The background is a detailed black and white woodcut-style illustration of London after the Great Fire. It depicts a dense urban landscape with numerous buildings, some with spires and domes, and a large crowd of people in the foreground. The scene is filled with activity, suggesting the rebuilding phase.

# Material reward: Supply chains, labour and money in the rebuilding of London after the Great Fire

Judy Z. Stephenson 10<sup>th</sup> February 2022



**ORIGINAL ARTICLE**

# Financing the rebuilding of the City of London after the Great Fire of 1666

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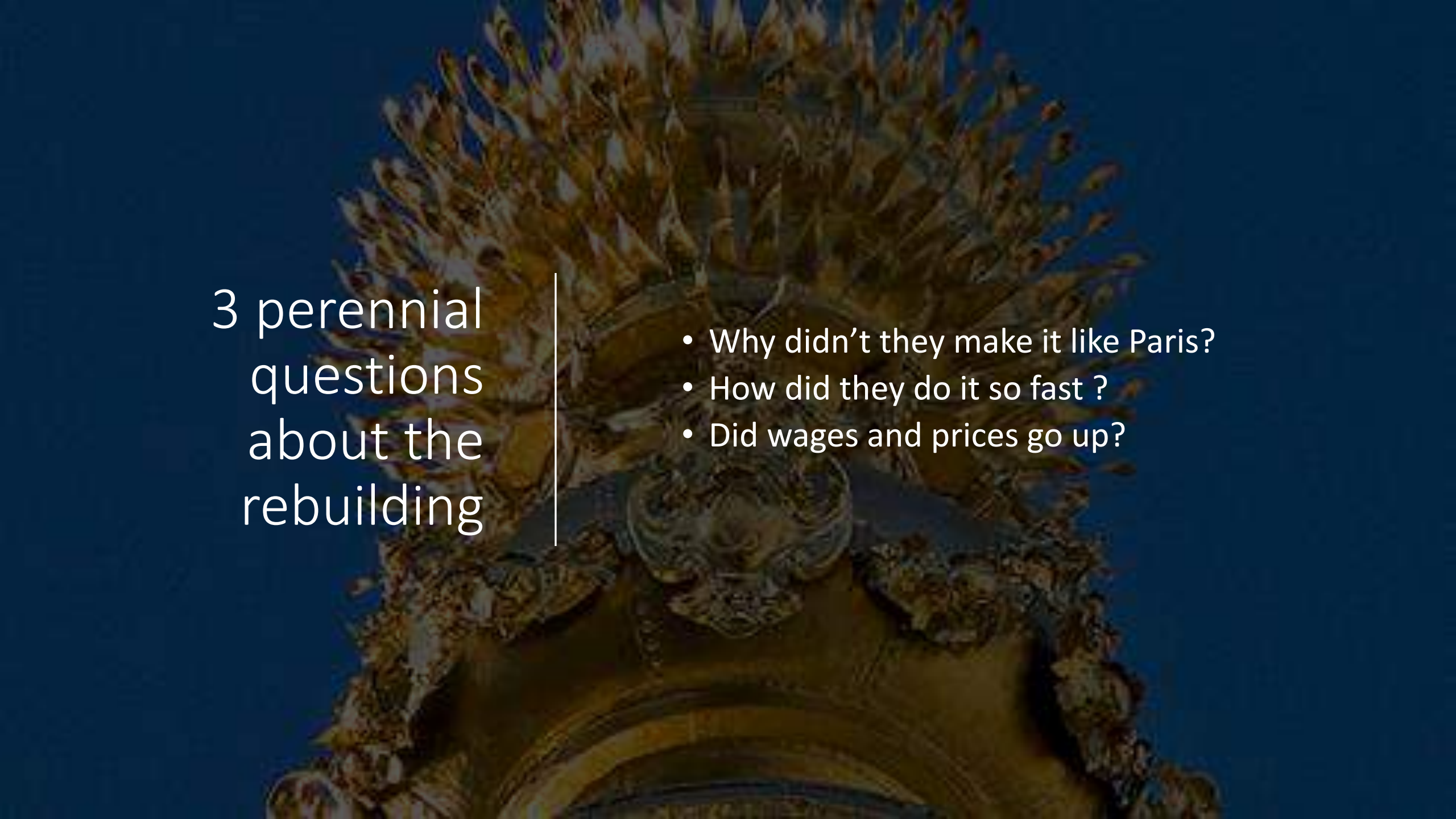
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**Abstract**

This article presents archival data on rebuilding costs and interest rates from the Corporation of London, 1666–83, to analyse how, in the absence of banking or capital market finance, the London Corporation funded the rebuilding of London after the Great Fire. The City borrowed from its citizens and outside investors at rates much lower than previously thought to replace vital services and to support large improvement works. Lenders were reassured by the Corporation's reputation, and its borrowing was partly secured by future coal tax receipts. The records show that funding from these sources was forthcoming and would have cov-






## 3 perennial questions about the rebuilding

- Why didn't they make it like Paris?
- How did they do it so fast ?
- Did wages and prices go up?





All of them are fundamental misunderstandings of the crisis, the institutional context... and the early modern building industry



“governments must act”

A twenty-first century call to action



# In London 1667 - 1710

- Rebuilding was well governed because it was co-operative
  - Between borough, corporation and state
- People and institutions contracted, and contracts were respected
- Risks (supply, price, time) were apportioned in the contracts
- Circularity and responsibility go 'hand in hand'\*

\* as in 'Hand in Hand' insurance







Why not Parisian  
boulevards?





## The Fire Courts

*“The principle that losses from the fire should be **distributed proportionately** rather than allocated all to one party was perhaps the most radical innovation in the Act, and its linchpin. Its loss-spreading insight is modern, recognising society’s capacity when necessary to override private covenant and contract.”*

Jay Tidmarsh



# Contracts

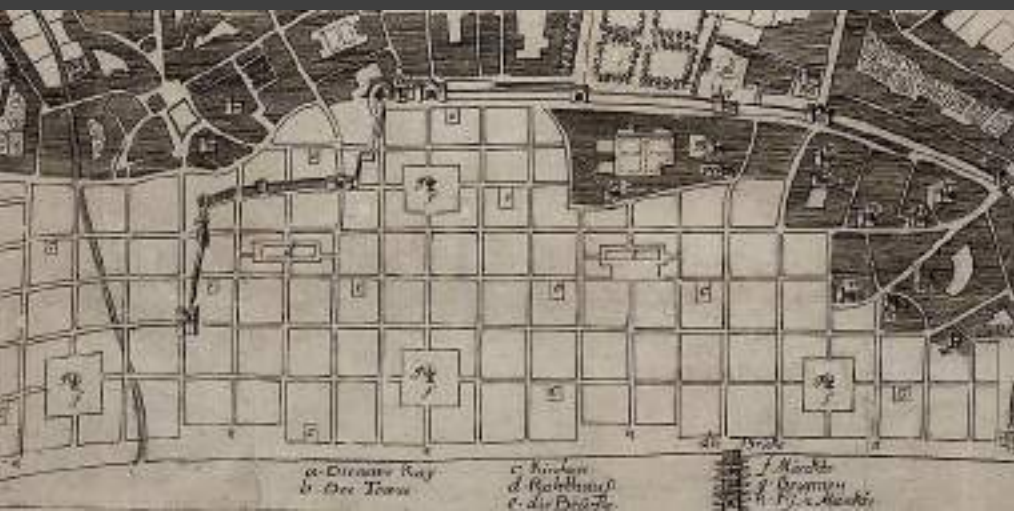
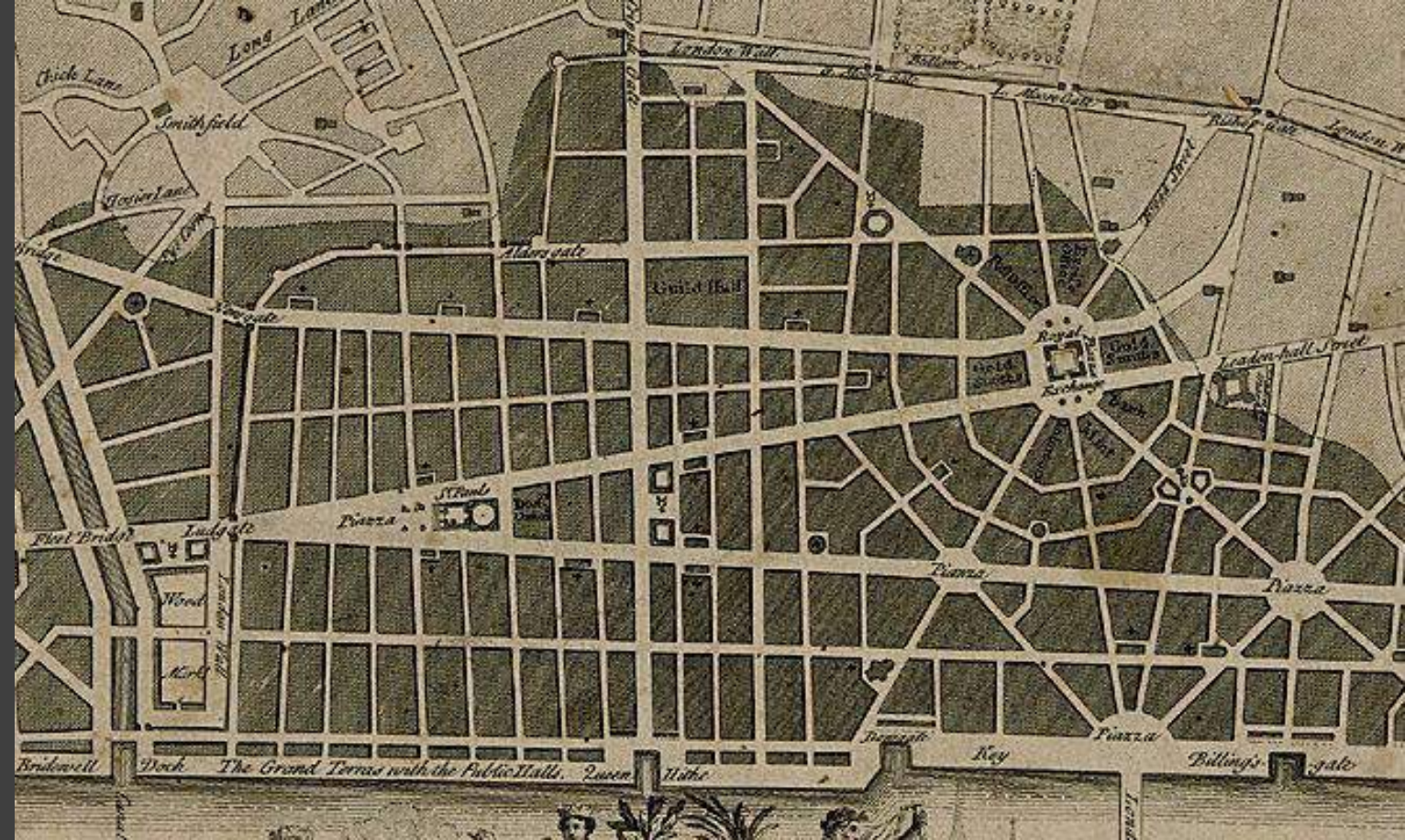
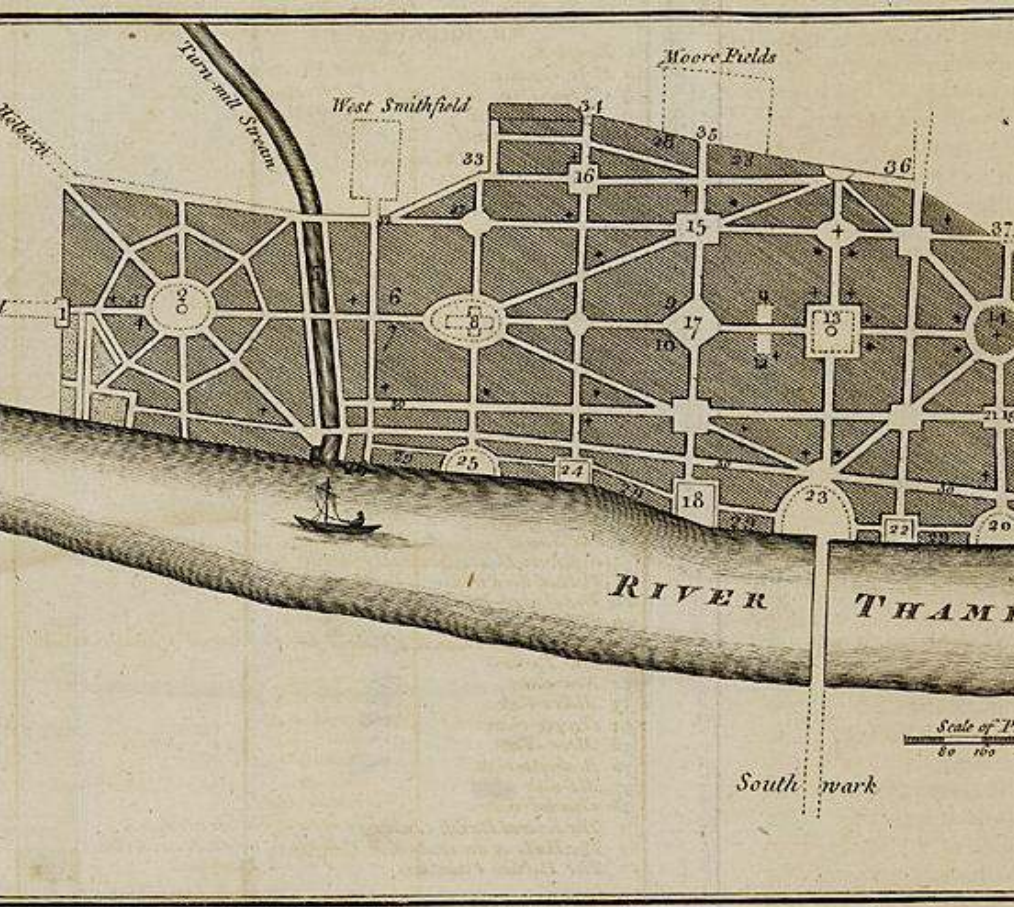
17<sup>th</sup> C political economy is obsessed with contracts - Hobbes! The Restoration!

- The city is a complex network of property rights - many landowners
- The corporation is a contract with its citizens - **for services**
- Livery companies, landlords, widows and children, relied on income from *leased property* for their income – contracts
- Fire Courts “including the power ‘to order new or longer Leases or Estates not exceeding Forty yeares . . . at such Rents and Fines or without any Rent or fine as they shall thinke fit”

# Contract between City and Parliament

- The Corporation needed Parliament to alter or allow certain rights and contracts
  - Leaseholds
  - Coal tax
- And to co-operate on major projects
  - Commission for the rebuilding of St Paul's





Parisian boulevards would only have been possible if all rights were destroyed

(John Evelyn, Christopher Wren, Robert Hooke plans)



Sam: Bishop		00 = 08 = 08
Wm: Stronghow		00 = 07 = 00
John: Saunders		00 = 08 = 04
Masons out of fall		07 = 02 = 10
Mick Gowden		00 = 12 = 00
Rich: Day		00 = 11 = 08
Mat: Waine		00 = 10 = 10
Eggs: Maslin		00 = 12 = 06
Thom: Luter		00 = 10 = 00
Ruff Layers & Lab?		02 = 00 = 00
Char: Drey		00 = 10 = 00
Edw: Weymond		00 = 10 = 00
James: Bishop		00 = 10 = 00
Thom: Sawbridg		00 = 07 = 06
Sam: Leoford		00 = 07 = 06
John: Smith		00 = 07 = 06
John: Bullweb		00 = 06 = 08
Wm: Brather		00 = 06 = 08
		03 = 05 = 10
		02 = 13 = 04
		07 = 02 = 00

Speed?

John: Hallrock		00 = 10 = 00
Regan: Heaton		00 = 09 = 00
Thom: Bitty		00 = 10 = 00
Wm: Stronghow		00 = 08 = 00
John: Saunders		08 = 08 = 00
Masons out of fall		
Mick: Gowden		00 = 15 = 00
Rich: Day		00 = 14 = 00
Mat: Waine		00 = 13 = 00
Thom: Luter		00 = 13 = 00
Edw: Maslin		00 = 15 = 00
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Edw: Weymond		00 = 12 = 00
James: Bishop		00 = 08 = 00
Sam: Leoford		00 = 09 = 00
John: Smith		00 = 09 = 00
Thom: Sawbridg		00 = 09 = 00
John: Bullweb		00 = 07 = 00
Wm: Brather		00 = 07 = 00



AN EXACT SURVEIGH OF THE STREETS LANES AND CHVRCHES CONTAINED WITHIN THE WYLLS OF THE CITY OF LONDON FIRST DESCRIBED IN SIX PLATS BY JOHN LEAKE JOHN TENNINGES WILLIAM MARK WILL LEEVEN THOMAS STREETE & RICHARD SHROVGRAYE in the Year 1647. BY THE ORDER OF THE LORD MAYOR ALDERMEN AND COMMON COUNCELL OF THE SAID CITY. Enlarged here again and correct print by John Leake, the City Willingness added. See The Title above the Title here accordingly Date of issue. A. of the Whole divided in sixe Plates.



The Royal Coat of Arms of the City of London, featuring a shield with a cross, topped with a crown and a helmet with a plume.

1. St. Dunstons Church	2. St. Dunstons Church	3. St. Dunstons Church	4. St. Dunstons Church
5. St. Dunstons Church	6. St. Dunstons Church	7. St. Dunstons Church	8. St. Dunstons Church
9. St. Dunstons Church	10. St. Dunstons Church	11. St. Dunstons Church	12. St. Dunstons Church
13. St. Dunstons Church	14. St. Dunstons Church	15. St. Dunstons Church	16. St. Dunstons Church
17. St. Dunstons Church	18. St. Dunstons Church	19. St. Dunstons Church	20. St. Dunstons Church
21. St. Dunstons Church	22. St. Dunstons Church	23. St. Dunstons Church	24. St. Dunstons Church
25. St. Dunstons Church	26. St. Dunstons Church	27. St. Dunstons Church	28. St. Dunstons Church
29. St. Dunstons Church	30. St. Dunstons Church	31. St. Dunstons Church	32. St. Dunstons Church
33. St. Dunstons Church	34. St. Dunstons Church	35. St. Dunstons Church	36. St. Dunstons Church
37. St. Dunstons Church	38. St. Dunstons Church	39. St. Dunstons Church	40. St. Dunstons Church
41. St. Dunstons Church	42. St. Dunstons Church	43. St. Dunstons Church	44. St. Dunstons Church
45. St. Dunstons Church	46. St. Dunstons Church	47. St. Dunstons Church	48. St. Dunstons Church
49. St. Dunstons Church	50. St. Dunstons Church	51. St. Dunstons Church	52. St. Dunstons Church
53. St. Dunstons Church	54. St. Dunstons Church	55. St. Dunstons Church	56. St. Dunstons Church
57. St. Dunstons Church	58. St. Dunstons Church	59. St. Dunstons Church	60. St. Dunstons Church
61. St. Dunstons Church	62. St. Dunstons Church	63. St. Dunstons Church	64. St. Dunstons Church
65. St. Dunstons Church	66. St. Dunstons Church	67. St. Dunstons Church	68. St. Dunstons Church
69. St. Dunstons Church	70. St. Dunstons Church	71. St. Dunstons Church	72. St. Dunstons Church
73. St. Dunstons Church	74. St. Dunstons Church	75. St. Dunstons Church	76. St. Dunstons Church
77. St. Dunstons Church	78. St. Dunstons Church	79. St. Dunstons Church	80. St. Dunstons Church
81. St. Dunstons Church	82. St. Dunstons Church	83. St. Dunstons Church	84. St. Dunstons Church
85. St. Dunstons Church	86. St. Dunstons Church	87. St. Dunstons Church	88. St. Dunstons Church
89. St. Dunstons Church	90. St. Dunstons Church	91. St. Dunstons Church	92. St. Dunstons Church
93. St. Dunstons Church	94. St. Dunstons Church	95. St. Dunstons Church	96. St. Dunstons Church
97. St. Dunstons Church	98. St. Dunstons Church	99. St. Dunstons Church	100. St. Dunstons Church



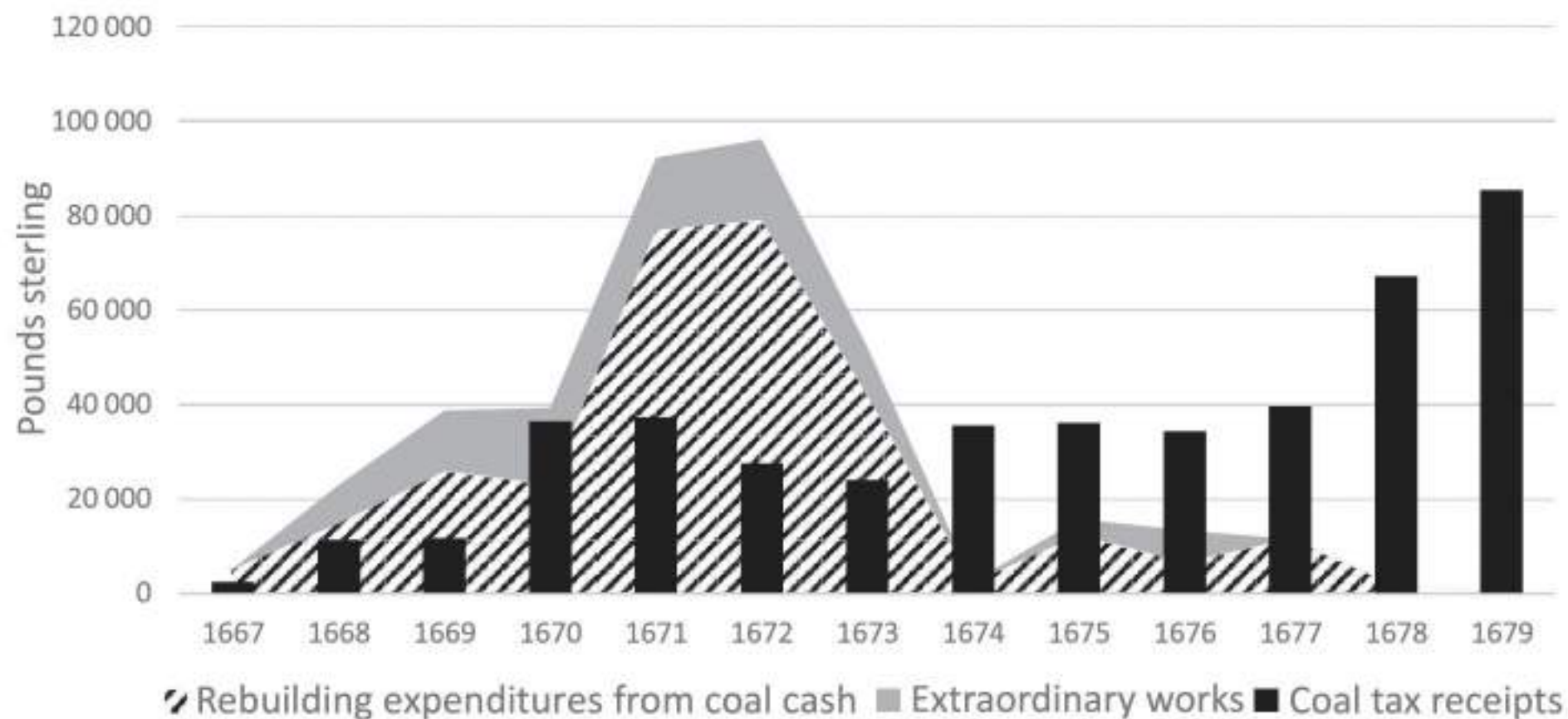


Received To Midfomer 1603. - 91315 05 00

- The fire burned for two weeks
- Then.... the damage was surveyed
- Some say most houses rebuilt by 1673. Monument completed in 1677
- Spires and church projects went well into the 1700s. As did St Paul's
- - the city was functional before it was finished
- Bulk of Corporation expenditure spent by 1675

In all - 91315 05 00





**FIGURE 2** London Corporation expenditures and revenue from coal tax, 1667–79. *Sources:* For the Coal Cash Fund: LMA, COL/CHD/DM/01/001-003; for works and tax receipts: LMA, COL/CHD/CT/01/013-019 and COL/CHD/CM/10/004 for 1667

No.	Name.	Date.	Cost.	Mason.	Bricklayer.	Carpenter.	Joiner.	Carver.
			£ s d.	missing (see Pp 106-117)				
XVII.	St. Clement Dunwich Strand.					Israel Knowles 500	—	—
XVIII.	St. Clement, East Cheap.	Mar. 1683 Oct. 1687	4,365 3 4	Edw. Strong	960	Wm. Taylor 540 Wm. Atwell 46 Rich. Reading 99 Jno. Longland 25	Wm. Clear 58	—
XIX D.	St. Dennis, Dunwich.	Mar. 1670 Aug. 1686	5,207 10 8	Jno. Thompson	3546	Geo. Turley	—	—
XX D.	St. Dunston in the East.		(1,025 18 2) By Assize. Paid Nov. 1670 and May and July 1671					
XXI.	St. Edmund the King, Lombard St.	Aug. 1670 Jan. 1679	5,007 11 9	Alr. Story Rob. Walters	2684	Geo. Choby and Hen. Wilkins 495	Thos. Whiting 576	—
XXII D.	St. George, Borough Lane.	July 1671 Mar. 1679	4,500 4 10	Nic. Young	2050	Thos. Horn 40 Rob. Day Thos. Gannan 8	Wm. Clear 45	—
XXIII.	St. James, Goswell Hill.	Sept. 1674 May 1687	5,357 14 10	Chr. Kempter	2127	Thos. Warren 278 Israel Knowles	Wm. Clear 45	—
XXIV.	St. James, Fleetbridge.			Amount missing				
XXV.	St. Lawrence, Jewry.	Jan. 1670 May 1686	11,810 1 9	Edw. Pearce	7526	Thos. Newman 12 Jno. Longland 1780	Wm. Clear 35	—
XXVI.	St. Magnus, London Bridge.	July 1671 Oct. 1687	8,279 19 10	Jno. Thompson	6213	Mat. Bancker 504 Thos. Lock 22	Wm. Clear 39	—
XXVII.	St. Margaret, Ludlow.	May 1686 May 1693	5,500 8 1	Sam. Falke	3235	Jno. Longland 700	Wm. Clear 54	—
XXVIII.	St. Margaret, Fleet Lane.	Feb. 1684 July 1689	4,966 16 8	Sam. Falke	3804	Jno. Evans 57 Thos. Woodstock 612	Wm. Clear Thos. Pudding 51	—
XXIX.	St. Martin, Ludgate.	Mar. 1671 Apr. 1677	5,218 0 7	Nick. Young	3128	Allan Garway 84 Thos. Horn 118 Hen. Blower 381 Rob. Day 97 Mat. Bancker 280	Wm. Draper 26	Wm. Emson 6
XXX.	St. Mary, Abchurch.	Aug. 1681 Nov. 1687	4,900 2 4	Chr. Kempter	1659	Jno. Bridges 425 Jno. Evans 144	Thos. Woodstock 1130	Wm. Grey 40
XXXI.	St. Mary at Hill.	July 1670 Sept. 1676	5,980 12 3	Josh. Marshall	1928	Thos. Lock 559	Wm. Clear 46	—
XXXII.	St. Mary, Aldersary.			Amount missing				
XXXIII D.	St. Mary Magdalen, Old Fish St.	Feb. 1683 Oct. 1687	4,491 18 5	Edw. Strong	2776	Israel Knowles 507	Rich. Kedge 14	Joath. Malin 6
XXXIV D.	St. Mary Somer- set, Thames St.	May 1686 Dec. 1694	6,579 18 1	Chr. Kempter	4146	Jno. Evans 396 Jas. Groves 672	Chas. Hopson Wm. Clear 15 64	—

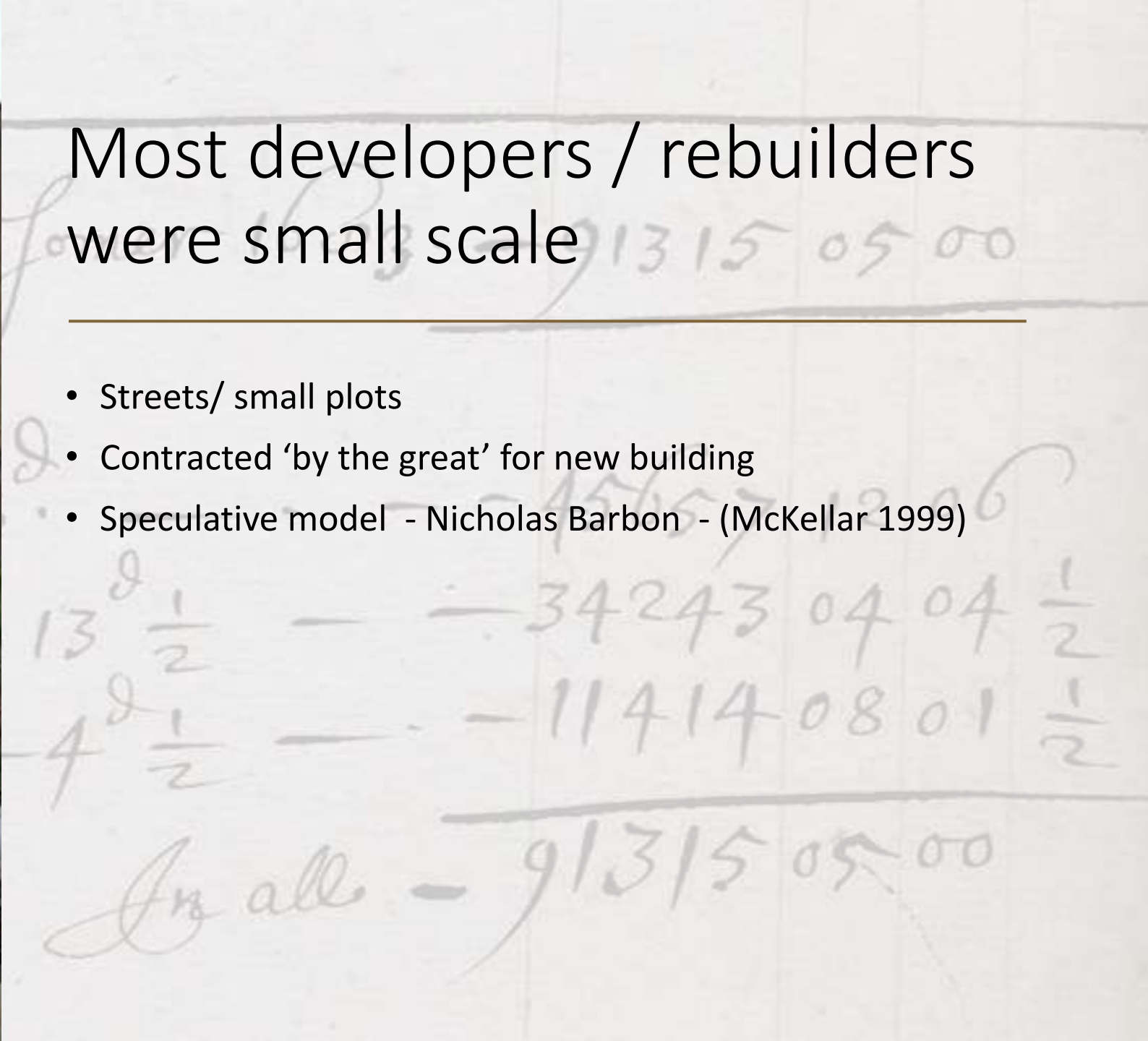
	Smith and Coppersmith.	Plasterer.	Plumber.	Painter.	Glazier.	Carver and Labourer.	Sundry.	No.
Humph. Clay 326	Jno. Grove and H. Doogood 195	Peter Read 43	Edw. Bird 12	Mat. Germaine 25	—	—	—	XVII.
Steph. Heath 187 Hen. Brooks 66 Geo. Drew 14 Rob. Bird 18	Jno. Grove H. Doogood Jno. Longard Jno. George 157 13	Wm. Bousnick 678 Jno. Longard 78 Jno. George 149	Rob. Streeter Ed. Bird 19 Jno. Holden 12 Francis Moore 4	—	—	Wm. Clement Anchor Smith J. Tillson	—	XIX D. XX D.
Edw. Smith 309	Danl. Morrice and Jno. Sherwood 85	Peter Brent Wm. Smith 664 20	Rob. Streeter 14	Jno. Brace 97	Jno. Simpson Jno. Hoy Thos. Paine 52 4 9	—	—	XXI.
Jno. Peachman 150	Jno. Grove Hen. Doogood 163	Wm. Bousnick Thos. Dobbins 497 70	Rob. Streeter 5	Jno. Odell 38	—	John Tillson	43	XXII D.
Hen. Brooks 244	Jno. Grove and H. Doogood 252	Sarah Freeman 725	John Kear Edw. Bird 12 7	Geo. Peewie 63	—	—	—	XXIII.
Thos. Smith Bissel and Taylor 302 25 Sarah, Leaver R. Bird 19 14	Thos. Mead 356	Chas. Atherton 1326	Thos. Laine Marg. Pearce 19 23	Geo. Peewie 6 Wm. Brown 60 Abr. Harris 3	—	—	—	XXIV. XXV.
Hen. Brooks 309	Jno. Grove and H. Doogood 189	Thos. Dobbins Chas. Atherton 1005 25	Widd. Pearce Edw. Bird 20 5	Jno. Goodchild Thos. Knight 7 47	—	Jno. Green Wm. Sheldon Nat. Attwell Churchwarden	390	XXVI.
Rich. Howes 268	H. Doogood 237	Mat. Roberts 645	Nich. Sheppard 9	Franc. Moore 51	Bart. Scott 42	—	—	XXVII.
Edw. Smith Humph. Clay 226 18	Jno. Grove and H. Doogood 198	Jas. Dobbins and Step. Smart 324	Wm. Thompson 14	Sam. Rainger 56	Bart. Scott 51	—	—	XXVIII.
Sam. Calburn 87 Steph. Leaver Rob. Bird 110 11	H. Doogood and Jno. Grove 221	Jno. Talbot Palmer Road 182 350	Ed. Bird Ed. Bird and Thos. Laine 7 6	Rich. Bowler 3 Rich. Pinder 27	Jno. Snyford 28	—	—	XXIX.
Thos. Hodgkins 144 Hen. Brooks Bryan 222 1 Rob. Bird 58	H. Doogood and Jno. Grove 144	Thos. Dobbins Sarah Freeman 954 2	Wm. Thompson Ed. Bird 16 16	Hen. Bray 49	Bart. Scott 58	Wm. Newton (Slater)	55	XXX.
Geo. Drew 170	Jno. Grove 212	Jno. George 810	Widdin Pearce 29	Jno. Alife 55	—	Rich. Morse and Hen. Leads Churchwarden	204	XXXI.
Thos. Hodgkins Rob. Bird 418 11	H. Doogood 144	Jno. Wilkins Mat. Roberts 518 4	Ed. Bird 21	Jno. Claridge 49	Bart. Scott 3	—	—	XXXII D. XXXIII D.
Thos. Hodgkins 212	H. Doogood 146	Mat. Roberts 542	Edw. Bird 12	Mat. Germaine 50	Bart. Scott Jno. Hunt 110 22	—	—	XXXIV D.





# Most developers / rebuilders were small scale

- Streets/ small plots
- Contracted 'by the great' for new building
- Speculative model - Nicholas Barbon - (McKellar 1999)



Sam: Bishop		00 = 08 = 08
Wm: Stronghow		00 = 07 = 00
John: Saunders		00 = 08 = 04
Masons out of fall		07 = 02 = 10
Mick Gowden		00 = 12 = 00
Rich: Day		00 = 11 = 08
Mat: Harris		00 = 10 = 10
Eggs: Maslin		00 = 12 = 06
Thom: Luter		
Ruff Layers & Lab:		
Char: Drey		00 = 10 = 00
Edw: Wrymon		00 = 10 = 00
James: Bishop		00 = 10 = 00
Thom: Sawbridg		00 = 07 = 06
Sam: Leoford		00 = 07 = 06
John: Smith		00 = 07 = 06
John: Bullweb		00 = 06 = 08
Wm: Brather		00 = 06 = 08
		03 = 05 = 10
		02 = 13 = 09
		07 = 02 = 10

# Wages and Prices?

John: Hallrock		00 = 10 = 00
Regan: Healin		00 = 09 = 00
Thom: Bitty		00 = 10 = 00
Wm: Stronghow		00 = 08 = 00
John: Saunders		08 = 08 = 00
Masons out of fall		
Mick: Gowden		00 = 15 = 00
Rich: Day		00 = 14 = 00
Mat: Harris		00 = 13 = 00
Eggs: Maslin		00 = 13 = 00
Thom: Luter		00 = 15 = 00
Edw: Maslin		03 = 10 = 00
Ruff Layers & Lab:		
Char: Drey		00 = 12 = 00
Edw: Wrymon		00 = 12 = 00
James: Bishop		00 = 08 = 00
Sam: Leoford		00 = 09 = 00
John: Smith		00 = 09 = 00
Thom: Sawbridg		00 = 09 = 00
John: Bullweb		00 = 07 = 00
Wm: Brather		



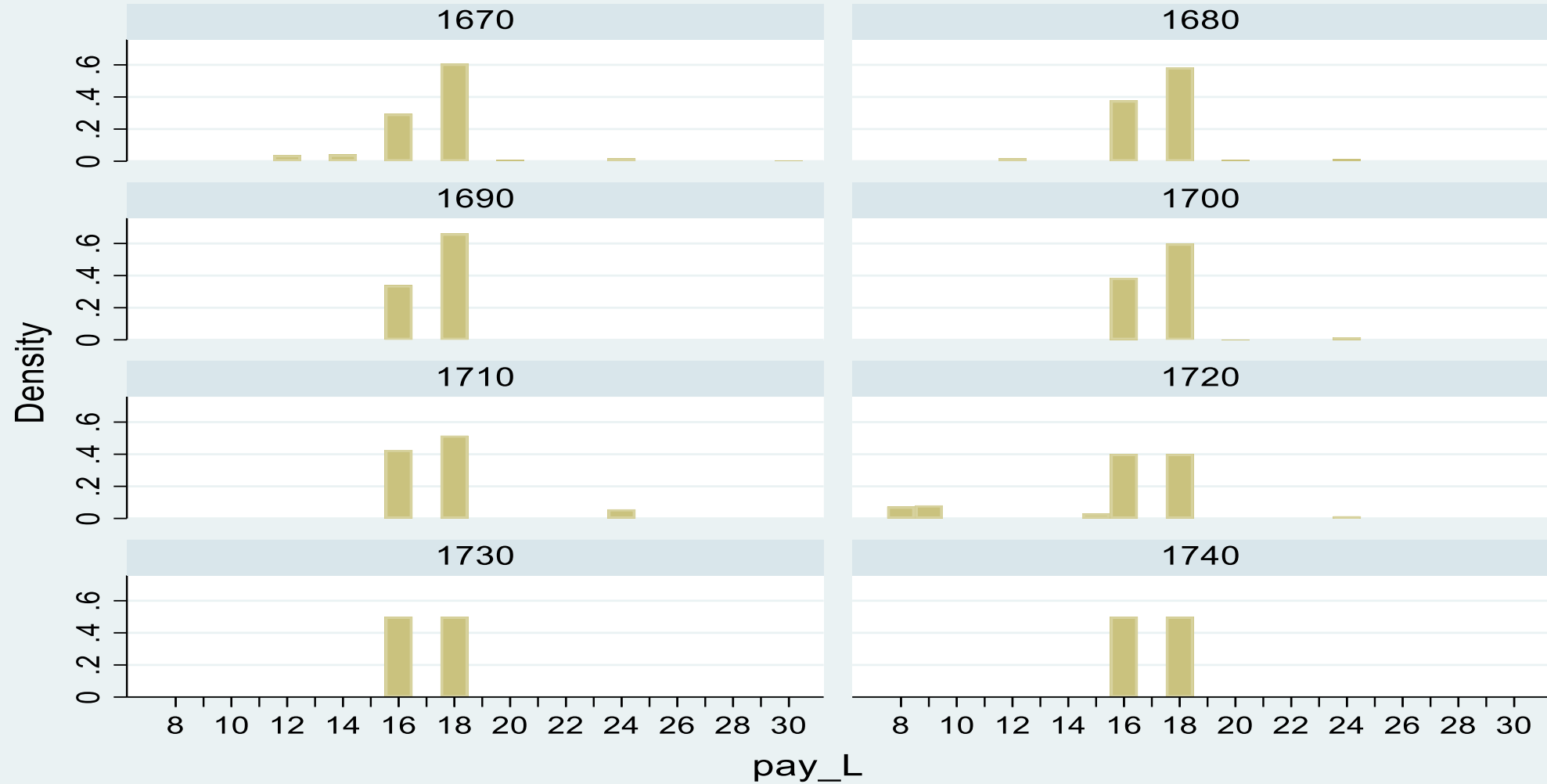
## Wages did not rise

- Statute of Artificers made it illegal to withhold labour
- No steady jobs – unskilled in gig market; skilled were traders
- Prices initially rose for materials but then declined





# St Paul's 1672-1748 Labourers' day wages- 16d. winter, 18d. summer



Graphs by decade

# Labour had intensive margins to work first

- Unskilled labour got more work

- Nominal wage rigidity

- Tenure mattered <https://eprints.lse.ac.uk/108562/1/WP322.pdf>

- Skilled labour earned margins through contracting for goods through supply chains

- The most successful contractors *owned* their supply chains



# Supply chains

- Housing was brick and timber; public projects needed stone / masonry
- All relied on transportation, the cost of which determined price
- London brick fields “areas used for brickmaking until they were exhausted and then built over” (McKellar 1999 pp.74)
- London clay and ‘rubbish’ - including offal – stockpiled into areas before building / burning of bricks
- Stone, lead, timbers were sold and **recycled**
- But ... Fir imported as a building material for the first time

Buildings are unique entities, as they are often the results of one-off projects. This feature adds to their inherent complexity, where each of the materials used has its own specific life cycle and all interact dynamically in space and time. Furthermore, their long lifespan, and changes of use during their service life, lead to increased uncertainty about future scenarios. Therefore, although buildings are made up of components which are manufactured products, when assembled together those products create an entity which no longer fits into the logic of manufacturing. From a CE perspective, current research tends to focus mainly on short-lived manufactured products (e.g. Singh and Ordoñez, 2016), and therefore the complexities that are inherent within buildings are often neglected.



# Circularity of risk and materials 1667 - 1700

- Contracts and co-operation determined the speed of rebuilding – **access prioritised over ownership**
- The Courts enforced cooperation through proportional alteration of contracts
- The Corporation borrowed from citizens to restore key services
- The income streams financed the building contracts /leases
- Which procured the materials through trade credit – material recycling a key part of financing works - **designing out waste**
- But... Labour only increased it's share through this credit and supply/ or through extra work intensity

The logo is a teal circle with a white border. At the top, there is a stylized white line-art graphic of a building facade with three vertical columns and a stepped roofline. Below this, the text "THE BARTLETT" is written in white, uppercase, sans-serif font. Underneath that, the word "SCHOOL OF" is written in a smaller, white, uppercase, sans-serif font. Below "SCHOOL OF", the words "SUSTAINABLE" and "CONSTRUCTION" are written in the same white, uppercase, sans-serif font as "THE BARTLETT", stacked on two lines.

THE BARTLETT  
SCHOOL OF  
SUSTAINABLE  
CONSTRUCTION

Questions ?



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# N.B. the calculation of costs

- Any relative calculation of costs depends on the cost of housing. The vast majority of housing had been in private hands and was rebuilt as such.
- Estimates of the cost of building are not as easy as taking the £300 figure per house given by Strype, however, because Strype's figures are for the loss of rental income rather than the cost of labour and materials of a rebuild.
- See Strype, *Survey of the cities*. The costs of building in brick according to the Fire regulations range from £100 to well over £300. McKellar, *Birth of modern London*, p. 71–5.