A Tax on Light and Air: Impact of the Window Duty on Tax Administration and Architecture, 1696-1851

Andrew E. Glantz
University of Pennsylvania, aeglantz@sas.upenn.edu
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INTRODUCTION

It is not at all uncommon for readers of eighteenth and nineteenth century British history to stumble across references to the Window Tax buried within accounts of more notable measures and events of the period. Descriptions of the tax are often trivial, inserted to provide color and context, to demonstrate the peculiarity—at least from a modern viewpoint—of the earlier English tax system and its cultural repercussions. Historians writing about this period frequently include a sentence or two relating the grievances of British homeowners who boarded or bricked up windows to evade the tax. Few bother to enumerate, however, the larger, indirect consequences of the Duty on Lights and Windows, or even explain why it was imposed in the first place.\(^1\) There are only a handful of scholarly articles on the subject and hardly anything original written on the Window tax within the last fifty years. W.R. Ward’s lone article, “The Administration of the Window and Assessed Taxes, 1696-1798,”\(^2\) published in *The English Historical Review* in 1952 and a chapter from Stephen Dowell’s *A History of Taxation and Taxes in England*, printed as early as 1884, remain the two most important secondary sources on the tax for modern scholars.

Although the Duty on Lights and Windows provided significant revenue in the 150 years it was administered (1696-1851), difficulties with assessment and collection plagued the tax, resulting in declining revenues and exposing easily exploited loopholes in the tax system. These inefficiencies underlie some of the most important tax reforms in British history as well as numerous effects on contemporary and current architecture. Parliament’s struggle to combat tax evasion and collection inefficiencies ultimately gave rise to a professional bureaucratic structure, capable of managing other, more modern and complex taxes assessments, and—in addition to triggering changes in administrative organization—the Window Tax also heavily influenced British residential architecture, a causal relationship practically unexplored by historians. Homeowners, builders and landlords took advantage of loopholes in the Window Tax legislation and built dwellings specifically designed to lessen the impact of the heavy tax burden on residents. These architectural changes intensified disparities in the living conditions of gentry and working classes and raised serious concerns about adequate light and ventilation, which inspired later architectural projects and provided fodder
The Window Tax originated in England in 1696 out of a desperate need for funds. In the last decade of the seventeenth century, currency debasement had become an increasingly pressing problem for Parliament as the widespread circulation of clipped coins seriously jeopardized the credibility of the Crown’s specie. With the aim of restoring faith in the treasury, a re-coinage was deemed necessary, and upon its completion, “non-fraudulent owners of the elipt coins” were free to exchange their debased monetary holdings for newly minted coins of proper metallic content. However, in order to cover the difference in value between the new and old coins in addition to the cost of minting an entirely new currency, a heftysum of money was required. The solution came in the form of a tax on windows. As early as 1695, when the notion of a window tax began to surface, polemics spoke out against its conception and advocated alternatives to the potentially invasive duty. One such critic, Charles Weston, proposed that in place of the duty on windows, one could simply place a duty on the “Portage of Letters,” a postagel tax that had the potential to raise substantial revenue and minimize administration costs by eliminating the need for assessors and surveyors. The details of his plan were vague however, and his suggestion was hardly taken seriously by the tax’s inventors. Although originally intended as a temporary measure, the Window Tax was ultimately established as a permanent tax and became an important source of revenue for other Parliamentary initiatives. Thus, in spite of abuse and repeated calls for its dissolution, the window tax outlasted the currency crisis in 1696 and continued to supply the British government for one hundred and fifty years.

In its most rudimentary form, the assessed Duty on Lights and Windows was a progressive tax on wealth, administered on a sliding scale tied to window quantity. It was assumed that the more windows in a dwelling, the greater the homeowner’s wealth, or income. The Hearth-Money Tax, abolished only eight years prior to the imposition of the Window Duty, had been for twenty-six years the primary means of taxing wealth, assessed instead by tallying hearths and chimneys. Though effective in raising revenue, this earlier form of taxation was greatly despised and characterized as “not only a great oppression to the poorer sort, but a badge of slavery upon the whole people, exposing every man’s house to be entered into and searched at pleasure by persons unknown to him.” It had long been Parliament’s endeavor to tap the wealth of the Crown’s subjects through taxation while at the same time respect a sense of personal privacy guaranteed by society’s unwritten constitution, the English Liberties. Direct income taxation had also been proposed from time to time, but as this method of taxing wealth required the disclosure of private information on earnings, it was mired in controversy. The Window Tax, which could be assessed without entering a private home or inquiring about household income, was inherently less invasive than the earlier Hearth-Money and bore no resemblance to an income tax. When framed simply as a tax on wealth however, “the people
comparing it with the old hearth-money, noted the resemblance, and were of opinion that “after all, they had got little by the swap,” for “as in most cases of complaints against taxes, the tax itself,” and not the manner in which it was collected “formed the real grievance.” Nonetheless, in retrospect, the Window Tax represents a crucial step in the evolution of taxes on wealth and sits squarely between the unpopular Hearth-Money and the direct income tax, which was finally passed in the late eighteenth century.

**Evolution of the Window Tax Code, 1696-1851**

From the establishment of the Window Duty to its ultimate dissolution in the mid-nineteenth century, the tax code became increasingly more complicated and precise, engineered to better tap the wealth of those with the greatest ability to pay. In the original Window Tax legislation from 1696 a basic annual charge of 2s. upon all dwelling houses was established. On top of this, houses having ten to twenty windows were billed 4s., or 6s. in total, and houses with more than twenty windows, 8s., or 10s. in total per year. In 1709, when Scotland and England were united under one kingdom, the tax code was altered so that all houses in Great Britain with twenty to twenty-nine windows would pay a total of 10s. and homes “with thirty or more, 20s. per annum, in addition, as regards to England, to the existing 10s.” The tax was completely recast and raised in 1747 by Parliament. In the new tax, the fixed duty of 2s. for every inhabited house in England was detached from the window duties and imposed in addition to the regular window assessments. For every window in every house with ten to fourteen windows, 6d. was charged. 9d. was charged on every window in every dwelling having fifteen to nineteen windows, and 1s. was charged for every window in every house having upwards of twenty windows.

In 1758 and 1761, additions were made to the tax to help fund the Seven Years War, including “an additional Duty of 1s. on every House in England & 1s. on every house in Scotland,” bringing the total annual House duty from 2s. to 3s. The tax was subsequently modified in 1766 to offset the repeal of the Stamp Act and the Cider Tax. In that year, it was extended to houses with seven windows or more, and rendered even more intricate. One day after the approval of these 1766 changes, in a letter written to Parliament member Sir James Lowther, John Robinson observed that “yesterday the House were upon the report in regard to the Window Tax and divided; for the Tax 179, against it 114.” Clearly there was a sizeable group in Parliament opposed to either the specific terms of the act, the increase in duties, or the Window Tax itself.

In 1784, as part of William Pitt’s Commutation Act in which tea duties were reduced, the house duties were bumped up once again, this time from 3s. to 6s., and the rates on windows changed dramatically ranging from 6d. for houses with seven windows to 20l. on homes with twenty windows. Although the debates about his measure in parliament were quite mild, “outside of Parliament . . . the Bill was not allowed to pass unnoticed. Almost immediately the opposition papers launched a sustained campaign against Pitt and the window tax.” On the 25th of June, the *Morning Chronicle* pub-
lished a sarcastic column about the “young minister and his taxes” and throughout the summer months, numerous signed and unsigned articles continued to be directed at Pitt and the Commutation Acts. One editorialist “likened the window tax to the French gabelle;” others reported on anti-window tax activities in various parts of England and Scotland; and one even tried to incite the landholders against the window tax.” Years later in 1792, duties for houses with less than seven windows were repealed, and further modifications were made to the tax structure during the war with France in 1797, in 1802 after the repeal of the income tax, and again in 1803, when the window duties were once more combined with the Tax on Inhabited Houses. The tax code reached its highest degree of complexity in 1808 under Spencer Perceval:

For houses with not more than six windows, if under the value of 5l. a year, 6s. 6d.; and if of that value or more, 8s.; the charges for Scotland being 4s. 6d. and 6s. The foregoing being, in effect, the old fixed house tax as subsequently increased. For houses with—not more than seven windows, the charge was 1l.; not more than eight, 1l. 13s.; not more than nine, 2l. 2s.; not more than ten, 2l. 16s.; and so on by an irregular ascending scale of charge, proceeding upwards, window by window, to houses with not more than forty windows, for which, and up to houses with forty-four windows, the charge was 28l. 17s. 6d. From this point the scale in its upward course proceeded, by steps of five windows each, till it reached 100 windows; for which, and up to 109 windows, the charge was 58l. 17s. From 110 windows, the scale proceeded by steps of ten windows each, until it reached houses with 180 windows or more; and, for such houses, the charge was 93l. 2s. 6d., and 3s. additional for every window over 180.

Throughout the early 1900s, exemptions in the tax were extended and expanded; in 1825, all houses with less than seven windows were excluded entirely from the tax. In farmhouses, one free glazed window in the dairy and cheese room and “interior windows deriving light from a window in the exterior wall of the house, which were specially charged by the Acts, were also exempted.” The last legislative changes made before the Window Tax was finally repealed and incorporated under the general Duty on Inhabited Houses in 1851 occurred in 1834, when special exemptions were given on lower-income farmhouses and in 1840 when the charges were increased by ten percent. Clearly more progressive and sophisticated throughout its lifespan, the Window Tax code was representative and directly a result of broader changes in tax administration.
Like the earlier Hearth Tax, which inspired many Englishmen to demolish their chimneys to avoid charges, the Window Tax was fraught with incessant evasion attempts and administrative obstacles. Frequent modifications, ambiguity in the tax code and creativity on the part of homeowners were the main impediments to an effective assessment and collection. Sympathetic local assessors and magistrates—who frequently prioritized protecting friends and neighbors over raising revenue for the Crown—were of little help in compensating for these problems. As external pressures created increasing demands for revenue, Parliament was forced to revise the existing tax administration. The innovations which came about led to the creation of a full-time professional organization up to the task of successfully managing increasingly complex taxes, such as the direct income tax imposed at the end of the eighteenth century.

Parliament, aiming to avoid pitfalls of the earlier Hearth Tax, managed to implement a few important administrative revisions as early as 1696. The first major innovations were in regards to collection. In the first year of its imposition, the tax was managed by the commissioners of the Land Tax—another assessed tax, which had already been established—then subsequently transferred to agents specifically assigned to the Window Duty. This allowed the tax to be collected efficiently from the very start as it eliminated the need to wait for an entirely new set of commissioners to be trained and deployed before collection could begin. Parliament took another progressive action by relying on “parochial collectors . . . selected from ‘the most substantial’ inhabitants” of each locality and abolishing the long-time practice of commissioning tax farmers to aggressively pursue assessed taxes for profit. As “the greater part of the machinery was [brought] under direct governmental control,” collection was generally effective and represented both a major achievement for the management of assessed taxes as well as a first step in a series of administrative measures which led to the growth of a full-time, professional tax administration.

Further refinement of the tax administration structure took place in the area of assessment. Under direction of the central tax office, the treasury was to appoint professional surveyors to make the first assessments rather than allow junior regional agents to appoint whomever they wished to make assessments. The idea behind the newly appointed surveyors was to remove bias and personal conflict from assessment and to restore a sense of duty to the post. Surveyors were also expected to represent the government’s interests in appeals against assessments brought by homeowners in local courts. These changes were certainly an improvement over earlier tax assessment methods and, with surveyors now appointed directly by the treasury, pushed the administration one step closer to a centralized professional system. In the end, these effects were limited, for once the original assessments had been made, the professional surveyors were permitted to appoint subordinate Justices of the Peace to make further assessments. Although “some surveyors undoubtedly did good work in keeping up the assessments . . . elsewhere J.P.s discharged the assessments of friends of local
gentlemen without oath,” and by the 1720s, revenues had declined substantially from original levels. Provincial court officials, appointed independently of the treasury, also hindered the process, interpreting the tax code liberally to find in favor of appeals against surveyors’ assessments and delaying paperwork to prevent collection.

Thus, despite early advances in the management of assessed taxes and their implications for future organization, conflicts between local and central powers undermined the efficiency and authority of the Window Tax and provided ample opportunities for evasion. These evasion attempts were detrimental to tax yields but ultimately spurred on another series of innovations in tax administration. By 1726, the yield of the window duties had fallen considerably, with average revenue “over £100,000 less than in the period 1703 to 1709. The administration of the Window Tax was decaying [quickly] . . . and in 1739 the tax office was at last constrained to admit that some of its officers ‘were more of a burden instead of a support’ to the administration.”

Evasion of the Window Tax took place in a number of forms, including the temporary and permanent closure of windows, bribery and abuse of ambiguities in the Window Duty legislation.

In the early tax code, “no provision had been made to prevent the closing up of windows. Consequently, as during the existence of the hearth-money, taxpayers had demolished their chimneys in order to obtain a reduction of charge, they now evaded the Window Tax by stopping up windows, opening them again as soon as the assessor had made his assessment.” The boarding up or simple camouflaging of portholes was quite common among homeowners, and in the first fifty years or so of the tax’s collection, posed a formidable obstacle to equitable assessment, especially when certain J.P.s were willing to overlook even the most obvious of schemes. In addition to simply boarding up windows until the tax collectors had gone, in many cases, residents and landlords actually filled in window openings with bricks and mortar, with the hopes of permanently avoiding assessment taxes; in new homes, windows were reserved for only the most important places.

More frequently the case in the early eighteenth century, homeowners and local surveyors sympathetic to taxpaying residents skirted the Window Tax by taking advantage of loopholes and ambiguities in the tax code. The duty was originally imposed on every window in inhabited houses. Exempted were all industrial or retail buildings and cottages “paying to the poor and church-rates,” i.e. homes of low-income residents, and “service and business premises attached to dwellings.” The Window Tax also “did not have to be paid on windows to rooms which were not lived in, such as dairies and pantries.” Numerous homeowners attempted to pass off regular living quarters as one of these service quarters to avoid tax on the associated windows. Therefore, “it seems probable that windows of garrets, and of warehouses built on to dwelling houses escaped taxation the most readily.”

Corrupt and locally biased assessors who permitted this form of evasion were little help to the central tax office in combating fraud. Politically inclined surveyors were even known to have ‘bought’ votes from local res-
idents by promising neglect in Window Duty assessment, and by 1720s, central administration had grown anxious about declining revenue. In the course of repeated inquiries, conducted between 1718 and 1729, the treasury “found a sorry story of windows stopped up, of J.P.s obstructing the work of assessment, of surveyors lazy and incompetent. In 1718, the tax office ascribed the declining yield of the duties ‘mainly to the stopping up of windows to avoid the tax and to the indisposition of the Justices to act, who . . . excuse when they think fit.’”

By the 1730s, pamphlets appeared condemning the Window Tax. Critics spoke fervently about a lack of ventilation and sufficient light afforded residents and demanded the repeal of the Window Tax due to its adverse effects. One political piece, published in 1733 and re-printed in a collection of other similar pieces that criticized the government at the time Robert Walpole was in power as Prime Minister, draws attention to some of these injustices. In ballad form, the anonymous author harps on the evils of taxing light, an essentially free commodity, the overcrowding of tenements, the strictness of magistrates in denying appeals against assessments, and heartless landlords, who, lacking consideration for their residents, board up windows and build without due provision of light and ventilation to save a few shillings. He writes, “We pay for our Light / Both by Day and by Night, / Malt, Salt, Shoes, News, and our Soap; / Oh! spare us, good B[O]B / And drop this new Job, / Or at last we can’t pay for a Rope.”

According to Dowell’s calculations, between 1716 and 1725, the yield from the Window Duties had decreased from 141,935l. 15s. 4d. to a meager 128,137l. 18s. 5d.; by the mid 1740s, continued decline in tax revenue due to rampant evasion and corruption in the tax system necessitated new reforms and innovations. The War of Austrian Succession created unprecedented demands for more money and incentivized Parliament to seek potential areas for improvement in the Window Tax administration. By 1742, it was clear to authorities that “revenues [were] not conducted with that care as they should & ought to [have been] to the great detriment of the public. . . . In 1743 the dreadful truth about [the assessors] came out in detail. From the journals and surveys of the four general surveyors thirty-seven of the local surveyors were convicted of negligence and incapacity.”

Accounts of lackadaisical and irresponsible surveyors read as follows:

Bartholomew Lynch of Middlesex spent almost all his time in another employment. ‘He neither attends at appeals, the signing of the rates, or settling the collectors’ accounts ‘, which put collection two years behind. He employed a deputy who, having no proper commission, was easily obstructed in the course of business. . . . Thomas Life of Cambridge kept no books and appeared never to have made a survey; he was a surgeon by profession. . . . Robert Obbinson of Lincoln was a rich farmer with no time for surveyor’s duties. . . . In Wales the surveyors regarded their posts as sinecures, and for the most part kept no books. They were discouraged by the fact that the J.P.s disallowed
any increases they made. . . . Much the same state of affairs existed in Devon. . . . In Bristol the surveyor had made no rounds for many years, and a person who attempted to raise the rates had been attacked by the Mob. 43

With assessment figures in decline and investigations pointing to lazy and corrupt surveyors as the main obstruction to successful administration, “it was not long . . . before the government was driven to place limitations upon the discretion of the local commissioners in matters of assessment." 44

In 1747, the situation had come to a head. Despite all attempts to add precision to assessment and punish irresponsible assessors, revenue levels could not be resuscitated. On March ninth of that year, the Commissioners for Taxes presented a report to the Lords Commissioners “relating to the Difficulties and Obstructions which have attended the Collection of the Duties on Houses, Windows, and Lights.” 45 The commissioners provided counts of “Surveyors not being permitted in some places to do their Duty,” and detailed “the Methods which have been universally practiced in stopping up Windows or Lights, to evade the Payment of the Duties.” 46 It was noted that in numerous cases,

Rooms in the Dwelling-house, where a few Sacks of Corn, or a little Lumber, has been laid, have been discharged, under the Name of Warehouses or Granaries. . . . [and that] In some Parts, Inhabitants of Freehold Houses, who rent small parcels of Land (the Taxes of such Land being paid by the Landlord) have been excused from paying these Duties, upon a Parish-Officer’s alleging them to be poor. . . . Some of the Surveyors have not been allowed to see the Assessors Books; and others not permitted to pass through the Houses, to number the Windows or Lights, as the act empowers and enjoins them to do, but were threatened at the Peril of their lives if they attempted it. The general Practice of stopping up Windows and Lights hath likewise been the greatest Prejudice to this Revenue, as the same hath been done only with loose Bricks or Boards, which may be removed at Pleasure, or with Mud, Cow-dung, Moarter, and Reeds, on the Outside, which are soon washed off with a Shower of Rain, or with Paper or Plateboard on the Inside. 47

**FURTHER ADMINISTRATIVE INNOVATION**

The worsening and ever more apparent difficulties with the Window Tax necessitated a second rash of innovations. It was now the goal of Parliament and the tax office to turn a mockery of a tax into a productive revenue generator for the Crown. The primary actor on behalf of the Window Duty was “Henry Pelham, always a workmanlike chancellor, [who] took the only remaining step, repealed the existing acts, and recast the whole system.” 48 As part of the 1747 act, “The practice of blocking up windows in
order to evade assessment and subsequently reopening them, was prohibited under a penalty of 20s. for every window so-reopened without due notice given to the tax surveyor.” Revised “by the treasury in consultation with the tax office,” the new act, now with sharper teeth, “attempted to increase the revenue and outwit those who had built houses designed to evade the old acts.” Pelham also realized that the inefficiencies of having two assessed taxes—the Window Tax and the Land Tax—administered by separate bodies under the tax office, could be resolved by combining the organizations wherever possible. Just as it was structured in 1696, in localities where it was feasible, “the assessments were in future to be made not by the J.P.s who had been tried and found wanting, but by the land tax commissioners once more. Besides commissioners and receivers, assessors and collectors were now often the same for Land and Window Tax.” This measure effectively reduced the number of officers needed to assess and collect from each house, substantially lowering the cost of administration and further centralizing the organization.

The most important innovation in the Window Tax administration up to this point, “was not to be won without a struggle.” In Scotland, “the earlier window duties had had a chequered history,’ but when the copies of the act of 1747 arrived, the entire local administration went on strike, and a few small sums collected in Edinburgh never reached the receiver. The commissioners claimed that the poundage was too miserable to offer collectors; the collectors were unwilling to offend their neighbors; the tax-payers, led by the clergy, refused to pay.” To combat this severe threat to revenue and stability, the Scottish authorities were urged to enforce the duty. It was ultimately decided upon by the various communities that if localities refused to appoint assessors, the window counts taken from the original surveys prior to 1747 would become the official assessments, and if the parishes “chose to appoint no collector, the collector of the land tax was made ipso facto the collector of the window tax. The one defect remaining was that appeals lay to the commissioners, and that payment could be held up pending settlement. [Nonetheless,] Scotland was set on the high road to the first fully professional system of collection of a direct tax seen in Great Britain.”

Savings in the cost of management were realized almost immediately after these changes with yields in the first year of the tax increasing by about £75,000, once again reaching respectable levels.

Unfortunately for Parliament, despite the early success of the 1747 reforms, after less than a year, “stopping up of windows began again, and many of the local commissioners would not allow the surveyors to interpret the act as they were directed from the tax office... The provisions for [exemptions] were interpreted as broadly as possible, and surveyors were often obstructed in the course of duty.” Now William Pitt and Henry Reade led the charge to perfect the tax’s management, and created a department in the tax office specifically to monitor the administration of the Window Tax. With this seemingly small bureaucratic innovation in place, throughout the early 1750s, Pitt and Reade discovered how minute fine-tuning of the tax system, supported by the central office and commissioners, could potentially lead to large differences in revenue. By the mid-1750s, Parliament and the
tax office had been able to finally work out most of the kinks in the management of the tax and were pulling in yields of over £200,000.\textsuperscript{58}

Further increases in assessments kept revenues afloat and sufficient for parliamentary expenditures, but did little to alter the administration structure. Not until the American Revolution was the crowning achievements of direct tax administration realized, though as before, these innovations came out of earlier difficulties. By 1776, the state of Window Tax assessment and collection had reverted to the miserable levels of efficiency last seen in 1747. Surveyors were lacking and reports of neglect in assessments were frequent. In the 1780s, with a mission to solve the matter once and for all, inspectors were hired by the tax office on direction of Parliament, to monitor the surveyors and report to tax authorities on performance. Meanwhile, debates about the merits of a tax, which was once again failing to draw sufficient revenue despite numerous revisions, became increasingly heated towards Parliament. The increased duties of William Pitt’s Commutation Act in 1784 only intensified the opposition.

One particularly caustic piece, briefly mentioned in the earlier discussion on legislative changes, was written in the format of sermon. The address, \textit{A Sermon on the Window Tax}, is directed at Charles Morgan Esq., a Member of Parliament for the county of Brecon and at first appears to support the Window Tax. However, this tract is no letter of praise. The author satirizes the Window Tax by defending its existence and consequences, employing biblical allusions and purposefully unconvincing rhetoric. In his attack on the duties the author directly compares the current situation to “one of the ten plagues of Egypt——such a darkness as the light of a candle could not penetrate! for, when Moses stretched forth his hand toward heaven, there was a thick darkness, more than the damp darkness of a vault, unopened for half a century!”\textsuperscript{59} Tongue-in-cheek, he asserts that the literal “darkness” resulting from stopped up windows much less damaging than references to darkness in the Bible and we should therefore be thankful. The writer goes on to argue that it is “political Darkness” that we should condemn rather than “our first ten Window Laws,” ironically aligning the Window Laws with the Ten Commandments.\textsuperscript{60} He furthers his case with increasingly foolish lines of reasoning. He attempts to convince his reader that the duties will be a boon to the people of England, for not only will they remove “a parcel of poor, beggardly rascals of Glass Manufactures” from society, but with the blocking up of windows, Englishmen will achieve improved eyesight as they become used to the lack of light.\textsuperscript{61} The sermon attempts to highlight the problems with assessment and collection by proposing that superior to the Window Tax would be a duty on heads, tongues or even dogs, the rational that it would be unlikely people would go so far as to cut off their heads, tongues or kill their dogs to avoid the taxes.\textsuperscript{62} Equally absurd, but brilliant from a satirical point of view, the polemicist suggests that the tax should be amended to prohibit windows all together, seeing that “half the crimes of House-Breaking have been caused by Windows [and] the open air is also the more healthy.”\textsuperscript{63}

In 1790, after the inspectors had returned with disappointing results, the final step in creating a professional bureaucratic tax administration was
taken. Wanting surveyors were retired and given pensions; in their place, new, professional surveyors were hired by the treasury, each given three months of training and compensation above and beyond the older pay scales. Upward mobility became possible in the new administrative structure and surveyors were for the first time given real accountability in that they were to be responsible for making up the difference in revenues when subordinate assessors and collectors did not assemble enough in taxes to cover the original assessments. Finally, William Pitt and his colleagues had completed the construction of a full-time professional tax agency and an entire new class of collectors. The reforms were so successful in elevating revenue and maintaining consistent yield over time that even after assessed taxes were no longer producing sufficient revenue to run parliamentary initiatives, this administrative system created by William Pitt and subordinates had been molded into a successful model for the collection of other direct taxes and was ultimately used to collect the new income tax. Without the problems of the Window Tax putting pressure on parliament to resolve administrative deficiencies and develop an innovative professional bureaucracy to manage the tax, it may have taken much longer for England to develop a successful organization to manage collection of direct taxes and would most definitely have hindered the success of the income tax in nineteenth century Britain.

Architectural Influences of the Window Tax

In contrast to well-noted effects on British tax administration, the Window Duty’s influence on architecture has been relatively unexplored by historians and architectural historians alike. Consequences of the tax went beyond residential building styles in eighteenth and nineteenth century Britain to impact contemporary design; thus, an intrigue into architectural developments which transpired in response to the Window Tax may hold more interest for the modern reader. Transformations in housing design occurred neither simultaneously nor in reaction to a single concern, the earliest of which addressed the heavy tax burden itself and unfortunately for residents, generally resulted in inferior dwelling conditions. Other adjustments took advantage of prevailing exemptions in the tax code. Meanwhile, English elites who could easily afford the heavy tax assessments built increasingly opulent homes, and by elevating their own living standards contributed to a growing disparity in housing conditions between the wealthy and working-class. Toward the middle of the nineteenth century, a select number of concerned architects attempted to reverse this trend by building low-income housing projects designed to both improve comfort for residents and minimize assessments.

Some of the first consequences of the Window Tax for British architecture emerged out of the inability or unwillingness, on the part of low-income homeowners and the landlords of large tenement buildings, to pay the assessments. In many cases the intolerability of the tax was due to the commissioners’ extremely broad definition of what types of openings could be subject to the tax and the tendency of certain assessors to charge homeowners for anything that even slightly resembled a window. As explained
in Stephen Dowell’s book on taxation, a “Window,” according to dictionaries in print at the time, “was derived from wind-door, and signified any ‘aperture in a building by which light and air are intromitted.’” This derivation and the special rules in the taxing Act seemed to justify the assessor in including in his assessment almost every hole in the wall; and the taxpayer would incur additional liability even by taking out a brick. . . . In all cases they allowed a very wide and comprehensive significance to the term window. They decided, for instance, that a hole made for additional ventilation was a window within the meaning of the Act.”

In an extreme case, “a Mr. Williams, who, under advice from a distinguished sanitary reformer, placed in the wall of his house four perforated zinc plates, with the object of ventilating his pantry, being surcharged by the assessor and, appealing to the judges, was held to have, in effect, opened four additional windows.” The case of Mr. Williams may represent the extraordinary, but was by no means an isolated instance of liberal interpretation and enforcement of the tax code, which both increased the heavy cost to taxpayers and ultimately affected building design.

Due to increasingly burdensome assessments and for fear of being assessed for every aperture through which air could pass, regardless of size or function, homeowners were quick to stop up windows and vents. Just as frequently, builders of new middle-to-lower class dwellings severely reduced the standard number of openings to lessen the window duty’s impact on dwellers. Assessments from 1766 demonstrate the extent to which the stopping up of lights was “a universal practice. . . . In 1766 when the tax was extended to houses with seven windows and upwards, the number of houses in England and Wales having exactly seven windows was reduced by nearly two-thirds.” In fact, if one examines data on the number of windows in homes from just one year earlier in 1765, it becomes obvious that people were extremely sensitive to the laws in place at the time. Built into the 1761 tax code, which was still in effect in 1765 were major rate increases for houses with eight windows or higher, ten windows or higher, twelve windows or higher, fifteen windows or higher, and twenty windows or higher. Not surprisingly, an unusually large number of homes had seven windows exactly, nine windows exactly, eleven windows exactly, fourteen windows exactly, and nineteen windows exactly, clearly modified or designed by homeowners to fall just under the rate increases. Even when the tax was extended to houses with six windows in 1798, “in spite of the increase in building and population, the number of chargeable houses was less in 1800 than it had been in 1781, 1759 or 1750. . . . Thus the law had done little to improve housing conditions and something to worsen them.”

The Window Tax had similar consequences for larger tenements and apartment buildings, and “the existence in some of the British cities of large tenement houses with almost no windows or ventilation is ascribable to the former tax on windows.” Because the tenements were charged as single residences under the tax code, Landlords were especially vulnerable to the heavy taxes. Although “houses not rated to church and poor on account of poverty were exempted, . . . this would not apply to London tenement houses, it being a constant preoccupation of London parish officers to prevent the landlords of such houses”—who tended to board up or limit the number of
windows in each apartment to the great frustration of their renters—“from evading the payment of taxes.”

As the exclusion of windows became commonplace in new dwellings, patterns quickly emerged in the designs of homes and tenements. In many modest, as well as some larger middle-class dwellings, second story windows—especially bedroom windows—were done away with entirely, “and in Edinburgh a whole row of houses had been built without a single window in the bedroom story of any house.” These openings were deemed least necessary presumably because residents spent less time in upper-story rooms, used primarily at night for sleeping when little light was available anyway. It was also realized that superfluous windows by hearths in the back of houses could be removed to save tax dollars with few consequences. Their elimination even allowed for some energy saving advantages, for by selectively omitting windows in this location, many builders were able “to cut down on heat-loss and the expense of glazing, [covering the opening with glass], where the extra light could be dispensed with.”

More creative builders and homeowners looked to lessen the impact of the Window Tax by simply taking advantage of exemptions in the tax code, rather than limiting the light and air afforded to them. These changes had substantial architectural implications, though mostly for working and upper-middle class homeowners. As windows in pantries, dairies, and other trade-oriented rooms were considered excused from assessments, residents often hung or painted signs—some of which remain today—above certain casements, delineating exactly what type of room the window served so surveyors would not mistakenly include them in their assessments. As explained by Lucy Caffyn in her book *Workers’ Housing in West Yorkshire, 1750-1920*, “To prevent these windows being included by the assessors they were labeled of such, [and] the larder windows of two of the cottages in Main Street, Burley-in-Wharfedale, for example, have retained their sign ‘Dairy.’”

Many homeowners attempted to shirk the tax on other non commercial dwelling rooms as well, deliberately mislabeling or simply rearranging the premises to suggest a service, or business function, both of which were exempted by the tax code. All it took was “a bit of furniture moving and a bribe offered to the assessor [to] reduce an individual’s charge substantially.”

By the early 1740s, in addition to the discovery and removal of corrupt surveyors, many of these fraudulent schemes had come to light. Parliament reacted by putting pressure on surveyors to be stricter in their assessments. Officers were to include all windows in the primary dwelling house in assessments, for “if indeed trade or manufactures are carried on in any part of the Dwelling House, that [should] not exempt such part of the Dwelling House from Tax [as] such rooms might & probably would be applied also to Domestic uses.” These changes, which hurt both the fraudulent as well as legitimate commercial interests, were met with opposition from homeowners and polemicists alike. Matthew Decker, a writer of the eighteenth century, emphasized the inequality created by these new actions. He indicated that “Mechanics’ workhouses, inns, lodging houses, etc. might
have as many windows as a nobleman’s seat, and the possessors [pay] equal sums upon unequal fortunes. ‘The idle may shut out the light the industrious can’t live without, the former favor and the latter tax themselves, for what? for working.’ With homeowners unable to gain exemption for work premises located within or attached to their primary dwelling, it became “usual to erect out-houses, wholly separate and disjointed from the Dwelling House, for Work-Shops and Warehouses; so that being kept distant, and wholly employed for Trade, they might not be subject to this Tax.” Although building work premises apart from one’s dwelling certainly didn’t guarantee their function was solely related to business, this architectural innovation was generally effective in removing some of the ambiguity involved with assessment. As many people performed work from their home, outhouses became such a common occurrence among homeowners that in 1747, when Parliament recast the tax, it was specifically “declared that every Kitchen, Scullery, Buttery, Pantry, Larder, Wash-house, Laundry, Bake house, Brew-house, and Lodging-Room, whether contiguous to, or disjointed from the Dwelling House, shall be charged with the Dwelling House,” marking an end to the effectiveness of this architectural solution to the tax burden.

**Other Architectural Consequences: Response of the Elite**

The poor and working-class were not the only ones to modify their homes in response to the Window Tax. Around the same time that the average homeowner was eliminating second story windows and building outhouses, the English gentry, much less inhibited by the Window Tax, were doing just the opposite, though less as a response to the tax than as a general assertion of status. These upper-crust elites employed a gratuitous use of windows when designing homes to distinguish themselves from rich Englishmen of non-gentry status and upper middle class homeowners who couldn’t afford such ostentation. The windows chosen to grace their façades were also “far more elaborate than in lesser men’s houses. Although mulioned and transomed windows had occurred in houses of yeoman status in the late sixteenth century, as at Dean Farm or Hargrove Farm, by the seventeenth century,” with the Window Tax in place, “they were confined to the houses of gentry.” This commonplace practice among the wealthy of including as many windows as possible in the walls of one’s home represented a shift in the architecture of affluence. In some majestic homes “windows were taken round projections such as porches or oriel, thus creating a glass-wall effect. This is a well-known characteristic of large houses everywhere in England, and Lancashire examples include Astley Hall near Chorley, and Gawthorpe. But the same thing also happened in a more limited way in a few medium and smaller gentry houses as at The Lodge and Worthstone Hall.”

A further impetus for the increase in windows in homes of the wealthy originated in another architectural trend that had begun as early as the latter part of the seventeenth century, before the imposition of the Window Tax. There was a decisive architectural shift in affluent dwelling design “towards a compact ground-floor plan, with the accompanying increase in
height...used to advantage to impress the world through the external appearance of houses. Almost all gentry houses were of two-and-a-half or three storeys, which meant three tiers of windows on the outside even where the upper ones only lit an attic.”

Despite the extra cost of building higher and adding additional windows, especially unnecessary ones that lit attic spaces, the English upper-crust were willing to take the monetary hit in order to assert their privileged status. In Shuttleworth Hall, a typical elite home, “everywhere the use of gables and the elaborate forms of fenestration indicate that the gentry considered it important to emphasise the fact that their houses had more stories than those of other men.”

With the Window Tax in full effect, this trend was only exaggerated further. In a majority of gentry homes in Lancashire, England, “three or four-storey houses with many gables, elaborate fenestration and moulded surrounds to windows and doorways made for imposing and decorative facades to the 17th-century gentry houses...almost certainly they were deliberately designed to remind visitors or passers-by of the success and position of their builders.”

As noted previously, attic windows were quite common in these homes and often used to create the appearance of a third or fourth story when only two and a half or three and a half existed. Distinguished homes like “Acornlee Hall, Emmot Hall, Hargrove Farm and Bank Hall all have third storey windows in the gables of the cross wings.” Clearly an ostentatious measure, most of these lit “only the roof space and [were] placed so close to the windows below and so high within the scope of the roof that even if they were open they can never have lit more than the meanest of attics.”

Some of the lesser gentry were ultimately forced to resign to the Window Tax and these superfluous attic windows were usually the first to be stopped up.

LIGHT AND VENTILATION: ARCHITECTURAL SOLUTIONS TO SUBSTANDARD LIVING CONDITIONS

By the early nineteenth century, after decades of stopped-up windows, concerns regarding the various health detriments caused by inadequate ventilation and light became increasingly serious. It had become evident that the gap in living conditions between the windowless poor and light laden wealthy was expanding rapidly. Architects as well as polemics now condemned the plight of the working-class, many of which could not afford to reside in better accommodations. In response to these outcries, a handful of adept individuals and institutions attempted to reverse the negative effects of the Window Tax on architecture and social inequity. The Metropolitan Association for Improving the Dwellings of the Industrious Classes was one such organization committed to ameliorating housing options for the lower classes. One of the main causes of such deteriorating conditions for the poor was the conflict of interests, which existed between landlords and their lower-income and working class tenants. As landlords were heavily burdened with the Window Tax, they had every incentive to block up as many windows as practical to save themselves from paying the tax. For this reason, many tenements were built with few windows and inadequate ventilation. Unfortunately, most working-class Brits, with limited
economic mobility and thus few choices about housing, opted to live close to their work and in whatever arrangement was affordable and available. Not only did these lower-income residents have to subsist in substandard conditions, but in many cases, landlords passed on the cost of the tax equally to their residents, further burdening them.95

In search of creative ideas to both improve housing for the poor and at the same time reduce the burdens of taxation on landlords and residents, in 1841—amid worsening conditions and increasing agitation against the tax—the Metropolitan Association brought on the well-respected architect Henry Roberts to aid in engineering a variety of public housing projects.96 Roberts strongly expressed his opinion that “The most humble abodes, whether in a town or in the country, in order to be healthy, must be dry and well ventilated; . . . To secure ventilation, there must be a free circulation of air; a sufficient number and size of openings, and adequate height of the rooms, which I should fix at not less than 7ft. 6in. to 8ft.; in town buildings I have allowed 9ft. from floor to floor.”97 In his book titled, The Dwellings of the Labouring Classes, Their Arrangement and Construction, Roberts provides examples of some of the miserable housing for poor-dwellers in existence at the time. He notes:

> In Glasgow, a dwelling-house of four stories, arranged to accommodate thirty-one families, has been built, with a benevolent view, by Mr. James Lumsden. The tenements are ranged on either side of a central passage, which communicates with the common staircase, and is lighted at the ends. Each tenement consists of one apartment, with a single window, two bed-closets, and a scullery, separated from the main compartment by partitions seven feet high. A water-closet, with a dust-shaft, is placed immediately within the entrance door, having no perceptible means for ventilation. Very questionable as this arrangement must be regarded in a sanitary point of view, it is chiefly referred to as a forcible illustration of the impediment offered by the window-tax to the proper construction of large piles of labourers’ dwellings on the ordinary plan of arrangement. In these tenements three windows should have been provided where there is one only.98

Dismayed with the lack of proper light and ventilation and associated health consequences, Roberts argued strongly against the virtues of a Window Tax, stating that “The policy of continuing a tax which so greatly conduces to augment the evils of an over-crowded dwelling, and at the same time presents a serious barrier to their improvement, by diminishing the fair return from such investments, can scarcely be matter for question.”99 Although proponents of the tax questioned the validity of health concerns, it was generally agreed upon in the health community that light and ventilation are vital for the wellbeing of residents; the Window Tax’s “disastrous consequence of inducing people to block up windows and reduce the admission of light and air to a minimum” had to be mitigated.100 Even more recent dis-
course on the unintended adverse side effects legislation can pose on health point to the Window Tax as an example with terrible consequences. 101

Roberts, acutely aware of the problem, was forced to be creative and implemented a number of important architectural innovations that promised to “provid[e] the labouring man with an increase of the comforts and conveniences of life, with full compensation to the capitalist” who would have developed the plan. 102 Two of Robert’s design changes in particular were most revolutionary and had powerful implications for affected residents. His first innovation was the use of a central staircase arrangement in larger tenements. By placing the stair centrally within the building lit by gas lamp, 103 as opposed to along an exterior wall lit by windows, 104 Roberts was able to save at least one window on every floor. The saving in taxes in this scheme was made available for either additional apartment windows or to offset the total tax burden on the residents. Also, since maintaining a gas lamp was less expensive than the aggregate tax savings, this lowered the cost of lighting the stairs. 105 Roberts describes the effects of his innovations on a recently completed building in his text:

At no great distance, a single pile of workmen’s houses,—for sixty-four families,—called ‘Morpeth Buildings,’ has been erected on the same general plan [as Roberts’ staircase arrangement], consisting of double houses, four stories high, with central staircase, giving access, on each landing, to two sets of apartments. These houses are not fire-proof, but enjoy the advantage of unobstructed light and air; they are near to the occupations of the tenants; are always full; and prove a great boon to the inmates, who willingly pay a rent of 2s. 6d. per week, with 3d. additional for gas-light. 106

In discussing the success of his innovation, Roberts mentions other similar tenements he and other architects of the Metropolitan Association designed, noting that the “dwellings have been constantly occupied since their completion, and the most gratifying evidence has been given of the change produced in the health and comfort of the tenants, by their improved and salubrious abodes.” 107 An even cleverer scheme of Roberts was his use of galleries in large tenements. The gallery, essentially an extended landing on each floor of a tenement building, provided access to individual apartments from the outdoors and under the law was actually considered a side street. These features qualified every flat within a larger tenement as an individual home according to interpretation of the Window Tax code at the time.

Since each apartment was likely to have less than the minimum number of openings charged by the tax, this arrangement eliminated the tax burden entirely on both the landlord and residents, and proved extremely effective in improving conditions. Family dwellings on Streatham Street are one such example of the gallery model invented by Roberts and implemented by a Mr. Moffet, another architect who worked for the Metropolitan Association:
Roberts’ earlier buildings were “organized on the principle of the enclosed staircase access system, which rendered [them] liable to the window tax and the house tax which later replaced it. Roberts subsequently avoided these taxes at Streatham Street with his open galleries, which were considered to be streets and the flats separate houses within the legal meaning of the act.”

Robert’s designs had a significant impact on the comfort of low-income dwellers in the nineteenth century and some of his buildings erected by the Metropolitan Association, as well as tenements influenced by Roberts’ designs, remain standing today.

The legacy of the Window Tax on architecture has been quite profound. There are many homes with bricked up casements or few windows in the first place that remain integral icons in British towns and cities. Out-houses with workshops and storerooms still stand, and gentry homes with excessive windows still dot the English countryside. Even concerns with ventilation and adequate light outlasted the duration of the Window Tax and inspired trends in late nineteenth century British architecture; ventilation became seen as so vital to residents’ wellbeing that laws were ultimately enacted to mandate a minimum number of windows in specific places and open space around each dwelling.

Once the Window Tax was finally repealed in 1851, and absorbed into the more general house tax, both the wealthy and the poor began to increase the number and size of windows in their homes. This represented the start of a long lasting legacy to bring the outdoors inside. By the late 1800s, “Interiors [had] changed too. The fashion for nooks, quaintness and cosy corners was over, replaced by an outdoor mood. Sunshine and the open air became something of a cult and it was considered essential to health for every room to have at least a little sunshine and the more it had, the better. Big windows of uniform size and shape now lit the rooms more brightly and evenly than before and, wherever it was practicable, French windows allowed people to step straight from the rooms into the garden, or on to a balcony, verandah, loggia, or sun porch.”

Peter Guillery, in his book on the Small house in eighteenth-century London wrote of the time, “it is to be expected that rising standards of comfort and amenity, whether in relation to heating or lighting, or to the spread of material possessions through all but the poorest groups, will have affected approaches to domestic interiors at all levels, vernacular and polite. Fewer rooms were left without fireplaces and windows tended to become bigger” throughout Britain.

**A Lasting Impact: The Modern Experience and Contemporary Significance**

The architectural evolutions inspired by the Window Tax not only altered the visage of urban and rural England but impacted later structural and aesthetic designs as well. Many architects looking to emulate British
buildings of the eighteenth and nineteenth centuries applied faux bricked up windows to the exterior walls of their designs to set the structure in an earlier time. Numerous cases of this modern imitation can be found in current architecture. One such example can be seen in a recently developed mixed-use shopping center in Columbus, Ohio, Easton Town Center. One of the buildings in the development was built with a pre-bricked up window to resemble an 18th century British town home.\textsuperscript{112}

Despite the familiar reference, the historical accuracy is questionable as the only stopped-up window is located on the first floor, whereas in most cases—as previously noted—windows were removed in upper stories. Other examples of stopped-up windows can be found in modern buildings, though not all have been included with the idea of creating an historical aura around the building. Architects have been known to include faux bricked-up windows in designs to maintain a sense of symmetry or decorate a bare wall. In addition, in cases in which windows cannot be placed in a certain location for structural or functional reasons, “stopped up” windows have been used to maintain aesthetics. A contemporary example of this practice is perhaps best found in a new townhouse development in Alexandria, VA.\textsuperscript{113} Because some residences are adjacent to a regional rail line and above ground metro tracks, in order to insulate residents against undesirable noise, many walls facing the tracks are being built without a single window.\textsuperscript{114} However to preserve aesthetics, fake windows that appear to have been filled with bricks have been constructed on the rear walls of the homes facing the train and metro tracks.

When the Window Tax was finally repealed and incorporated into the general Duty on Inhabited Houses in 1851, although the tax itself was no longer assessed, collected, or responsible for revenues to fund parliamentary initiatives, the effects of the Duty on Houses, Lights and Windows didn’t simply disappear along with the legislation. For centuries after the abolition of the window duties, the tax administration—which by the middle of the nineteenth century had matured into a sophisticated, centrally administered, full-time, professional organization—managed the direct income tax, a much more complicated and sensitive levy on wealth. Although many other taxes and excises came and went and influenced the British tax administration in the process, the Window Tax was the first to bring about changes of such scale and scope to the management of direct taxes and architectural design. Moreover, the tax’s legacy remains strong today as many of the dark, crowded, poorly ventilated tenements condemned by Roberts in the mid-nineteenth century still exist today, as do examples of old bricked up windows and modern replications.

Ironically, most of these windowless tenements and town homes have been transformed into upper class condominiums and luxury apartments with the signs of oppression long since removed. Nevertheless, deep within the walls and attic crawl spaces remains a story of incredible ingenuity on the part of Englishmen in asserting their English Liberties against Parliament and the Crown by exploiting loopholes in legislation to free themselves from the burdens of taxation.
A Tax on Light and Air

ENDNOTES


4 Officially termed the Duty on Houses, Lights and Windows, assessors were instructed to count any openings in the exterior walls of a dwelling as a porthole through which light could pass. Glazed windows, or windows with clear glass, were expensive; therefore, any openings, so long as they could allow the passage of light into an interior space, were included in assessments.; Dowell, *History of Taxation and Taxes*, 201-2.

5 Charles Weston, *To the Honourable House of Commons, a method humbly proposed, for raising as great a sum (by a more equal way) than the intended duty on windows ([London], 1695), 1.


9 Ibid., 191.

10 NRA T 1/434/123-1/434/124.


12 Abbreviations for English currency: l. = pound; s. = shilling; d. = penny`

13 Ibid., 195.

14 Ibid.

15 NRA T 1/434/123-1/434/124.

16 Ibid.

17 In Dowell’s account, he writes “the fixed charge on all houses in England, . . . had been raised in 1766 from 2s. to 3s.” Dowell is mistaken however, as the Duty was actually raised from 2s. to 3s. in 1758. Documentation of this change can be found in NRA T 1/434/123-1/434/124; Sir Frederick Morton Eden, *An Estimate of the number of inhabitants in Great Britain and Ireland* (London: Piccadilly, 1800), 22.


20 The *gabelle* was a despised French tax on salt.


Ward, The Administration, 525.

Ward, History of Taxation, 194.

Ibid., 194.

Ward, The Administration, 523.

Ibid., 525.

Great Britain, Office for Taxes. *Cases of appellants relating to the duties on houses, windows, or lights, with the opinion of the judges thereon* ([London], 1786), 3-6. http://proxy.library.upenn.edu:3065/servlet/ECCO

Ward, The Administration 525.

Ibid., 525-6.

Ward, The Administration, 527; Great Britain, Cases, 14, 22, 37.


Dowell, History of Taxation, 195.


Caffyn, Workers’ Housing, 52-3.

Ward, The Administration, 526.

Ibid., 526.


Ibid., 528.

Ward, The Administration, 524; N.R.A.T 1/434/122.

Journals of the House of Commons. From October the 17th, 1745, In the Nineteenth Year of the Reign of King George the Second, to November the 22nd, 1750, In the Twenty-fourth Year of the Reign of King George the second, vol. 25 (London: House of Commons, 1803), 560.

Journals of the House of Commons 1745-1750, 560.

Ibid., 561.

Ward, The Administration, 529.

Dowell, History of Taxation, 196.

Ward, The Administration, 529.

Ibid., 529.

Ibid.

Ibid., 529-30.

Ibid., 530.
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55 NRA T 1/434/122; see table 1.
56 Ward, The Administration, 531.
57 Ibid., 532.
58 Ibid.; see table 1.
60 A Sermon on the Window Tax, 15.
61 Ibid., 24-6
62 Ibid., 27.
63 Ibid., 28.
65 Dowell, History of Taxation, 201-2.
66 Ibid., 202.
67 Ibid., 203.
69 George, London Life, 77.
71 George, London Life, 77; See fig. 1.
72 Dowell, History of Taxation, 203.
73 Caffyn, Worker’s Housing, 52; Dowell, History of Taxation, 203.
74 Caffyn, Worker’s Housing, 52.
75 Ibid., 52-3.
76 Ibid., 52-3.
77 Gibson, Land and Window Tax Assessments, 14.
78 Ibid., 14.
79 There can be no doubt, 1.
81 Ibid., 1.
82 Ibid.
83 Ibid.
85 Ibid., 46-9.
86 Ibid.
87 Ibid.
88 Ibid., 44.
89 Ibid., 49.
90 Ibid., 47; See fig. 3.
91 Ibid., 78.
92 Ibid.

Roberts, *Dwellings of the Labouring Classes*, 16-17.

Ibid., 15.


Roberts, *Dwellings of the Labouring Classes*, 4-5.

Ibid., 16-7.

Ibid., 17.

*A Sermon on the Window tax*, 8;


See fig. 6.

See fig. 7.


Ibid.

Ibid., 15.


“*The Neighborhoods of EYA*”; See fig. 13.