Navigator (O'Hara: Germany – Ireland)

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The author alludes at the outset, and in conclusion, to the Irish 'Donegal heretic' John Toland, and specifically to the publication of his book *Christianity not Mysterious* (1696). Having fallen out with the Catholic Church, the author subsequently came to be despised by the Irish Protestant ascendancy, before going on to become a 'persona non grata' in Hanover, Germany, but nonetheless a close acquaintance of Gottfried Wilhelm Leibniz there. Toland's stance mirrored the rationalistic standpoint of Leibniz regarding mathematics, the sciences, and their roots in metaphysics. His deistic, rationalistic, and controversial theological standpoint, focused on the insistence that, although God created the world, there was no subsequent divine interaction with, or direct intervention in, that created world.

Before Toland, another Anglo-Irish personality Robert Molesworth of Dublin, who, having served as ambassador to Denmark following the Glorious Revolution of 1688/89, published a controversial work entitled *An Account of Denmark as it was in the year 1692* (1694), in which he criticized Danish absolutism and advocated a parliamentary role in government. He came into conflict with Leibniz's advocacy of a rational absolutist form of government.

Yet another important scientific personality known to Leibniz was Robert Boyle, son of the first Earl of Cork. In February 1673, Leibniz visited Boyle at Ranelagh House on Pall Mall – the London residence of Boyle's sister, Katherine Jones, Viscountess Ranelagh; Katherine and Robert were the 6th and 12th of the Boyle siblings, respectively, in surely one the most important families in seventeenth-century Ireland. In his official correspondence, Leibniz usually expressed his reverence for Boyle but behind the scenes, controversy and competition arose between the two. As regards practical science, and physics in particular, the question of priority in the development of the vacuum pump proved to be a point of contention. Boyle (together with Robert Hooke) had improved the vacuum pump, which had originally been developed by Otto (von)

Guericke in Magdeburg. Equipped with this pneumatic machine, or engine, Boyle had embarked on his epoch-making experiments on the properties of air. In Leibniz's eyes, however, Boyle unjustly received acclamation for the development of the vacuum pump to the detriment of Guericke, with whom he himself had corresponded in 1671 and 1672. The discovery of the new device by Guericke had first been made widely known through an appendix in Caspar Schott's *Mechanica hydraulico-pneumatica* in 1657 with an appendix entitled: *Experimentum novum Magdeburgicum, … Inventum primo Magdeburgi a Ottone Gericke urbis illius consule*. The seminal publication of Boyle three years later took the form of a letter addressed to his Anglo-Irish nephew Charles Boyle, Viscount of Dungarvan, with the title *New experiments physico-mechanicall, touching the spring of the air, and its effects, (made for the most part, in a new pneumatical engine)*. Although Boyle acknowledged his indebtedness, as regards the pneumatic engine, to Guericke, Leibniz continued to claim for Guericke the status of "inventor primus" of the vacuum pump, in his correspondence from the mid-1670s. In October 1690, in the draft of a letter intended for the Dutch scientist Christiaan Huygens, Leibniz wrote: "As regards Mr Boyle, I am astonished that everybody attributes to him the [invention of the] vacuum pump of which Mr Guericke is the artificer and which Mr Boyle simply rendered more convenient [to use]". Leibniz claimed that no other nation was as outstanding as the German nation in acknowledging the achievements of others, and that the result of this exemplary behavior was that the Germans themselves were often disadvantaged.

A similar example was the discovery of phosphorus in 1669, or in the early 1670s, by the Hamburg alchemist and pharmacist Heinrich Brand (by a process of human urine distillation), concerning which discovery Leibniz later published an account, entitled "Historia inventionis phosphori" in1710. Brand was always referred to in Leibniz's letters as the "inventor primus" of the new substance, and this attitude on Leibniz's part mirrored the fashion in which he referred to von Guericke's role in the development of the vacuum pump, that was subsequently improved by Boyle. After Boyle learned of the discovery of phosphorus in 1677, he presented his first

major publication on phosphorus in the tract *The aerial noctiluca,* presented to the Royal Society of London in December 1680, and in which he referred to the discovery of Brand, and his knowledge of it, in the opening prefatory address. Boyle (and Robert Hooke) had of course produced chemical substances or nutrients containing phosphorus from urine using other chemical processes (like freezing-thawing and precipitation) while at Oxford and before Brand's discovery.

In relation to questions of the geological configuration of the European Atlantic coastline, there was the issue of the pre-Christian Celticization of the lands and islands along and off these shores, and in historical linguistic studies the theory of the relationship of languages, and alphabets, became an interest of Leibniz in the early 1690s. The discussion in his correspondence of the interrelationship, and development or evolution, of the Celtic languages, or protolanguages, and of Irish (or Proto-Irish) in particular, probably began in 1694. The origins of the peoples and languages of Great Britain and Ireland were again considered in Leibniz's correspondence with the English mathematician John Wallis later in that decade. Thus, Leibniz's words in his letter of December 4, 1699, refer to the Anglo-Saxon settlement and reveal an inkling of the later formulated division of the Celtic peoples and languages into two groups, namely the Brythonic or P-Celtic ("Cymraeos … vel Cambros") and Goidelic or Q-Celtic ("Scotos antiquos seu Hibernos"). Leibniz alluded here to recent works of the Welsh naturalist, botanist, linguist, geographer and antiquary, Edward Lhuyd, whose catalog of fossils entitled *Lithophylacii Britannici ichnographia* (1699) had been published with the financial assistance of the author's friend, namely Isaac Newton. Specifically in his observations concerning Irish Gaelic ("de Lingua Hibernica quaedam non vulgaria observasse"), Lhuyd had noted the similarity between the two linguistic families, namely P-Celtic (Breton, Cornish and Welsh) and Q-Celtic (Irish Gaelic, Manx and Scottish Gaelic). The first formulation of the historical P-Q split of the Celtic languages, advanced by Lhuyd and referred to by Leibniz in his letter of December 4, 1699, to Wallis, is however generally traced back in the literature to Lhuyd's glossography (or study of ancient words or

languages) of 1707, namely his *Archaeologia Britannica*, which was only published after Wallis' death in 1703. Leibniz subsequently developed a more complex theory, in which the Irish language was integrated into his concept of the history and the interrelationship of the European languages. The most prominent Irish speaker – with a lifelong interest in the Celtic languages and their cultures – known to Leibniz was surely John Toland, particularly during the latter's Hanoverian years (1701–1707). Ultimately, the culmination and conclusion of Leibniz's efforts in this field, was no doubt the posthumous publication (together with Johann Georg Eckhart) of his *Collectanea Etymologica, illustrationi linguarum, veteris Celticae, Germanicae, Gallicae, aliarumque inserventia*, in 1717.