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Abstract
This article provides transcriptions of two manuscripts of William Petty (1623–1687), together with a substantial editorial apparatus. The first manuscript analyses the feasibility of doubling the population of England plus Ireland and Scotland in 25 years; the second considers how a uniform taxation might be imposed upon consumption. Elements of particular interest in the manuscripts are: an empirical estimation of economic surplus for England, Ireland and Scotland taken together; the conceptualization of value-added taxation as an instrument for taxing consumption; and an argument for limits to rational quantification.

Keywords: economic surplus, population growth, value-added taxation, quantification

JEL Codes: B11

William Petty (1623–1687) is a significant figure in seventeenth-century English intellectual history for a variety of reasons. First and foremost an enthusiastic and committed devotee of the Francis Bacon inspired English scientific revolution of that century, with Thomas Hobbes also an early mentor, he was Professor of Anatomy at Oxford, surveyor of Ireland and a founding member of The Royal Society and its Council. But what most singles him out as a 17th-century thinker is his systematic pursuit of economic subjects, with a collection of published economic works large by the standards of 17th-century economic literature. He is arguably the most important single contributor in that century to the formation of a distinct economic science. Be that as it may, Petty's significance for the formation of political economy in the century or so from the mid-17th is widely appreciated – perhaps most notably, by Karl Marx characterizing him as 'the father of Political Economy' (Marx 1967 [1867]: 272–3). Petty's *Treatise of Taxes*, published, anonymously about the time of his thirty-ninth birthday, is his most important work, certainly in terms of contributions at the conceptual and theoretical level (Petty 1899 [1662]). His project of a 'political arithmetic' took shape in the course of the subsequent decade, his first essay in political arithmetic being at least begun in 1671, although only published posthumously.[1]

By the time of his death in December 1687 Petty had also produced and accumulated a very large and diverse collection of manuscript writings – some 10,000 pages when combined with other Petty-related manuscripts subsequently incorporated into the collection – a remarkable archive that remained in the possession of his descendants, the Petty-Fitzmaurice (Lansdowne) family, until 1993, when they were purchased by The British Library (see British Library 2001). In the course of the late 1990s I undertook a detailed investigation of the entire contents of the archive (Aspromourgos 2001) and subsequently published an article focussed on the significance of two manuscripts in particular (Aspromourgos 2000).[2] Those two manuscripts are published here in full. (For the principles governing our transcription of the documents, see the Appendix below.) The first is a document of a little over 2,000 words, with no distinct title and in the hand of an amanuensis, entitled here 'Doubling the People' (hereafter, 'Doubling' for short). It is located at British Library Additional Manuscripts 72866 (item 30), folios 138recto–142verso. The document is undated but tentatively attributed to 1687 by the BL *Catalogue*.[3] The second manuscript is approximately 3,200 words, in Petty's own hand, and entitled 'How all persons and Things may contribute proporti[onally] to their Government and defence' (BL Add. MSS 72865, item 2, ff. 6r–12r; hereafter, 'Proportion' for

[1] Petty (1899 [1690]); Hull (1899: 235–6). See Aspromourgos (1996: 41–3) and (2001: 79–83) for references to political arithmetic in Petty's correspondence in the early 1670s.

[2] Aspromourgos (2011) is a more concise version of the same material. Aspromourgos (2005) is a related investigation, but based almost entirely on Petty manuscripts separate from the British Library Petty Papers.

[3] There are three other Petty manuscripts that have a particularly close connection to it: a) 'Of Doubling the people & Encreasing the Commonwealth', BL Add. MSS 72866 (item 31), ff. 144–5, evidently preparatory to 'Doubling' and also tentatively dated 1687 by the BL *Catalogue*; b) 'The State of the Case', BL Add. MSS 72854 (item 5), ff. 96–7, from 1687, published in Lansdowne (1927, vol. 2: 55–7); c) 'Magnalia Regni', BL Add. MSS 72866 (item 27), ff. 118–29, also 1687 and also published in Lansdowne (1927, vol. 1: 264–76), which includes a section on 'Doubling the People in 25 Yeares' (at Lansdowne's page 267), briefly stating some similar elements to those of 'Doubling', sections 1–3.

short). It is in the form of a dialogue between 'A' and 'B', and like the first, is undated but tentatively placed in the 1660s by the BL *Catalogue*.[4]

The purpose of the first is to demonstrate that it is feasible and desirable to double the population of England plus Ireland and Scotland in 25 years. The purpose of the second is to determine an appropriate method for imposing taxation upon consumption. My 2000 article offers a substantial interpretation of the two documents. It suffices to indicate here three elements of the documents which appear to me of particular interest and significance.

1. **Calculating the social surplus.** In 'Doubling', Petty's first step towards demonstrating the feasibility of doubling the population is to seek to demonstrate the feasibility of the required birth rates. But more interesting is that he then seeks to show that so enlarging the population is *economically* viable insofar as it will be feasible for just a part of that larger population and associated workforce to suffice for producing the necessary consumption of the whole population – with the system producing a surplus output, and having a surplus of labour and at least sufficient if not surplus land (138v–140v).[5] The abstract theoretical production 'models' (our term) that Petty presented in the *Treatise of Taxes* were framed, effectively, in terms of homogeneous land, labour and necessary consumption – as is likewise true of his theoretical exercises in determining a land-labour parity (Aspromourgos 1996: 22–30, 49–51, 89–95). The treatment of production in 'Doubling' shows his appreciation of the heterogeneity involved in empirical specification of necessary input and surplus output and surplus activity. The abstract theoretical commentaries generally involve production by means of just direct labour and land alone[6] (plus sometimes seed corn as well); both of the manuscripts published here considerably incorporate intermediate commodity inputs. The manuscript published by Matsukawa (1977: 45–8) includes an empirical specification of necessary inputs and surplus outputs and activities that parallels the analysis here, but only applied to Ireland, not as detailed as the 'Doubling' exercise, and not involving population growth.[7]

[4] There is actually a typescript transcription of 'Proportion' by the sixth Marquis of Lansdowne, the editor of Lansdowne (1927; 1928), in the archive adjacent to the original manuscript (BL Add. MSS 72865 (item 2), ff. 15–23 – but not included by him in his 1927 collection. There are few instances where I have had reason to differ from his reading of the text – involving only a little more than a dozen words – none of them of substantive significance, with one minor possible exception (see note 36 below).

[5] Folio numbers are incorporated in the transcriptions. In the second paragraph of section 5 (141v) it is suggested that land will be fully utilized with the doubling of the population.

[6] Although for Petty, the direct labour input to production can be replaced by the necessary consumption of that labour (see note 33 below). Hence in relation to the *Treatise of Taxes* models I commented in Aspromourgos (1996: 27), 'the primary form of produced necessary input is necessary labour consumption'.

[7] Matsukawa (1977: 33–4) argues for dating that manuscript at late 1660s to early 1670s. It is now located at BL Add. MSS 72865, ff. 93–107. The British Library *Catalogue* places it at about 1675. Further to Petty's development of the concept of economic or social surplus, along with Aspromourgos (1996: 22–41, 44–6), see Aspromourgos (2000: 58–9; 2001: 50–53 with 84–5). Aspromourgos (2005) and the separate manuscripts considered there are of course highly relevant as well, and specifically to heterogeneous production with a surplus; all Petty's various formulations of production with a surplus, that involve definite numerical estimates or assumptions, are brought together at pages 12–14.

2. **Uniform taxation of consumption.** It is evident already in the *Treatise of Taxes* that Petty favours taxation of consumption as a general principle (Petty 1899 [1662]: 91 with 56; Aspromourgos 1996: 30–31, 69). 'Proportion' enters more deeply into the matter, particularly with respect to the question of how best to implement the principle in practice and in a manner that avoids double taxation. In the process of thinking through this problem Petty arrives at taxation of value-added as a solution (11r, beginning 'What you say …'), thereby formulating a policy instrument that would only receive systematic (re)conceptualization, and subsequently, very widespread application in actual economies, in the 20th century (Lindholm 1970: 1178–9; Aspromourgos 2000: 65–6). The systematic incorporation of intermediate goods in the specification of production processes, evident in 'Doubling', is more clearly expressed in 'Proportion' and involves more considerable detail with respect to intermediate processes. This is significant in itself, advancing conceptualization and analysis beyond the simple and contemporaneously common land-plus-labour-makes-commodities formula. At some points the analysis amounts to conceptualizing production as a sequence of dated direct and indirect inputs or processes, going back in (notional) time to unimproved primary natural resources (6r, last paragraph to 6v, first paragraph; 8v–9r, paragraph beginning 'We must divide …'; also further at 9r, to the sentence 'you … may wrap up all trades'; compare Petty 1899 [1691]: 110, 108 with 114, and Aspromourgos 2000: 64). And there is recognition that a particular kind of commodity can serve as both final consumption and intermediate good; although at least one of his four examples is not well chosen (10v and beginning 11v). What Petty does not quite achieve is consciously and explicitly conceptualizing intersectoral production relations in the strict sense of interdependence between different processes or activities – even if such intersectoral interdependence is implied, indeed, entailed.[8]

3. **Limits to quantification.** In the course of defending the practicality of proportionally taxing consumption expenditure, Petty presents an argument for limits to rational quantification. This is very interesting because, to the best of my knowledge, nothing resembling such an argument is to be found anywhere else in Petty's writings, and on the contrary, his political arithmetic project can encourage a perception that, if anything, his belief in and pursuit of quantification were excessive. The relevant passage of argument begins at folio 7r (from 'The use of leaving things …'), with appeal to 'opinion' (7r), 'experience and judgement' (7v), 'estimate and opinion' (7v) when application of 'number weight and measure' (7r) or 'exact … measure[ment]' (7v) reach their limit – including their *useful* limit (7r: 'the … labour of examining further exceed[ing] the loss of missing the truth'). And the argument culminates at

[8] Rather than merely intersectoral production relations, one may contemplate intersectoral production-and-consumption relations, keeping in mind that from Petty's standpoint labour consumption can be conceived of as a production input (see notes 6 and 33). Then the distinction between conceptualizing intermediate goods and conceptualizing intersectoral interdependence can be easily illustrated using commodities from Petty's commentary, as well as the sense in which interdependence can be entailed: corn as an input to bread makes corn an intermediate good; corn as an input to bread, combined with bread as an input to necessary labour consumption and labour as an input to corn production, makes corn production and bread production interdependent.

folio 8v, in relation to commodity prices that are 'compounded of many particulars … themselves not simple', since they 'vary according to many circumstances', so that therefore 'estimate … by those of greatest practice and experience must be made use of'. This may be compared with Petty's contrast between his quantitative determination of 'natural price[s]' and 'Political Price[s]' – because these conceptualized prices are due to 'permanent Causes' – and the contingencies governing actual prices:

> Forasmuch as almost all Commodities have their Substitutes or Succedanea, and that almost all uses may be answered several wayes; and for that novelty, surprize, example of Superiours, and opinion of unexaminable effects do adde or take away from the price of things, we must adde these contingent Causes to the permanent Causes abovementioned, in the judicious foresight and computation whereof lies the excellency of a Merchant. (Petty 1899 [1662]: 90).[9]

This in turn may be read as a prefiguration of the classical dichotomy between the determinants of natural prices and market prices.

It may also be noted in advance that there are a considerable number of arithmetical imprecisions and errors in 'Doubling'. Perhaps they can to some degree be explained by the way in which documents such as this were created. The use of amanuenses itself provides scope for error to enter. Here is a contemporaneous account of Petty's writing methods during his Irish activities in the 1650s:

> His way was to retire early to his lodgings, where his supper was only a handfull of raisins and a piece of bread. He would bid one of his clarks, who wrote a fair hand, go to sleep; and while he eat his raisins and walked about, he would dictate to the other clark, who was a ready man at short-hand. When this was fitted to his mind, the other was roused, and set to work, and he [Petty] went to bed, so that next morning all was ready. (Larcom 1851: v; original now at BL Add. MSS 21128, f. 143v)

It should also be kept in mind that this is a manuscript, not *necessarily* designed for circulation without further attention from Petty.[10] It might have been intended that the arithmetic would subsequently be checked and if necessary, improved or corrected. On the other hand, there is a perhaps revealing Petty comment in a 10 April 1675 letter to Robert Wood (probably concerning a manuscript of Petty's *Political Arithmetick*, 1899 [1690]):

> As for the Corrections [you have] sent Mee, I thank you, Many of the faults were not mine [suggesting an amanuensis], & Others are according to My usuall way of grose Draughts [that is, rough drafts] of new Conceptions. *Polis[h]ing is not my way*. (Aspromourgos 2001: 60, 61n; emphasis added; BL Add. MSS 72858, f. 211r).

[9] Compare also Petty's (1899 [1662]: 44) contrasting 'the foundation of equallizing and ballancing of values' (that foundation being labour input or cost of production) with 'the superstructures and practices hereupon', involving 'much variety, and intricacy'. For Petty's theory of natural and political prices see Aspromourgos (1996: 25–7). On Petty and mathematics, see also Aspromourgos (1999).

[10] See Aspromourgos (2001: 55–63) for an account of Petty's writing methods and self-understanding of his writing; his two- and three-step procedures for composing documents; and his circulation of manuscript writings.

In any case, from the standpoint of intellectual history, the arithmetical defects should not detract from the significance of the document's conceptualizations, particularly with respect to economic surplus in sections 2–3. However, the treatment of population growth in section 1 is certainly *conceptually* highly problematic as well.

Finally, there is also a particular kind of 'defectiveness', so to speak, in the 'Proportion' manuscript: Petty's handwriting! It can be very difficult to decipher. Further to this merely practical but very real problem see Aspromourgos (2001: 49, 57, 72–3). For the editorial resolution of the issue here see the Appendix.

[Doubling the People]

(1)

That the people may be doubled in 25 years.

1. The females being divided into 12 parts, 5 of the said 12 are girls under 18 years old, $^{4}/_{12}$ parts are teeming or prolific women of between 18 and 44 years old, the other $^{3}/_{12}$ parts are women of above 43 years old: so as the 6th part of the mass of mankind, are teeming women.
2. Of teeming women, it is found by observation that about ⅓ part or 33 per cent only are married, or at most not above 40 per cent.[11]
3. Married teeming women (notwithstanding the nursing of their children and the abortions) do bear a child one with another in 2½ years at most.
4. At London (which is the composition of all the people of England) there are 14 males for 13 females: And forasmuch as males are prolific 40 years, or from 18 to 58, and that females are prolific but 25 years, or from 18 to 44, there are in effect 560 males for 325 females, or 112 to 65. Wherefore, if there be in the King's European Dominions 9,700m[12] heads, the teeming women are 1,617m which will breed 647m children per annum: But out of 9,700m (after the rate of one in 30) there die 323m per annum and consequently there are born 324m per annum more than are buried.[13]

[11] The manuscript published in Lansdowne (1927, vol. 1: 264–76), mentioned earlier, is more expansive in relation to this factor, providing a commentary that takes its point of departure from the proposition that only 'between 30 & 40 of the teeming women are att present married, by reason the prolifick people are afraid they shall not be able to maintaine the Childrene they shall begett' (page 267). Other relevant manuscripts on marriage, procreation and children are also published in Lansdowne (1927, vol. 2: 45–58).

[12] The manuscript uses 'm.' and 'ml.' to denote thousands. They are replaced here with 'm' throughout.

[13] The ratio 40:25 is 1.6 whereas 560:325 and 112:65 generate 1.72; but in any case, neither of these ratios plays any part in the subsequent population growth calculation. The figure of 1,617m women is evidently based on half the population being female – half of four-twelfths of 9,700m – notwithstanding the 14:13 ratio of males to females given earlier. The 647m births per annum are 0.4 times 1,617m, based on the posited one child per woman every 2.5 years.

Now forasmuch as the new-born children may have children themselves within 16 years, we must multiply the annual increase 324m by 16, which makes 5,184m [**138r**] which being added to the original stock of 9,700m makes the total at 16 years end to be 14,884m.

Now if 9,700m do increase 324m per annum, then 14,884m will increase 495m per annum, which being multiplied by 9 (the remainder of 16 to 25) the product will be 4,455m which being added to the last mentioned 14,884m makes the total 19,339m or very near double to the original stock of 9,700m.[14]

(2)

That 72 millions of acres will feed the said 19,339m people
at the rate of 3 acres 3 quarters to each head. (vizt)

[1.] We suppose an acre to be divided into 16 parts and thereupon say, that $^{2}/_{16}$ parts of an acre is abundantly sufficient to find fruit, legumes, roots and eatable herbs to every head one with another, and consequently the $^{2}/_{16}$ parts of 19,339m heads, gives 2,418m acres for garden-stuff.

2. In the next place, we suppose that one quart of malt will give above 3 pints of good beer, and that 3 pints of such beer is sufficient for every man, woman and child at a medium, and consequently [**138v**] that 91 gallons of malt, or 80 gallons or ten bushels of barley, is sufficient for the drink of every head, and that ten bushels of barley will grow upon a quarter of an acre of land.

[14] The last two sentences of this section are very problematic. Based on *the initial stocks* of population and 'teeming' women, the net addition to the population in a year is 324m. This absolute number is then simply added to the population for each of the successive first 16 years. The rationale for this – 'new-born children may have children themselves within 16 years' – seems to be Petty's way of pointing out that as children grow into maturity, the number of reproducing women will be increasing, generating more births; but properly calculated, this should be compounding growth (and from 18 years old rather than 16, to be consistent with the earlier reference to 'between 18 and 44'). Then, at the year 16 point, the impact of the growth of the population on the number of teeming women *is* allowed for – 'if 9,700m do increase 324m per annum, then 14,884m will increase 495m per annum' – but once again, as with the first 16 years, this absolute number is then merely repeated every year for the remaining 9 years. Adding the same absolute number every year for 16 years – and then again, for the subsequent 9 years – contradicts the very principle upon which the initial increase of 324m, and the 495m at year 16, were determined, which was by taking *a proportion* (one-sixth) of the initial population, for determining the number of teeming women (together with a proportion of one-thirtieth of the population dying per annum).

There is a further problem here as well: from the numbered points 1–3 of this section, one-sixth is the proportion of total population who are teeming women; but only 33–40% of those are supposed as married, and it appears that these latter are the only women to whom child-bearing is attributed. Should it not therefore be only 33–40% of the one-sixth who are reproducing? The earlier cited manuscripts on marriage, procreation and children (note 11) point to Petty's ideas for minimizing such non-procreation. In effect, he would like *all* fertile women to procreate, married or otherwise, in the latter case, via couplings governed by 'a covenant' or 'short marriage' (Lansdowne 1927, vol. 2: 50–51; also 54–5) – and with a possibility to 'sell these children', although with a requirement 'that those who buy them adopt them' (Lansdowne 1927, vol. 2: 55). There is other evidence for Petty's willingness to contemplate sexual practices unorthodox by 17th-century English public standards (Aspromourgos 2001: 65–7).

3. We suppose that one pint of wheat will make a pound of bread, and that about six bushels of wheat will make a year's bread for every head, and that six bushels of wheat will grow upon a quarter of an acre of land.
4. We suppose that the 16th part of the number of the people, which is 1,209m, is a number of acres that will give hemp and flax for the whole people. And that the same number will afford beans, oats and fitches [that is, vetches] for all necessary horses [in the Table below, 'provender']. And that 4,836m acres will afford hay for the said horses, as also winter fodder for other cattle according to the following Table. (vizt)

For Bread and Drink	9,669m acres[15]
For Hay	4,835
For Hemp and Flax	1,209
For Pasture	52,660
For Garden-stuff	2,418
For Provender	1,209[16] [**139r**]

Forasmuch as one acre of pasture doth produce 64lb of flesh, and 2 acres 3 quarters doth produce 176 of flesh, or about half a pound of flesh per head. It follows, that 52,660m acres will produce near half a pound of flesh per diem, for every head of man, woman and child of 19,339m souls.[17] Which quantity of flesh, with the bread, drink and garden stuff abovementioned, as also with the milk, butter, cheese and eggs, fish and fowl, will be a sufficient food for all the said people. Moreover the wool and leather, hemp and flax, together with the skins of other animals, will afford clothing for the same. Moreover, the tallow proceeding from the cattle will afford candles and soap. The bowels of the Earth will afford metals. The hedgerows and void spaces will afford timber and coals for iron, and the superfluities of the above particulars will purchase foreign commodities as may be more expressly set down in all their respective particulars.

(3)

[15] For 'drink' (beer), the preceding numbered element 2 entails a requirement of approximately 4,835 acres, as follows: 1 quart of malt generates the required beer consumption (implicitly, per day) of 3 pints per person; so that 91 gallons of malt (implicitly, per annum), being 364 quarts, suffices per person per year; this consumption per person per annum requires 10 bushels of barley which in turn requires a quarter acre of land for cultivation – implying, for the doubled population of 19,339m people, approximately 4,835 acres. The same calculation – one quarter of an acre times population – applies to the land requirements for bread production in the preceding numbered element 3; so that the sum of the two amounts is approximately 9,670 acres.

[16] As indicated in note 15, the first row of the Table accounts for the calculations in the preceding numbered elements 2 and 3. The second row accounts for the calculation in the third sentence of element 4 (albeit with a slight discrepancy in the number); and the third and sixth rows, for the calculations in the first and second sentences, respectively. The fifth row accounts for the preceding element 1. In the manuscript, but omitted here, following the 'Hay' row there is a repetition of a row 'For Bread and Drink', but without a number of acres included. The calculations justifying the fourth row are provided in the following paragraph.

[17] The 52,660m acres times 64lb of flesh per acre is 3,370,240m. This per annum output divided by 365 equals approximately 9,234m pounds of aggregate flesh output per day; divided by the population of 19,339m gives approximately 0.48lb of flesh per person per day.

That about ⅔ of all the said people working >upon< necessary business not above 12 hours per diem will sufficiently maintain the said increased number of 19,339m. vizt [**139v**]

[1.] The 2,418m acres of gardenage will be managed by 1,209m gardeners.

2. The 4,836m acres of meadow by 483m men. The 1,209m acres for hemp and flax, with the 1,209m of horse-provender and 9,669m acres for corn, in all 12,087m acres of tillage, by 2,416m husbandmen, and the 52,660m acres of pasture by 2,633m herdsmen and dairy men, according to the following Table. vizt

The 2,418m acres of Gardenage by	1,209m men
The 12,087 acres for Hemp, Flax and Corn, by	2,417
The 4,836 acres of Meadow by	483
The 52,660 acres of Pasture by	2,633
	6,742 husbandmen
The Seamen and Fishermen are by good estimate	28
	6,770[18]

[1.] Having thus estimated the number of husbandmen, it seems hard, or at least troublesome, to guess the number of necessary tradesmen, meaning by necessary tradesmen, such as work on wool, hemp and flax, hides and skins, as also metals and timber of all sorts.

2. Such tradesmen are also necessary, as work woollen and linen cloth, leather and iron into several utensils, garments, furniture for horse and man etc. [**140r**]

By the books of the families and hearths of England,[19] ⅓ of the people do live in cities and towns, which for the present we suppose to be all tradesmen necessary and ornamental. And of those that live without the towns, we will suppose ¼ to be also tradesmen: By which estimate, the number of tradesmen of all sorts are about equal to the number of husbandmen,[20] and consequently the number of all working hands is 13,540m – of which 540m may very well be trades of ornament and pleasure, and the remaining 5,800m may be such as live upon their estates, as also divines, physicians, lawyers, officers, soldiers, impotents, beggars, prisoners, and in brief, such as do little corporal labour. Now the greater

[18] The 'Corn' of the second row here aligns with 'Bread and Drink' in the previous Table. The slight discrepancy in the number of workers, between the second row and the preceding paragraph, is in the manuscript. The 'Meadow' of the third row aligns with 'Hay' in the previous Table.

[19] Evidently a reference to the records of the hearth tax assessments, from 1662 in England.

[20] The numbers here for the distribution of population between, for short, town and country (our terms), and the proportions of tradesmen in each population generates 9,670m tradesmen – one-third of 19,339m plus a quarter of two-thirds of 19,339m – not 6,770m. One could conjecture an error, on the part of either Petty or his amanuensis, in one or other of the parameters of the calculation – the ratio between town and country populations (1:2) or the proportions of tradesmen in each population (1, ¼) – correction of which would generate the result in the manuscript. But considering the range of possible alternative values for these parameters, there seem to be no reasonable values that would generate 6,770 tradesmen *and* could be regarded as a plausible accidental misspecification by Petty or his amanuensis. It is also not clear how non-working children (and perhaps women) are to be reconciled with these numbers.

the proportion is of these otiosi[21] and freemen are[22] in comparison of them that work from morning till night, the better the country and government is. For some countries are so hard and barren that 19 parts of 20 are forced to work hard and fair hard.

(4)

That a child of one year old is worth 4lb and the same at 20 years old is worth 140lb, and all the people at a medium are worth 70lb per head, as hath been elsewhere shown,[23] being the medium between 000 and 140.

The value of such a child is the charge of its mother's lying-in, which for 28 days may be 28sh[illings]. And the charge of a [**140v**] year's nursing, which at 12d [that is, pence] per week, may be 52sh; in all 4lb.

If a child of one year be worth 4lb, the same at ten years old may be worth 24lb 5sh; vizt 4lb principal, 2lb 5sh the interest of 4lb for 9 years, and 18lb keeping at 40sh per annum for 9 years, in all 24lb 5sh.

A child of ten years old well-bred may till he be 15 years old earn 4d per diem, or 104sh per annum,[24] out of which deducting 29sh for the interest of 24lb 5sh the remainder will be 3lb 15sh for the victuals and clothes of the child.[25]

The same child of 15 years old, may till 20 earn 12d per diem or 15lb per annum: But 5 years interest of the said 24lb 5sh, which is 7lb 10sh, and the principal itself, makes 32lb 10sh. The 5th part whereof is 6lb 2sh per annum, which being paid for the 5 years between 15 and 20, the remainder will be 8lb 18sh per annum for the maintenance of the youth, which will be absolutely free at 20 years old, having paid for his keeping all that while with the interest of the same.[26]

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[21] The *Oxford English Dictionary* does not recognize this word. The relevant senses of the Latin term are idle, unoccupied, at leisure. *Otiosity* is the oldest variant in English reported by the *OED*, from 1483, conveying the same senses – as likewise *otiose*, recognized by the *OED* only from 1795.

[22] This (obviously inadvertent) superfluous verb is in the manuscript.

[23] This is a concept of valuing population, and labour in particular, as a sort of capital, that Petty pursues quite frequently in his writings. For a more detailed account and critical assessment of the concept, see Aspromourgos (1996: 94–5; 2000: 60–62). In the other extant versions of the idea it generally involves capitalizing an annual flow of wage income as if it were, in effect, earned in perpetuity, at some given rate of return, and treating the resulting valuation as the value of the population or workforce, analogous to the valuation of land by capitalizing rent. The formulation here is quite different from most of those other extant versions, albeit – and one can be cynical about this – arriving at the same or a similar value as is generally arrived at in the other formulations (£70). In particular, this formulation incorporates the cost, and interest on the cost, of raising a new-born infant to a working age of ten years old and capitalizes only the person's income net of expenditure, rather than capitalizing the total income. The reason, left unstated, that this value-of-the-people formulation is included in the manuscript is that Petty regarded it as an argument bolstering the desirability of population growth.

[24] Evidently calculated as 4d times 6 days times 52 weeks.

[25] In the previous sentence, on the 4lb principal the 2lb, 5sh – evidently calculated as simple rather than compound interest – is the total for nine years, implying 5sh interest per year and an annual simple interest rate of 6.25 per cent. In this sentence, the 29sh is interest per annum, implying an annual simple interest rate of 5.98 per cent.

[26] Unlike the parallel calculation in the previous paragraph, the 12d per diem here, times 6 days, generates the supposed 15lb over a period of 50 weeks not 52 weeks. The posited 7lb, 10sh interest implies an annual simple

At 20 years old, the same person (having been bred accordingly) may earn 10sh per week or 26lb per annum and live upon 12lb with an overplus of 14lb which is worth ten years purchase in a person but of 20 years old, or 140lb as was propounded.[27] [**141r**]

(5)

That doubling the people doth quadruple the value of the lands. (vizt)

It is manifest that if all England had but one inhabitant, the rent of the whole territory could be but the overplus of what >that< one man raised above what he spendeth.

Now if there were 2 men, the rent would be double; if 3 men, triple: and so on to 12 millions, which is the utmost number that England is able to maintain, as 4 millions may be for Ireland and 3 millions for Scotland, making in all 19 millions.[28]

As for the number of years purchase, it dependeth also upon the thinner or thicker peopling of the territory; for if the lands of England be able to support 12 millions of people and there be but one to be inhabited: Then 'tis 12 millions to one, whether the owner of small spots shall have any rent or no, or that any use shall be made of his lands. But if the inhabitants will be so many as a territory will feed, then there is a moral certainty that the owner shall have always rent for his land,[29] and that land shall be worth a lease of 12 millions of lives, that is to say, of as many years (perhaps a 100) as the said 12 millions shall live. And such a lease being rated according to the common estimation of the use or interest of money, [**141v**] is the intrinsic value of the inheritance without the consideration of more base or more noble tenure.

The number of years purchase doth depend also upon the steadiness of the government and on the country's not being liable to civil wars; for if there be a doubt which half or party of the people shall enjoy the whole land, it seems that the number of years purchase must be diminished accordingly, as in Ireland is visible, where lands were not worth 12 years purchase, when in Scotland (a worser country) they were worth 24.

Another cause of the number of years purchase is the clearness of the laws; the uprightness of judges and the good consciences of witnesses. For if all or either of those be vicious, the certainty of enjoying lands will be accordingly, and the number of years purchase will be according to the same.

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interest rate of 6.19 per cent; with the 24lb, 5sh principal this sums to 31lb, 15sh not 32lb, 10sh – and 6lb, 2sh is a fifth of neither of these. The 6lb, 2sh deducted from 15lb annual earnings does leave 8lb, 18sh.

[27] The concept of years-purchase was a way of quoting land values: the ratio of the money price of land to its annual money rent and hence, the reciprocal of the annual yield when the rent is construed as a perpetual income. Petty (1899: 564) also uses an income-net-of-expenditure figure for determining a capitalized value of labour and with exactly the same numbers as here: 26, 12, 14, 10; and then also appealing to the mean of 0 and 140.

[28] Petty (1899 [1690]: 286), written in the 1670s, has a very similar formulation to the first two paragraphs here.

[29] The remainder of this paragraph is very obscure.

A notorious instance of these 2 points hath been lately in Ireland, where Anno 1653 lands were worth 7d½ the acre (one with another) and 2 years purchase, vizt 15d per acre or $^1/_{24}$ part of 31sh debentures.[30] [**142r**]

Sometime after, the rent rise to triple, or to 22d½ per acre. It is well-known that the lands then yielded 6 years purchase: and afterwards when the lands rise to 3sh 9d per acre, the number of years purchase was 12.

Wherefore the addition of the people doth not only increase the rent in proportion to the respect of numbers, but in proportion to the squares of such numbers – as for example, if the inhabitants of any country be 3 millions and shall be increased to 4, the value of the land shall not only increase from 3 to 4, but from 3 times 3, which is 9, to 4 times 4, which is 16, which was the thing to be proved: And the same is by experience visible in Holland and other peopled countries.[31] [**142v**]

How all persons and Things may contribute proporti[onally][32] to their Government and defence

The wealth of a nation is, 1^o the territory thereof, which is the mother or matrix, ~~and~~ >2^o< the daily labour of the people which is as the father and seed of wealth and 3^o what hath been already gotten out of the lands of the nation by the hands of the people, whereof part is fixed or ['incorporated'?] with the lands, ~~the which together with the lands is called real estate,~~ and part, moveable ~~which is called personal estate~~. I might add a fourth which is money, which although >it is< as a metal useful in many ways is of the latter sort, but as it is a token or bond

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[30] Here, 7½d is the rent per acre and the land price at two years-purchase is 15d, a 50 per cent yield in perpetuity. One-twenty-fourth of 31sh is 15.5d – close enough to 15d, given the imperfect arithmetic of the manuscript. Hence the 31sh being compared to the land price must be referencing the price of debentures (not the income stream). This suggests that what is implicit in the comparison is that 31sh of debentures are regarded as yielding the same or similar 7½d per annum, which, if a perpetual income stream, would entail a 2 per cent yield, a huge imputed risk differential between the two assets.

[31] Where the text here refers to '*rent* in proportion', it is the land price that must be intended: in the previous paragraph rents triple from 7½d to 22½d (and then double, from 22½d to 3sh 9d) and years-purchase triple from 2 to 6 (and then double to 12); so that the land price would rise by 3^2 (and then 2^2). This is an instance of what Petty elsewhere calls 'duplicate proportion' (Petty 1674). On the suppositions that the years-purchase value of land (y) and annual money rent per unit of land (R) are both proportional to population (N),

$$y = P/R = k_1N$$
$$R = k_2N$$
$$P = yR = k_1k_2N^2$$

where P is the money price per unit of land and k_1, k_2 are positive parameters. If N increases from 3 to 4, rent increases from $3k_2$ to $4k_2$ and the price of land increases from $9k_1k_2$ to $16k_1k_2$. For a fuller consideration of this issue in the context of Petty's wider thought on valuation of land and labour, see Aspromourgos (1996: 89–95) and particularly note 3 at page 92.

[32] This word runs up into the right margin of the page.

seems of a more ambiguous nature and scarce a real thing, because in many cases a bill or bond ~~nay a~~ made of paper nay a promise of mere words will beget the same effect.

Wherefore our design is how to cut off any aliquot part assigned of the whole >annual< proceed of all the lands labour and stock and money also of any nation or state of people, without ~~double~~ charging any of them more than once in the same year, and without taking of a greater or lesser part or proportion of one of the said 3 or 4 species than >from< of the others.[33]

Our Wealth is our store of useful things perfectly and thoroughly ripened and fitted for the immediate use of men's necessity ornament pleasure defence etc. not excluding the remote materials of the same. Wherefore we will call the former, goods, the other, materials, though either name may be given to either. For we aim to take the said aliquot part rather of goods than materials, desiring not to hinder the progress of >unripe< materials into perfect and elaborate goods. [**6r**]

As for example. The earth or land is the material of grass, grass of the sheep, the sheep of wool, wool of cloth, >and< cloth of a garment. Of all which I call only the garment goods, because, neither the earth grass sheep wool nor cloth was actually good unto man [before] a garment was made wherewith to defend from what might interrupt his ease, ['quiet'?] and life. The same may be said of earth, leguminous plants, corn and bread, the last only of all which I call goods for the same reason. Now a garment is the effect of land labour stock and money compounded and incorporated all together, so as the question is: In order to take the aliquot part of ~~the garment we shall~~ land stock labour and money as we first propounded, we should stay to take it of the >entire< garment resolved ['into'?] and equated with divisible money, or take it successively of the land labour stock etc. at the several points and stations whereby ~~earth~~ the most general and remote matter earth passeth into a garment, or bread etc.

[A.] Now to resolve this question let's try both ways. And first let's take the aliquot part of the garment.

B. If you take of or cut away part of the garment, the whole is destroyed, and so the part taken and the parts left become all of none or lesser use.

[33] It may be wondered how Petty would reconcile uniform taxation of all consumption with at least a substantial proportion of wage-earners being at subsistence consumption, as he supposes elsewhere in his economic writings (for example, Petty 1899 [1662]: 30–31; 1899 [1690]: 275; Aspromourgos 1996: 23, 201 note 6). These references themselves point to 'subsistence' having a somewhat elastic character for Petty, so providing scope for taxation. One further possible resolution is suggested in the manuscript published by Matsukawa (1977: 41):

> there is a great Shynesse of taxing y^e^ poore. Whereas I think That [they] ought to bee proportionally taxed as well as y^e^ richest. For y^e^ poorest man in y^e^ world hath 300 dayes of y^e^ 365 to Work in. Why should not hee Work as many dayes for y^e^ King, as a man of 360^£^ p[er] an[num] payeth of pounds to y^e^ King.

A. In this case make an equation between the garment and money, and then let him that keepeth ~~the greater~~ >most< parts of the garment give for those he is to part with the equivalent or par in money.

B. If your design is to [‘expend’?] a tenth part, then if 10 equal garments be made you may take one of them in specie.

[A.] The same [**6v**] garment or house is of greater value to him who appointed it to be made, than to him upon [whom] the use of the same is forced. Wherefore one of the 10 equal and like garments is not, as to common use, the full $^1/_{10}$ part of the value of all the 10 garment[s], and so in taking but one, we take not a full tenth ~~which~~ >as< was propounded. And therefore we must even in this case also fly to our aforementioned equation in money.

B. How shall the common power find out ~~what~~ >the value of the< garments ~~are made A~~? Because of 2 equal and like garments one applied to present use is of a different, and for the most part of an higher value, than of that which is made but upon presumption that somebody or other will hereafter, we know not when, use it and buy it. For change of fashion, fading of colours and decay of materials may happen between the time that the garment is made and that of its being made use [of] ~~of. For all which and 1000 more particulars, some desireth [‘also allowance’?] must be made~~].

A. For this and 1000 more particulars there must be indifferent appraisers ~~such as are at the coffee house~~.

B. If you come to that, what need we discourse further but leave it to indifferent appraisers to say what is $^1/_{10}$ part of everyman’s land labour stock money etc.?

A. No. The use of leaving things to the opinions of men, or to lot ~~are~~ is, when we have proceeded as far as we can by number weight and measure, and have applied them to the smallest parts our senses can discern, or until the certain labour of examining further exceed the loss of missing the truth.

B. Pray explain what you have last said. [**7r**]

A. If the question were >between a buyer and seller< how many yards such a piece of cloth contains, each yard being worth 5d and that the whole piece might be exactly measured in a quarter of an hour, here [it] is unfit to leave the measure to any man’s estimate, since the difference must be one at least yard worth 5d, which is far more [than] ¼ of an hour’s labour of buyer and seller both is worth. But if a question should arise whichever were the finer, it

will be left to the judgement of some indifferent person who hath experience and judgement in such matters.

B. I see you shall agree that so much clearness and certainty are forced sometimes to fly even to estimate and opinion.

A. Yes, and to lot too. For in drawing small pictures representing a man's face with a circle of an inch diameter, the most mathematical limner useth no scale nor compasses but measures properties both of lines and angles by the estimate of his eye. Upon the violin there are no frets or divisions upon the neck but by estimate and yet the music intended to be exact. Those that play best at tennis and billiards use no instruments ~~of~~ >for the< angles of incidence and reflection. At bowls there is no computation of the lines and radius which the bowls describe upon various players according to the various positions of the centre of gravity in the bowl. If a man wished divide an inch into 100 >visible< parts he needs make scarce half so many lineary[34] distinctions. And so of 1000 more[35] particulars. [**7v**] Wherefore there is more exactness in the conjectures of some men's hand and eyes than in ~~scales >and< weights~~ measures or weights. And this judgement of reason to men of gross sensation ~~is of~~ bears the same proportion as lot doth to the finest of all human computations.

B. Why doth lot exceed computation?

A. I call lot or chance to be the effect of so many and so minute causes as the sense of man cannot[36] compute. For the fall of a die we commonly say to be by chance, though the causes of it be as necessary as that [?] should weigh one pound. For when all the sides of a die are exactly square and equal, the corners alike, and the matter homogeneous and equable, that so near so, as that no human eye can discern a difference, we must yet grant that there are small and sensible differences, which other small causes in the motion projection and incidence of the die do easily chance. But because God or some natures superior to man's are thought [to] discern what we cannot, for as they can foresee the cast [of] the dice we call as well as we men can do of those we call false, we term the upshot of motions lot, [**8r**] unto which we are forced to refer many things when our senses and afterwards our reason can help us no further. To conclude, where the prices of any goods are compounded of many particulars, which are also themselves not simple, and where all and each do vary according to many circumstances not obvious to everyone, there I say the estimate bona fide made by those of greatest practice and experience must be made use of. But still we must stick to number weight and measure, till our senses and instruments of applying them fails us.

[34] This is a synonym for 'linear' in the seventeenth century, since then obsolete.
[35] There may be some words missing here (up to perhaps three or four), between this and the next word, as a result of damage at the bottom left corner of the page.
[36] Lansdowne's typescript has 'can'. I am confident, considering the script in itself, that the word is 'cannot'; but in addition, this gives the sentence a more coherent meaning.

B. You have told me how all goods ought to [be] rated and equated with money. Pray now, tell me next, how and where we may meet with all sorts of goods just before they be applied to their ultimate use.

A. We must divide them into classes according to the trades that dispense them in these countries, vizt tailors haberdashers of hats shoemakers lineners milliners stocking-sellers, do dispense all sorts of apparel ready to be worn and used. For tailor comprehends drapers, mercers button-sellers and many others. Draper again contains clothier packer dyer. Clothier >contains< spinner weaver tucker[37] [**8v**] and so ad infinitum till you come to the husbandman who works upon the first matter earth, which begets [?], as animals do wool leather silk hemp and flax [?] hair, cotton etc.

B. You have named 6 trades which as you say seem to comprehend all apparel. Name such as relate to the furniture of an house which seems to be the trimming of a common garment and covering unto many men together which we call a family.

A. They are upholsters cabinetmakers joiners pewterers goldsmiths, linen-sellers braziers latton-makers[38] glass and earthen vessel sellers turners ironmongers, each of which like the others comprehend many species and under-species of other tradesmen and artificers [possibly 'artisans'].

[B.] Name those that concern war.

A. Sadlers spinners cuttlers bellmakers armourers gunsmiths, you may add coachmakers.

B. Name those that belong to food.

A. Cooks and butlers and confectioners.

B. You have omitted butchers bakers and many more.

A. Because they all terminate in the cook and butler. For so do butchers fishmongers poulterers oilmen cheesemongers terminate all in the cook, as vintners brewers bakers etc. do in the butler.

B. By the same reason you [**9r**] ~~you~~ may wrap up all trades relating to building ~~into~~ within that one of an architect or builder.

[37] The *Oxford English Dictionary* 'Historical Thesaurus' defines this now obsolete term, from 1388 forward, as one whose occupation is the fulling and dressing of cloth.
[38] The *Oxford English Dictionary* defines latton, a now obsolete term, from 1340 forward, as a mixed metal of yellow colour, either identical with, or closely resembling, brass; often hammered into thin sheets.

A. 'Tis true. For he only knows the value of the whole house as fit to be dwelled in, which no one of the other doth, nor all of them together, but by inference. Besides what is said of an house may be said of a shipwright.

B. What are the common trades which serve all these others you have named?

A. The smith who serves the husbandman seaman soldier, the tailor and cook and confectioner etc. The carpenter makes bridges wharfs.

[B.] Name some trades of ornament.

[A.] 'Tis needless. For painters relate to houses or furniture, perfumes to tailors or milliners, musicians to eating and drinking. [?] [**9v**]

B. I think you need enumerate no more trades, nor trouble yourself to branch or subdivide them. For I think your scope is but to bring all goods such as are ready and ripe for consumption into certain classes and dispensatories, where accounts may be perfectly taken of them in order to the true and proportionable valuation of the whole and then [?[39]] the aliquot part thereof either in specie or in money.

A. You apprehend me rightly. For I endeavoured [to] make my classes conformable to the trades and ['requirements'?] now already in vulgar practice and not in order to any monopolies of each sort of goods to be allowed unto any particular person or society.

B. Well; your main end being to take an aliquot part of all men's land labour stock and money. And your next means thereunto being to bring to account and valuation of goods ready for consumption, you have in the 3rd place propounded the reducing of the whole into certain classes answering several trades now in use. What shall be your next step?

A. The next or 4th step shall be to enumerate the goods of common and familiar use which may be esteemed ready for consumption. To which purpose I recommend the Book of Rates[40] inserted almost with every statute that concerns the Customs, wherein ~~this end~~ what relates to this point may in a good measure be imposed, with many others besides relating to the remoter matter (of the premises[)]. [**10r**]

[39] Here there is an illegible word. Lansdowne's typescript suggests it is 'extending' but this seems implausible.
[40] The Book of Rates was a document issued intermittently from the 16th century forward, providing a detailed schedule of dutiable commodities, imports and exports, with the associated rates of taxation. For example, a 1660 schedule runs to 128 pages, with an average of about 15 commodities listed per page (*A Subsidy Granted to the King, of Tonnage, & Poundage, and other Sums of money, payable upon Merchandize exported and imported. Together with a Book of Rates agreed upon by the Honourable House of Commons, and hereunto annexed*, London: John Bill and Chr. Barker Printers, 1660).

B. Methinks there are many things both fit for present consumption ~~as~~ >which< also are the matter of further elaborations. Vizt [1.] Oats are the present >and consummated< food for horses ~~and some other animals after made the food of men~~ and also the food of some animals which being fattened with oats ~~become~~ >do< afterwards become the food of men. Oats also such as horses eat raw are by several further preparations and cautions made into the food of men. 2. Some kinds of oil and butter may serve to eat, and also to grease wool in order to clothing. 3. Some iron is forged immediately for the [?] with bars of present use, whereas others endure many further elaborations into edge-tools arms and other more fine instruments, until that cheap matter of iron exceed the price of silver. 5.[41] Some liquors made of malt are fit for immediate drinking others are the matter of distilled spirits vinegar etc. My question is how you would so methodize all the ripe and raw goods (if I may so call them) that nothing might escape being excised once and none oftener.

A. In your first instance, according to my principle, I would have the oats not ~~immediate~~ excised in specie at all, but in horse of present service, (not an unbroken colt) that eats them. For 'tis the horse which >is< of immediate good to the man not the oats. As for the oats that happen to [be] used to fatten eatable animals, let them be excised in those animals fully prepared for use. [**10v**] And the like for the meal and bread of oats. Whereby I intend to excise the labour of the miller baker or cook, and of all the [?] between the grower and eater.

B. Surely 'twill be late not to excise butter, till it be in sauce with meat or fish or pulse or roots ~~for it may be~~ >or< eaten with bread ~~before~~. For then what might at once have been excised in the cheesemonger shop must now be dealt with in 1,000 general [?] and families. On the other hand if it should be excised in the cheesemonger shop as food, and afterwards be sold for the use of wool and cloth, the excise must be paid again in the cloth or garment.

A. What you say, is a real difficulty for remedy whereof I shall propound a gradual [?[42]] excising by parts, and instance wool for the purpose. Vizt 1. Suppose wool were to be exported so as it should escape ever being excised in a garment. I would excise the wool. 2. Suppose this wool be made into cloth and the cloth exported before it come to a garment. Then I would excise the cloth deducting the value of the material wool. 3. Suppose the garment be exported as hath been usual to the Barbados. I would then excise the garment deducting the value of [?[43]] the materials as had before been excised. And this brings me to make a second or third enumeration and distribution of goods besides the first. [**11r**] Vizt As the first genus was of good[s] perfectly fitted for use so the next should be of goods which might be ultimately used as they are, and which may also serve as matter for further operations. Unto which might be added a third being of such things as are never used in their present state. Such as wool hemp

[41] There is no fourth numbered element in the manuscript.
[42] Here there is an illegible word, inserted and then also deleted (probably 'and multiple').
[43] Here there is an illegible word, inserted and then also deleted (probably 'such').

and flax. There might be added a fourth and fifth distribution though the fewer the better. Now to this work also the >Custom House< Book of Rates abovementioned will be necessary.

B. To rate all besides such as are ready for consumption will be convenient in case of transporting them beyond seas where when they are fully wrought we can reach them no more.

A. Yes, and withal to excise them which need no more elaboration when what we may easily estimate. Vizt It is easy to estimate the charge of bringing wheat in bread, so as ~~wheat~~ bread may be excised whilst it is yet in wheat, that is the charge of grinding and baking may be easily superadded to the price of the wheat.

B. Suppose you had all ripe goods within 30 or 40 dispensatories. And suppose you had in particular within one of them all such clothes as are made by tailors. Show me for instance how and when you would excise them.

A. I would take an account of them weekly, that is, of their value and for whose use they were made.

B. What satisfaction could you have thereof but the tailor's bare word? [**11v**]

A. Yes I could apply mine own judgement, and withal, plough with the tailor's heifer, that is, keep correspondence with some of his most knowing servants.

B. According to this exactness you could inspect but few of these dispensatories and consequently the charge would be great of administering the whole or the ['uncertainty'?] and cozenage great in case the instruments were few and the charge small.

A. I suppose the charge of excising $^1/_{20}$ part might be $^1/_{20}$ of that twentieth part or $^1/_{400}$ of the whole. For supposing there be 6,000,000 of people, I conclude there could not be above 1 million of families and that one good officer might do 1000 families and so 1000 officers the whole whose salaries at 100 [pounds] per annum might be 100,000 [pounds] which I estimate be $^1/_{20}$ of the $^1/_{20}$ of the whole.

B. Why do [you] think that 1000 officers might serve?

A. Because each might do 20 families per week for all sorts of goods together, or 20 [?[44]] >tailors'< accounts ~~for one species as for this of~~ for as many families as they work [for]. For to

[44] Here a word has been deleted and in the process, rendered illegible.

do one or the other seems [the] same thing as to expense and labour though perhaps not to conveniency. [**12r**]

APPENDIX: TRANSCRIPTION PRINCIPLES

Our transcriptions of the two Petty manuscripts involve a small set of 'translation rules' which are all noted here. Spelling has been modernized and the extensive use of capitalization on the first letter of words, often unclear in any case, has been removed. The modernization of spelling includes removal of all superscripting, archaic word contractions and use of the tilde and ampersand: & becomes (→) and; Ann → annum; c̃ → ti (for example, 'observac̃on' → 'observation'); m^t → ment (for example, $governm^t$ → government); $mill^{ns}$ → millions; p^t → part; pr, p → per; s^d → said; w^{ch} → which; w^{th} → with; y^t → that; y^e → the; y^m → them; and some slight others along the same lines. The following forms of editorial intervention have also been employed: 1) reverse diamond brackets (> <) to indicate that the words enclosed have been inserted by Petty; 2) strikethrough (—) to indicate that the words have been crossed out by Petty; 3) some insertions and deletions of punctuation, not made editorially explicit; 4) all square-bracketed insertions; and 5) all footnotes attached to the texts of the manuscripts. 'Then' can be employed in 17th-century English to convey a comparative rather than temporal sense, equivalent to 'than', and when so employed in these manuscripts, it is has been replaced here with 'than'. In relation to the problem of Petty's often very difficult handwriting, occasionally in 'Proportion', where a word is unclear it is placed in inverted commas and square brackets with a question mark; and somewhat more frequently, where a word is too illegible to even conjecture what it is, '[?]' is employed to signal an omitted word. The British Library folio numbering of the original manuscripts is included in the transcriptions, indicating where each page of the original documents ends. Finally, the presentation of 'Proportion' in discrete paragraphs for the interlocutors is an editorial intervention as well; the manuscript is largely written as continuous text without paragraphing.

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