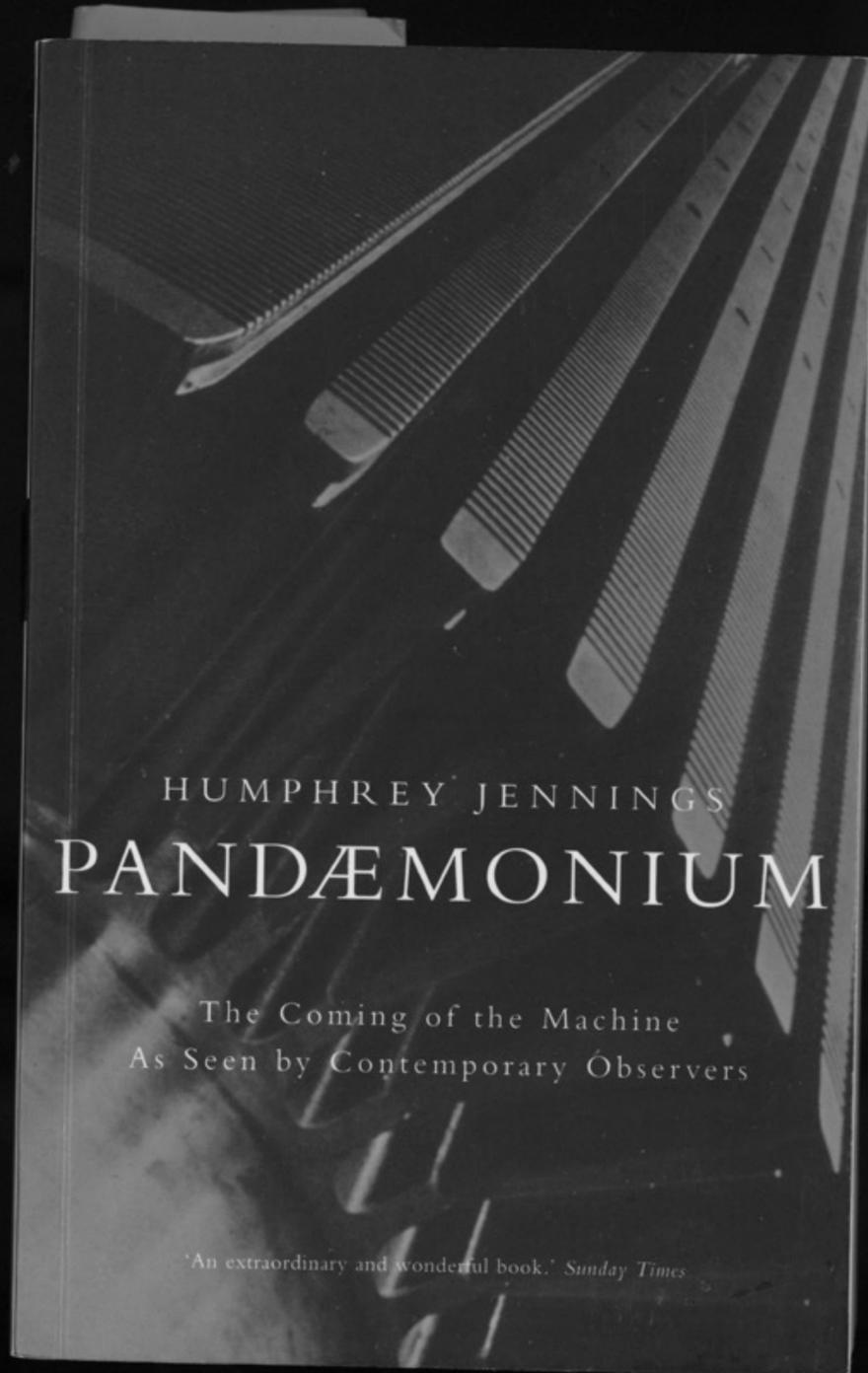
When I get into a conversation with a stranger on a train or in the barber's, and it gets to the bit where they say, "And what do you do?" I feel like I'm boasting when I admit, "Actually I'm a writer." Then ... the hammer blow ...

"Written anything I might have heard of?"

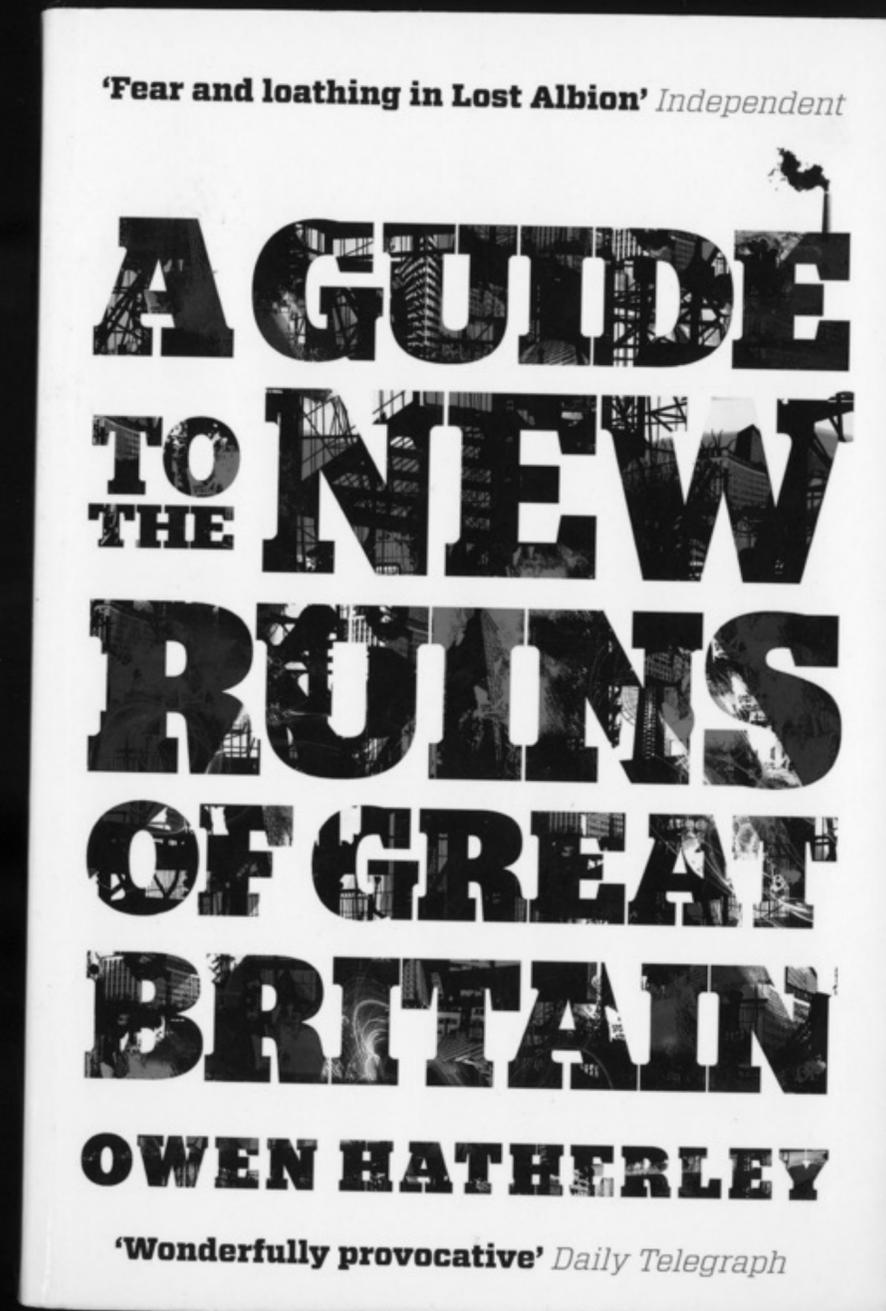
And the only possible answer is a muttered, "Excuse me, I think this is my stop."

Until 2012. After that my answer was "I was the writer who helped Danny Boyle

where bombs fell



Jennings, H., Jennings, M.-L., & Madge, C. (1995). *Pandaemonium: 1660-1886: The coming of the machine as seen by contemporary observers*. London: Papermac.



Hatherley, O. (2010). *A guide to the new ruins of great Britain*. London, UK: Verso Books.

where bombs fell



This is where it happened.



Vertigo
Alfred Hitchcock, 1958



And here I died.

La Jetee
Chris Marker, 1962

where bombs fell

H EINKEL
JUNKERS
DORNIER

14.12.1940
Campo Lane / Vicar Lane
High Explosive &
Incendiary Bomb

The British Landscape, Sheffield, 1982
John Davies

where bombs fell

A FIELD IN EN GLA ND

HERE. LOOK TOWARDS THE
SITE OF THE OLD CASTLE.

A Field in England
Amy Jump & Ben Wheatley, 2013

12. 12. 1940
Angel Street /
Corner of Bank Street
High Explosive

where bombs fell



where bombs fell

how to make the city more legible?



where bombs fell

to design an interface to upload and
download stories from the past?

where bombs fell

**where
bombs
fell** + **the
internet
of
things** = ?

where bombs fell

evocative
layer

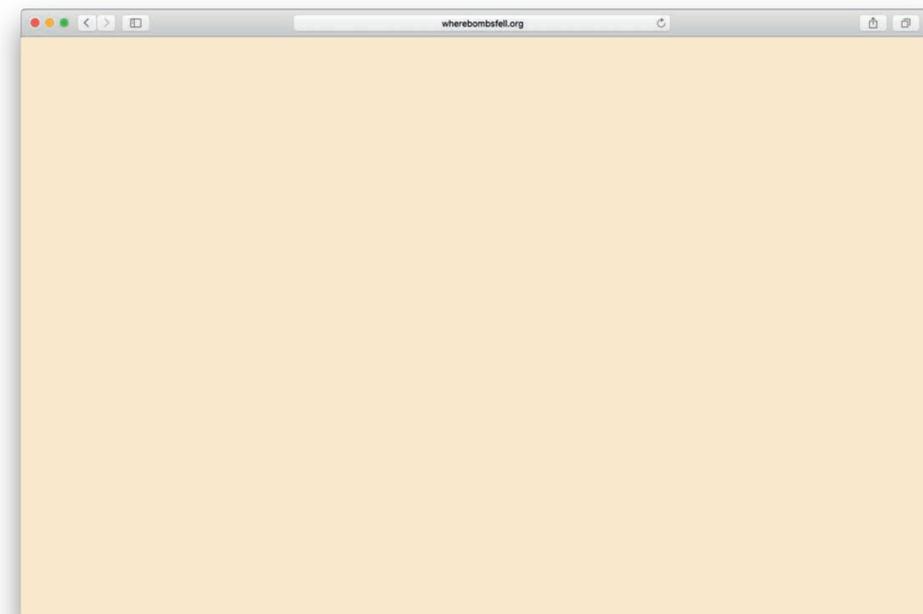
Visualising the stories relating
to the bomb and it's impact at
the site.

illustration reference

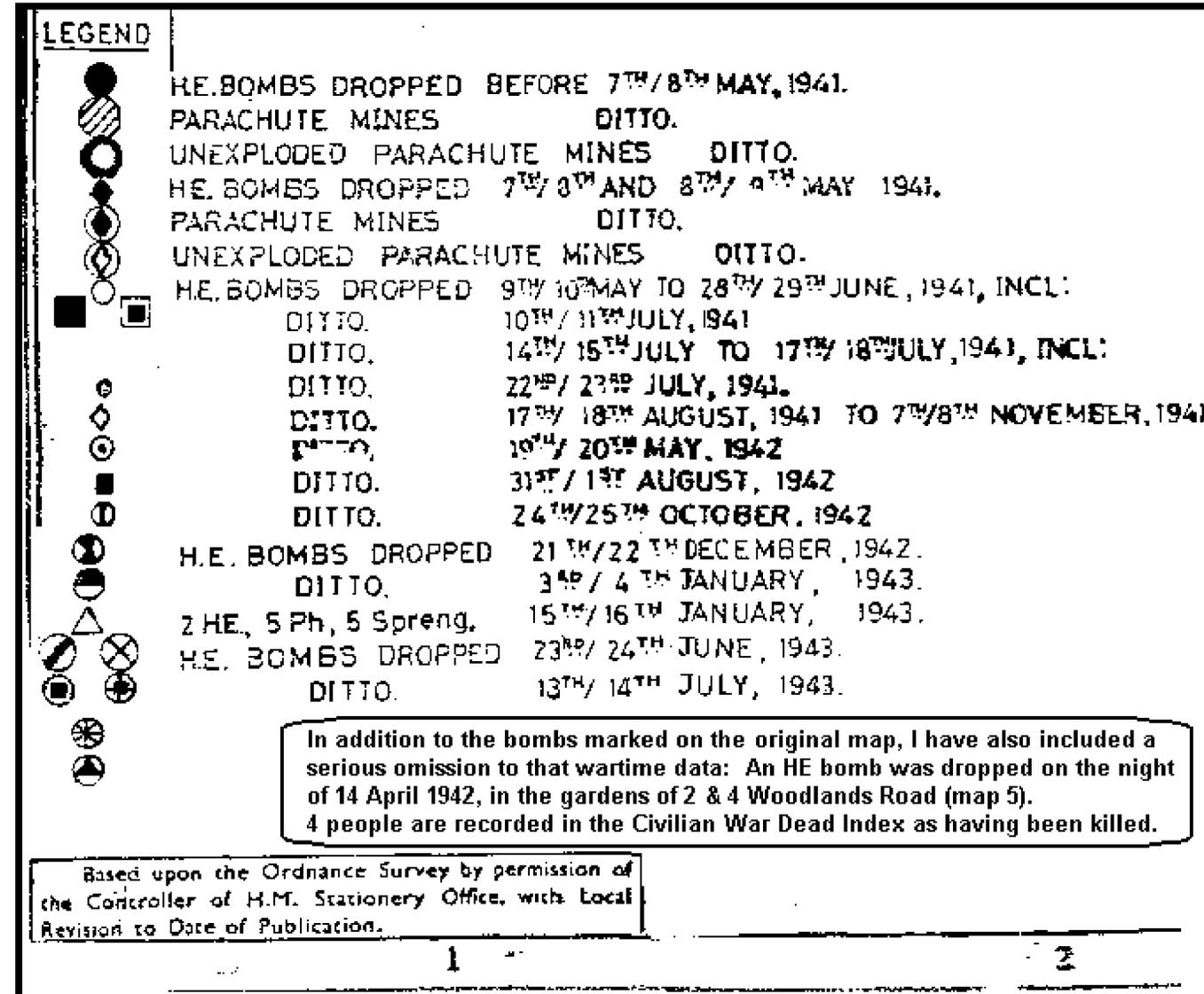
interactive
layer

Instructing the viewer on how to
interact with the marker and
link with other stories.

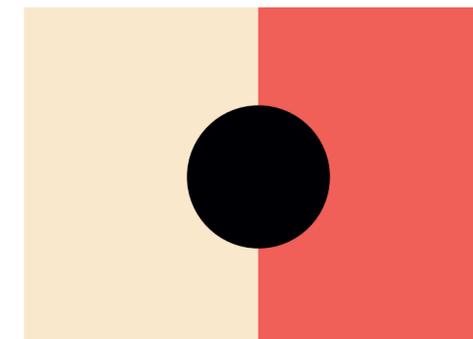
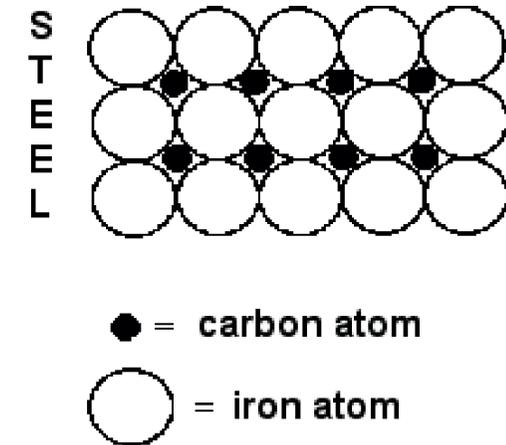
digital
manifestation



where bombs fell



visual language



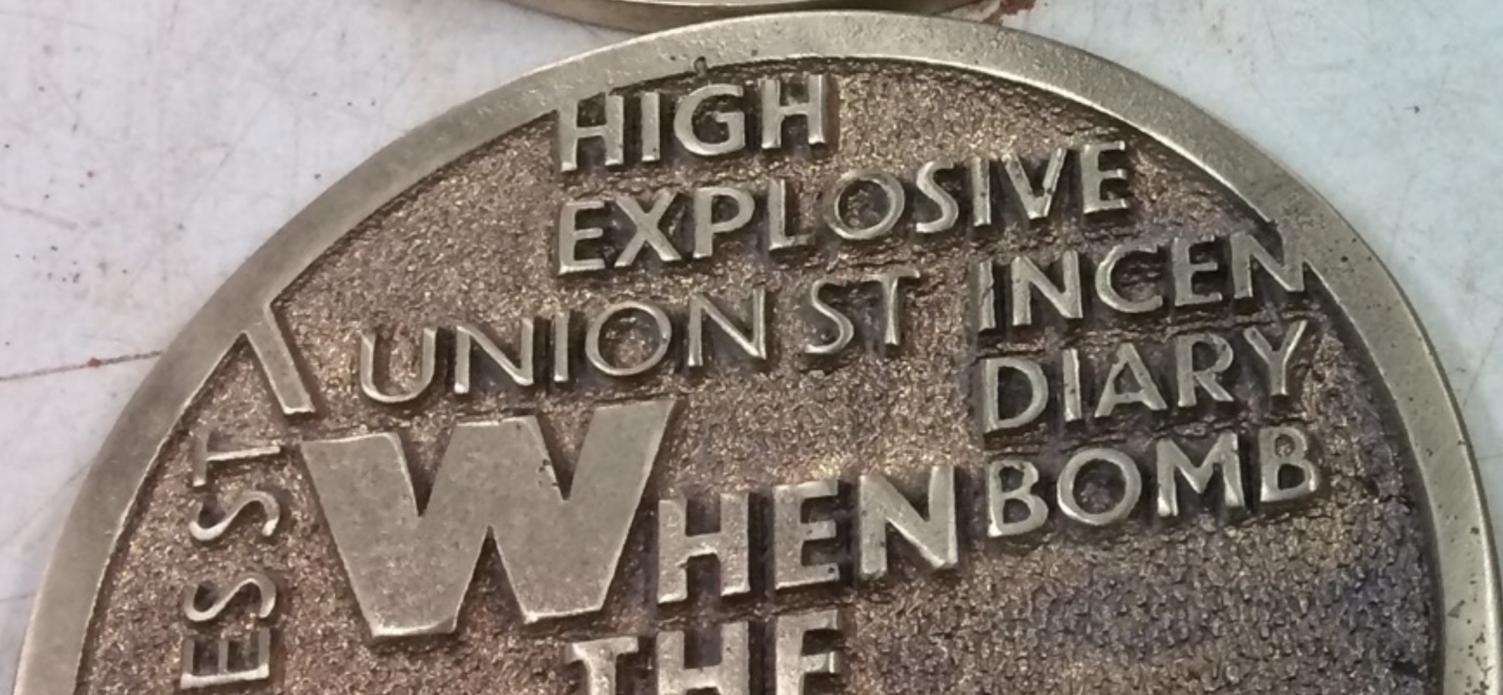
where bombs fell
physical manifestation



where bombs fell
physical manifestation



where bombs fell
physical manifestation



where bombs fell

narratives

CCULVERT
MCON
CDUIT
MEGAT
RON

13.12.1940
Midland Station
Parachute Mine &
Unexploded Bomb

**THIS IS A JOURNEY
THROUGH NOW.**

**YOU WILL REMEMBER
WHAT WAS, SEE WHAT
IS AND IMAGINE WHAT
WILL BE.**

where bombs fell
narratives

A SHEFFEL DE THWITEL BARE HE IN HIS HOSE

HERE STOOD WALKER & HALL.

The first documented use of the term “cutler” in Sheffield appeared in a 1297 tax return. Chaucer referenced Sheffield as a centre of cutlery in *The Reeve’s Tale* in 1380 where he says of the Miller of Trompington “a Shefelde thwitel bare he in his hose”. The thwitel was a knife.

1624: The Company of Cutlers in Hallamshire was formed to oversee the cutlery trade in the town. By the mid C17 60% of the workers in Sheffield were working in the cutlery trades.

1913: Stainless steel was invented by Harry Brearley whilst working at the Brown Firth Laboratories.

Specialising in electro plate, cutlery and silver, the central block of the Electro Works of Walker & Hall dominated the central Sheffield skyline from the later 19th century up until the blitz. By 1894 the company reported a total of 1500 employees.

Two metal flags ‘flew’ over the building forming the identity for the company and marked on its goods. W&H rebuilt and continued production until 1963 and the building was demolished in 1965.

David Mellor joined Walker & Hall in 1954, where he designed the iconic ‘Pride’ range of cutlery. This range won a Design Centre award in 1957.

**Return to the confluence of
the Sheaf and Porter.**

where bombs fell
narratives

8.

**DUL
CE ET
DECORUM EST
PRO PATRIA
MORI**

13. 12. 1940
Barkers Pool
High Explosive

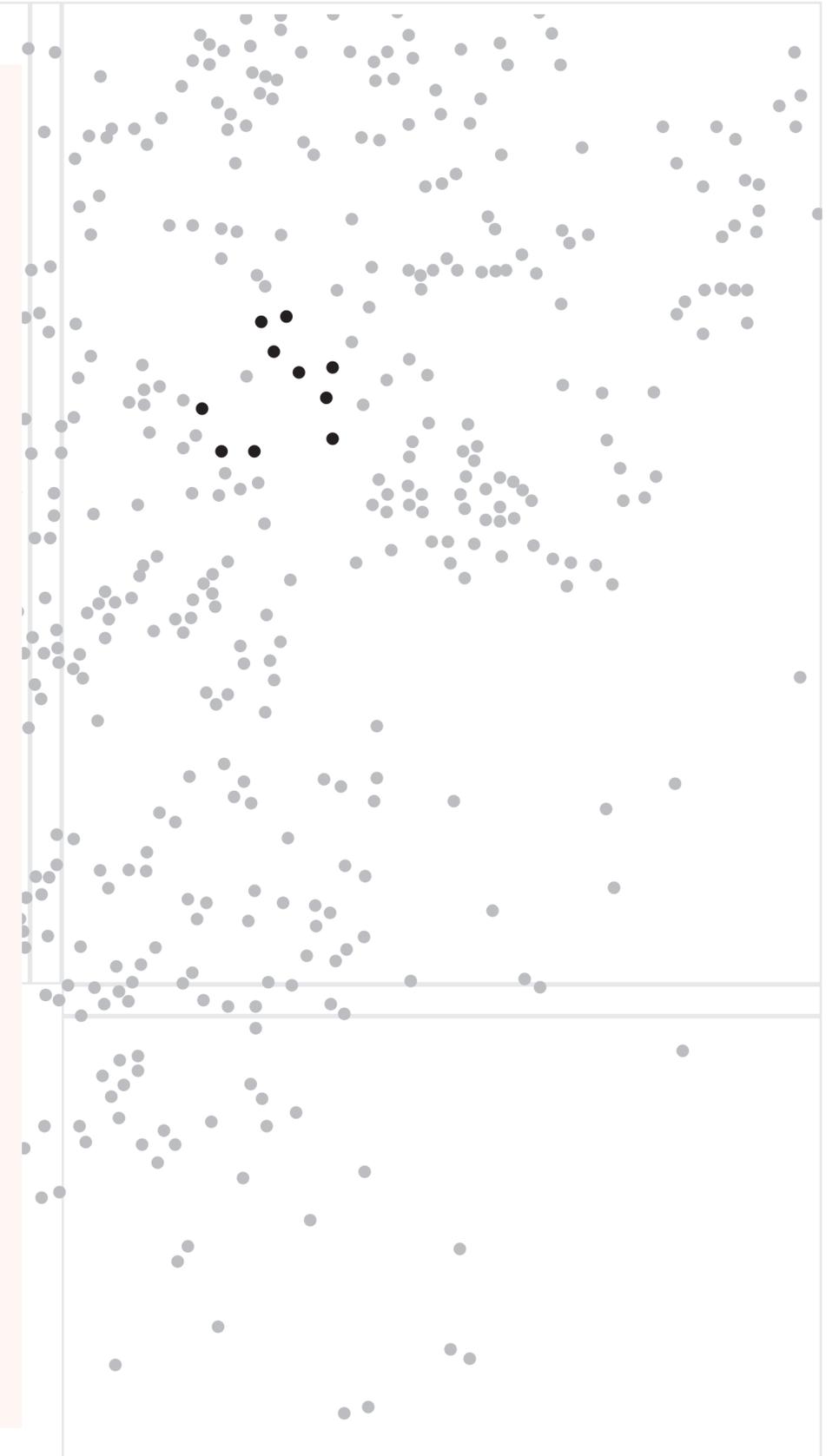


where bombs fell
narratives

HERE LIES GRANBY.

Each location featured here is commemorated with an 80mm bronze plaque. The designs featured on the plaques use four weights of Granby – Hippo, extra bold, bold and medium.

Granby is a Stephenson Blake typeface that first appeared in 1930 at a time when the Sheffield type foundry held the metal patterns for London Underground's Johnston wood letter. Granby drew influence from Gill Sans and the geometric sans serifs Futura, Erbar and Kabel.



where bombs fell
walks

