Additional notes on the Leibniz Controversy

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to the world that he was the first inventor thereof. But for the future when ever he represents himself the first inventor of exponential equations he ought at the same time to acknowledge that Mr Newton gave him light into the invention by teaching him the use of dignities whose indices were fract surd or indeterminate. [And whereas he pretends to have enlarged Geometry by Exponential Equations he ought to consider that the indices of all dignities are numbers & where numbers are fluents, the æquations are Arithmetical & have no place in Geometry. Geometrical quantities may be represented by numbers & Arithmetic may be applyed to the resolution of Geometrical Problems: but such resolutions are only Arithmetical, & have no place in Geometry untill they are demonstrated by Geometrical Proposition & thereby become Geometrical Solutions. Geometry is composed of nothing else then Definitions Axioms & Propositions Lemmas & Corollaries demonstrated synthetically, Analysis whether ancient or modern is only a mean of resolving Problemes: and the Resolutions ought to be turned into Solutions by Geometrical Synthesis or Composition before the Propositions be admitted into Geometry.]

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Sir I. Newton in his Letter of 24 Octob. 1676 wrote that he had two methods of resolving Invers Problemes of tangents & such like difficult ones, <u>one</u> of which methods <u>consisted in assuming a Series for any unknown quantity from which the other unknown quantities might conveniently be deduced & in the collection of the homologous terms of the resulting equation, for determining the terms of the assumed series</u>. Mr Leibnitz some years after published this method as his own claiming to himself the first invention thereof. If remains that he either renounce this claim publickly or prove that he invented it before I. Newton wrote the said Letter.

Sir I. Newton introduced into Analysis the use of fract surd & indefinite indices of dignities & in his letter of 24 Octob 1676 represented to Mr Leibnitz his methods extended to the resolution of affected æquations involving dignities whose indices were fract or surd. Mr Leibnitz in his answer dated 21 Jun{e} 1677 mutually desired M^r newton to tell him what he thought of the resolution of æquations involving dignities whose indices were indetermined such as were $x^y + y^x = xy$ & $x^x + y^y = x + y$. And these æquations he calls exponential, & has represented to

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pag. 183. l. 11 In the year 1672 going to Paris he fell acquainted with Mr Hugens & in the beginning of the next year came to London, & in February meeting Dr Pell at Mr Boyles.

Pag. 184. l. 1. In the end of February or beginning of March 1672/3 Mr Leibnitz went from London to Paris carrying with him the Logarithmotechnia of Mercator of which Dr Pell had given him notice & kept a

correspondence with Mr Oldenburg about Arithmetical matters till June following being hitherto unacquainted with the higher Geometry. But the Horologium Oscillatorum of Mr Hugens being published in April, by the reading of that book first & then of Paschal's Letters & Gregory of s^t Vincent's Book de quadratura circuli &c he became acquainted with this Geometry, & after some intermission of his correspondence with Mr Oldenburg, wrote to him in July 1684 that he had a wonderful Theoreme, which gave &c

Pag. 191. l. 12. He found out therefore this new Analysis after Aug. 27 1676. or rather after his being in England which was in October following.

Pag. 189. lin. 25. After the words — he wrote for Mr Newton's — add this section. After he began to study the higher geometry he fell upon his Triangulum characteristicum, & invented many particular Theorems like those of Gregory & Barrow, & went on to his Method founded on his Analytical Tables of Tangents & his Combinatory Art. And this was the top of his skill when he wrote his Letter of 27 Aug. 1676. For in that Letter he said of one part of this Method: Nihil est quod norim in tota Analysi momenti majoris. And of another part: Cujus vim ac potestatem nescio an quisquam hactenus sic consecutus. Ea vero nihil differt ab Analysi illa suprema ad cujus intima Cartesius non pervenit. Est enim ad eam costituendam opus Alphabeto cogitationum humanarum.

Cæterum vocem Corporis hic accipio in sensu vulgi id est pro substantia tangibili seu quæ tangendo sentiri potest vel resistentiam creare; cujus generis sunt metalla, lapides, arena, lutum, salia, lignum, caro, Argentum vivum, aqua, oleum, lac ventus, fumus, exhalatio flamma, &c. Et quicquid ab Elementis quatuor comprehendi potest vel ab his exhalando emanat & in hæc per condensationem rediret potest Solida mathematica non sentiuntur tangendo, neque apud vulgus corpora nominantur. Siquis contenderit corpora dari quæ tangendo sentiri nequeunt, disputantur tantum de significatione vocis. Et malim loqui cum vulgo, cujus utique est lex et norma loquendi. Quæ tangendo sentiuntur & quæ non sentiuntur ita ab invicem distingui possunt ut hæc vocentur corpora, illa quovis alio nomine designentur & horum genus commune tertio nomine gaudent. Sic enim evitetur ambiguitas verborum ex qua contentiones oriri solent confusio. Hoc igitur sensu vocem corporis semper accipio ubi dico corpora omnia mobilia esse et tangibilia & impenetrabilia & gravia & vire inertiæ habere & spatia dari corporibus vacua.

Cæterum vocem Corporis hic accipio in sensu vulgi, nempe pro substantia tangibili, seu quæ tangendo resistentiam creat & satis resistendo sentiri potest : cujus generis sunt metalla, lapides, arena, argilla lutum, salia, lignum, ossa, caro, argentum vivum, aqua, oleum, lac, sanguis, ventus, fumus, exhalatio, flamma, & quicquid sub elementis quatuor comprehendi potest vel ab his exhalando emanare & in hæc per condensationem redire. Solida mathematica non sentiuntur tangendo neque resistentiam creant, ideoque nec apud vulgus corpora nominantur. Siquis contenderit corpora dari quæ tangendo nec sentiri nec resistentiam creare queant, hic jam disputat de vocis significatione Grammatica corpora nominando quæ vulgus corpora non vocat; & malim cum Vulgo loqui, cujus utique est lex et norma loquendi. Quæ tangendo <97v> premunt et premendo agunt in alia quæ non premunt & premendo non agunt in alia, ita ab invicem distingui possunt, ut priora vocentur corpora, {altera} quovis alio nomine designentur, & horum genus commune tertio nomine gaudeat. Sic enim evitabit confusio ideorum & ambiguitas verborum ex qua confusio idearum contentiones oriri solent. Hoc igitur sensu vocem corporis semper accipio in his Principijs præsertim ubi dico corpora omnia mobilia esse, et tangibilia, et impenetrabilia, et gravia, et vires inertiæ habere, & spatia dari corporibus vacua. De natura rerum in spatijs resistentia omni destitutis, disputent, per me licet, metaphysici. Hoc ad Principia mea nil spectat.

DEFINITIONES.

Def. 1

Corpus voco rem omnem tangibilem qua tangentibus resistitur , et cujus actio si satis magna sit sentiri potest. Hoc enim vulgus vocem corporis semper accipit. Et Hujus generis sunt Planetæ, Cometæ metalla, lapides, arena, argilla, lutum, salia, lignum, ossa, caro, aqua, oleum, lac, sanguis, aer ventus, fumus, exhalatio, flamma, et quicquid sub elementis quatuor comprehendi potest, vel ab his exhalando manare & in hæc per condensationem redire. Planetæ et Cometæ agunt in lucem, & a partibus suis incumbentibus premuntur

Solida mathematica non sentiuntur tangendo nec resistentiam creant neque corpora dici solent. # < insertion from f 98r > # Vapores et Exhalationes ob raritatem suam amittendo resistentiam prope omnem sensibilem, & apud vulgus sæpe amittunt etiam nomen corporum & spiritus vocantur. Corpora autem vocari possunt quatenus resistentia**{m}** habent densitati proportionalem. Quod si effluvia corporum ita formis mutarentur ut vim resistendi amitterent, hæc non amplius corpora vocarem. < text from f 97v resumes > Pla

Def. 2

Vacuum voco locum omnem sine resistentia movetur. Sic enim vulgus loqui solet.

Siquis contendat corpora dari quæ tangendo nec sentiri nec resistentiam creare queant, hic jam disputat de vocis significatione Grammatica, corpora nominando quæ vulgus corpora non vocat: et malim cum vulgo loqui, cujus utique est vis et norma loquendi. Quæ tangendo premunt & premendo agunt in alia, quæque non premunt et premendo non agunt in alia, ita ab invicem distingui possunt, ut priora vocentur corpora, altera dicentur res intangibiles vel quovis alio nomine designentur, & horum genus commune tertio **{ter.}** nomine gaudeat quale est Substantia vel Eus vel res mobilis, vel Agens. Sic enim evitabitur ambiguitas illa verborum ex qua confusio idearum & contentiones oriri solent. Et cum de corporibus in hoc sensu tanquam Phænomenis hic disputetur, spatium omne **{quo}** **{hic}** destituitur ut Vacuum considero. De natura rerum in spatijs resistentia omni destitutis, disputent, per me licet, Metaphysici. Hoc ad Principia mea nil spectat, in quibus utique Phænomena tantum tracto.

Hæc lucem emittent et reflectunt instar corporum & in motibus suis observant leges corporum, & a partibus suis incumbentibus premuntur idque æqualiter undique & per æqualitatem pressionis formantur in globos et inter corporea naturæ phænomena numerari solent.

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Deuteronomy 16. 18 Judges & Officers shalt thou make in all thy Gates &c
Deuteronomy 25. 7 Go up to the Gate unto the Elders. & Ruth 4. 7
Lamentations 5. 14. Elders have ceased from the Gate.
Deuteronomy 22. 15. unto the Elders of the city in the gate. — chastise & amerce him. — stone her with stones.
Deuteronomy 21. 19 & bring him unto the Elders of his city unto the Gate of his place — — — stone him.
Amos. 5. 10,12.