

David Hume on Technology and Culture

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One of the earliest statements, if not the first, of a putatively causal nexus between 'technology' and 'culture' appears in David Hume's essay, 'Of Refinement in the Arts' first published in 1752 under the title, 'Of Luxury'.

Another advantage of industry and of refinements in the mechanical arts, is, that they commonly produce some refinements in the liberal; nor can one be carried to perfection, without being accompanied, in some degree, with the other. The same age, which produces great philosophers and politicians, renowned generals and poets, usually abounds with skilful weavers and ship-carpenters. We cannot reasonably expect, that a piece of woollen cloth will be wrought to perfection in a nation, which is ignorant of astronomy, or where ethics are neglected (Hume [1752] 1994 p. 107).

The 'culture' which is thus associated with 'technology' is quite general, but in particular it includes politics.

Laws, order, police, discipline; these can never be carried to any degree of perfection, before human reason has refined itself by exercise, and by an application to the more vulgar arts, at least, of commerce and manufacture. Can we expect, that a government will be well modelled by a people, who know not how to make a spinning wheel, or to employ a loom to advantage? (p. 109)

There is an obvious suggestion, in the first of these passages, of a doctrine later developed and propagated by Karl Marx: that 'The mode of production in material life determines the general character of the social, political and spiritual process of life' (cit. Berlin 1959, p. 127, from trans. by N. I. Stone of *Critique of Political Economy*). But the second passage shows that Hume may have had a more complex relation in mind: a mutual determination of 'technology' and 'culture'; or a causal process by which other, exogenous determinants generate each simultaneously as merely correlated outcomes; or both of these.

These pregnant suggestions are nowhere explained or elucidated by Hume. Though occasionally remarked (e.g. Livingston 1984, p. 226) they have never been discussed in the secondary literature, so far as I know. It is accordingly my purpose in this paper to supply a 'rational reconstruction': not what Hume actually said, but what he might have said had we subjected him to oral examination for the doctorate. Before doing so however, it seems both prudent and methodologically orthodox (Skinner 1969) to attend to the context of Hume's political essays, first published with one exception - ('Of the Origin of Government', 1777) at various times from 1741 to 1758. But 'context' itself can and ought to be understood from both an 'externalist' and an 'internalist' standpoint. Therefore my first section outlines the economic and political circumstances of the conversation which Hume joined in these essays, and my second the intellectual climate in which Hume wrote. Because each depends almost entirely upon the proven scholarship of many others they can be brief. But they are necessary, I believe, for a just appreciation of Hume's 'text' which I attempt to reconstruct in the third section.

I

Like anyone else, David Hume's ideas about 'technology' and 'culture' must have been formed, in part at least, by his own observation. His direct observations were largely confined to

Scotland in the years between his birth in 1711 and the appearance of the political essays in 1741 and 1752, supplemented by a three-year sojourn in France during his mid-twenties and occasional, shorter visits to England and the Continent. Hume's 'angle of vision' (perhaps one should now say, his 'social location') was that of the younger son of a Border laird of small fortune, related on his father's side to the noble house of Douglas Home, and on his mother's to a patrician legal family in Edinburgh; Whig, Presbyterian, anti-Jacobite and strongly in favour of union (Mossner 1980, pp. 6-34).

In 1700 Scotland was still a Third-World country, almost wholly dependent upon a primitive and largely feudal agriculture. Most of its population of about one million lived on wages of sixpence a day in summer and less in winter, at the very margin of subsistence. Adam Smith wrote of 'the half-starved Highland woman' who bears twenty children of whom two survive; and in general of the 'great mortality ... among the children of the common people' one half of whom die, in some places, before they are four years old (WN I, pp. 68, 70, 71). Even at the end of the eighteenth century Robert Malthus could remark that 'The labourers of the South of England will suffer themselves to be half starved, before they will submit to live like the Scotch peasants' (Malthus 1789, p. 132). Such very few examples of industrial development as then existed were confined to the neighbourhoods of Edinburgh and Glasgow, and were severely hampered by trade restrictions imposed by England and by a web of mercantilist regulation enacted by the Scottish Restoration parliament with the intention of fostering economic growth (Mathieson 1905, pp. 18-23).

As usual in Third-World countries, government was simultaneously weak and tyrannical. And as usual, civic peace was in constant jeopardy from religious and tribal war, conspiracy, treason and insurrection, and from the side-effects of diplomatic and commercial rivalry between more advanced and more powerful neighbours. That half of Scotland which lies to the North and West of the Highland Line was a no-go area for unarmed and unescorted Lowland burghesses, lacking roads, mail and police; inhabited by Gaelic-speaking warriors and cattle-thieves few of whom -- save the Campbells -- had any contact with the national church, who knew no English and might shoot a stranger for insulting their chief in an unknown tongue. Chiefs held *de facto* power of life and death over their vassals until 1746, and used the small surplus of their estates to employ retainers of armed retainers to do battle with their neighbours. The last full-scale clan war was fought between the Campbells and the Sinclairs in 1680, but there was continual feuding and marauding until the power of the chiefs was broken after Culloden (Smout 1969, pp. 333-42). Blood feuds and cattle-raiding had become rare in the Lowlands by the seventeenth century, but their place in fomenting civil discord was taken by implacable sectarian strife between and among presbyterians, prelatists and papists. Covenanters were hunted down, tortured, massacred or transported; archbishops were assassinated; between 1560 and 1707 between 3,000 and 4,500 women were judicially tortured, strangled and burnt for witchcraft (Hume 1983 VI, pp. 227-28, 324, 372-3; Smout 1969, pp. 198-207). During the entire period from the Great Rebellion to the Jacobite insurrection of 1745, these disorders were manipulated or at any rate exacerbated by agents of England, France, Holland and the Papacy seeking the interest of their own states. 'The Scottish nation' wrote Hume eight years after Culloden, 'had but very imperfect notions of law and liberty; and scarcely in any age had they ever enjoyed an administration, which had confined itself within the proper boundaries. By their final union alone with England, their once hated adversary, they have happily attained the experience of a government perfectly regular, and exempt from all violence and injustice' (Hume [1778] 1983 VI, p. 223).

Though the union of the crowns in 1603 had been intended by James VI to create a true 'union of England and Scotland' the project failed because of opposition in the English parliament (Galloway 1986). A commercial union enforced by Cromwell dissolved at the

Restoration, and for the next forty years Scotland's foreign trade was strangled by English navigation acts and import duties. The last decade of the seventeenth century was a period of tribulation unusual even for Scotland. In 1692 the infamous massacre by presbyterian Campbells of the allegedly papist Macdonalds of Glencoe was justified by its Lowland instigator, Dalrymple of Stair, as 'a great work of charity' (Prebble 1967). A series of harvest failures from 1696 to 1699 created famine on such a scale that as many as 25% of the entire population are estimated to have died from starvation (Smout 1969, p. 242). And in 1700, 'the first national movement since the ... Reformation in which religion had practically no share' (Mathieson 1905, p. 57), a grandiose project to launch Scotland into the big league of international trade, came to a bitter and ignominious end. In 1695 the Scottish Parliament had incorporated *The Company of Scotland Trading to Africa and the Indies* which was to compete with the English and Dutch East India companies. Meeting with strong opposition both in England and in Holland, the projectors decided instead to establish a trading colony at Darien (then the name for Panama) which would serve as an entrepot for a trans-Atlantic, trans-Pacific trade with the Indies. Three disastrous expeditions were dispatched to Darien, a well-defended territory of the Spanish Empire, with the loss of 2,000 lives and some £200,000 of the stockholders' money, or more than half the capital subscribed. (The ordinary revenue of the Kingdom of Scotland at this time was reckoned at about £110,000 a year; its public debt in 1718 was £248,550.) The national trauma and humiliation of the Darien affair was an important element of the political debate in Scotland which led to the Act of Union of 1707 (Mathieson 1905, pp. 26-58, 348).

Louis XIV having recognised the Stuart Pretender in 1701, a full constitutional union was sought by England to avoid a disputed succession when Queen Anne died. A federal union was the most favoured choice in the Scottish parliament though there were strong separatist voices. England insisted on complete union or nothing. After six years of intense national debate in Scotland the union was consummated (Smout 1969, pp. 215-17; Mathieson 1905, pp. 59-176). From the outset that debate turned upon rival strategies for the economic development of Scotland. For despite the caution with which present-day historians now view the matter (e.g. Wrightson, in Houston and Whyte 1989, pp. 251-56; Smout in Hont and Ignatieff 1983, pp. 45-7), it was generally supposed at the time that Scotland was very poor and economically very backward by comparison with England. Though her population was one-fifth of her neighbour's, her wealth -- as estimated from land-tax and other revenues -- was only one fortieth. Despite, or possibly because of, the attempts of Parliament, manufacturing was still almost non-existent (Smout 1969, p. 216, 243; Mathieson 1905, pp. 19-20). In the Scotland of David Hume's parents there were indeed very few 'skilful weavers and ship-carpenters', none able to ensure that 'a piece of woollen cloth will be wrought to perfection'; and the 'vulgar arts ... of commerce and manufacture' were largely unknown. Accordingly (Hume seems to imply in 1752), there were as yet no 'great philosophers and politicians, renowned generals and poets'; government was by no means 'well modelled', nor had 'laws, order, police, discipline' ever been 'carried to any degree of perfection'.

The terms of the Scottish union debate were set by Andrew Fletcher of Saltoun, described by Hume as 'a man of signal probity and fine genius', holding 'republican principles' (Hume [1778] 1983 VI, p. 459). Fletcher recognised that Scotland's economic plight was not caused by accidental circumstances of the 1690s but was chronic and structural, only to be remedied by a fundamental re-modelling of government and society. But he also believed, in accordance with the conventional wisdom of his age, that (merely commercial) 'wealth' may undermine 'virtue' (Hont 1983, p. 272). His proposed remedies, strongly reflecting what J. G. A. Pocock has labelled the 'civic humanist' tradition of social thought associated with Machiavelli and Harrington (Pocock 1975; Robertson in Hont and Ignatieff 1983, pp. 137-51)

were drastic and unpopular. *Scotland must get rich, but Scotland must stay virtuous*. Hence to relieve poverty and insubordination among the lower orders, a form of what we should now call 'workfare' was called for. The entire labouring class must be bound to servitude, and every landlord obliged to employ and maintain a certain number. Large estates must be expropriated and the compensation invested as half-shares in small holdings. The revenue of the land-tax must be applied as credit for a national trading company. Parliament must be reformed, standing armies abolished and the power of the sovereign drastically reduced (Robertson, pp. 143-45). Fletcher's proposals attracted support and were seriously discussed, for it was evident to his contemporaries that he had correctly perceived the subversive 'moral consequences of commerce and culture' and the need that these should be 'controlled by the disciplined virtue that only the maintenance of autonomous political and military institutions could preserve for Scotland' (Pocock 1985, p. 238). However, his proposals were unfeasible and they were soon rejected as visionary. The Parliament of Scotland settled instead for a union that offered the prospective benefits of free trade with England, transfer payments to foster economic development, compensation for (financial) victims of the Darien disaster, presbyterian religion and Scottish Law (Mathieson 1905, pp. 59-177).

Though Fletcher's 'civic republican' arguments failed to persuade his countrymen, they were undoubtedly one of the circumstances determining the form of Hume's own intervention in political debate forty years later. But as John Robertson has explained, 'Hume subsumed the case of Scotland within a consciously universal inquiry', for 'he regarded an understanding of the common problems of developing, commercial societies as the prerequisite for dealing with the specific affairs of his own country' (Robertson, p. 151). Another other circumstance is simply the fact that despite the hope of economic prosperity held out by the terms of union, very little improvement had actually occurred by the time Hume began work on the essays in the early 1740s (Mathieson 1905, pp. 348 ff.; Smout 1969, pp. 243-45). The economic development of Scotland therefore, and in a larger sense 'The Progress of Society' (Forbes 1978, p. xi) was still high on the agenda when the first two sets of *Essays, Moral and Political* appeared in Edinburgh in 1741 and 1742.

II

The supposed trade-off between 'wealth' and 'virtue' in a commercial society was presented in lurid colours to Hume and his contemporaries by successive recensions of *The Fable of the Bees* (Mandeville, ed. Kaye [1924] 1988). There can be little doubt that many readers of the essay on 'Luxury' would have regarded it as one of the many responses to Mandeville which appeared from time to time throughout the eighteenth century from about 1723 (Mandeville 1988 II, pp. 419-53). Hume recognised Mandeville in the Introduction to his first work, together with Locke, Shaftesbury, Hutcheson and Bishop Butler, as one of those 'who have begun to put the science of man on a new footing' (Hume [1739] 1960, p. xxi). Friedrich von Hayek has conjectured that *The Fable*, and Mandeville's later work on *The Origin of Honour* (1732), were studied by Hume at the time he was planning the *Treatise* but had not yet begun to write (Hayek 1978, p. 263). The probable influence of Mandeville is of the highest importance for the argument of my paper.

It is commonplace, if not merely etymological, to regard the Enlightenment as an attempt to extend the method of Newtonian science into all possible aspects of human experience. 'God said, Let Newton be! and all was light'. Isaiah Berlin has lent his authority to the view that 'If the model that dominated the seventeenth century was mathematical, it is the mechanical model, more particularly that of the Newtonian system, that is everywhere imitated in the century that followed' (Berlin 1956, p. 14). Hume studied natural philosophy at Edinburgh under Colin Maclaurin, the author of popular textbooks of Newtonian physics and

natural theology, and there is no doubt of Hume's ambition 'to be the Newton of the moral sciences' (Mossner 1980, pp. 42-3, 74-5; Livingston 1984, p. 41). There are a few instances in Hume's writing where Newtonian methods are employed with almost naive fidelity. This is above all the case in his brilliant essay 'Of the Balance of Trade', a canonical text in the history of economic analysis, which models the international flow of money by application of the Newtonian, quasi-'mechanical' concept of stable equilibrium (Hont 1983, p. 282; Waterman 1988). Moreover in a fundamental but narrow methodological sense Hume was strictly Newtonian.

It is entirely agreeable to the rules of philosophy, and even of common reason, where any principle has been found to have a great force and energy in one instance, to ascribe it to a like energy in all similar instances. This indeed is NEWTON'S chief rule of philosophizing. (Hume 1788 II, p. 234).

Yet it is quite clear that in general Hume wished to keep his distance from Newton, or at any rate from crude Newtonianism. In the first place Newton himself, when rightly understood, left things pretty much as they had been before God said, Let Newton be! For 'While Newton seemed to draw off the veil from some of the mysteries of nature, he showed at the same time the imperfections of the mechanical philosophy; and thereby restored her ultimate secrets to that obscurity, in which they ever did and ever will remain' (Hume [1778] 1983 VI, p. 542). This anti-'Enlightenment' judgment, delivered at the appropriate place in the *History of England*, is partly owing to Hume's correct perception that Newton's hypothesis of gravitation -- which is purely metaphysical, as S. Gravesende had seen as early as 1717 (Cassirer 1955, p. 61) -- undermines any strictly mechanical account of the interaction of bodies (Livingston 1984, pp. 170-71); and more fundamentally, to Hume's early recognition that ultimate causation is occult (e.g. Hume [1739] 1888, pp. 170-71; [1748] 1902, pp. 30-31). In the second place therefore, Hume was obliged to repudiate Newton's theological project. For Newton had published the *Principia* with 'an Eye upon such Principles as might work with considering Men for the belief of a Deity' (Newton [1687] 1756, p. 1), whereas for Hume 'The most perfect philosophy of the natural kind only staves off our ignorance a little longer' (Hume [1748] 1902, p. 31). Where we can have no certain knowledge of final causes, the Argument from Design must fail.

If we must abandon the attempt to explain how things actually are (seem to be) by any reference to a transcendent, designing deity we must seek an alternative in some version or versions of immanence (Nathan 1968), which includes the idea of what we should now call 'evolution'. In his posthumous *Dialogues Concerning Natural Religion* Hume clearly articulated the grounds for doubting whether the 'excellencies' of any work 'can justly be ascribed to the workman' and seems to have adumbrated a theory of organic evolution (Hume [1779] 1788 II, pp. 470, 483-84; see Hayek 1968, p. 356). With Hume's extended development of certain powerful-insights of Mandeville, the so-called and now much-maligned 'Enlightenment project' took a drastically new turn.

Hayek has argued persuasively that Mandeville 'made Hume possible ... It is only in Hume's work that the significance of Mandeville's efforts become wholly clear' (Hayek 1978, p. 264). According to Hayek and many others who have followed him (e.g. Hamowy 1987), the Mandeville-Hume legacy to modern social thought is the so-called 'theory of spontaneous order'. This is because the two most important ideas which Hume learnt from, or at any rate shared with Mandeville are first, 'the narrow Bounds of human Knowledge, and the small Assistance we can have, either from Dissection or Philosophy, or any part of Mathematics to trace and penetrate into ... Cause *a priori*'; and secondly, that 'all Human Creatures are sway'd and wholly govern'd by their Passions ... even those who act suitably to their Knowledge, and strictly follow the Dictates of their Reason, are not less compell'd so to do by some Passion or

other' (Mandeville [1728] 1988 II, p. 104; [1732], cit. 1988 I, p. lxxix). It is evident that in a world populated by beings of exiguous knowledge and impotent 'reason', social order cannot be the result of human design, but must emerge -- if at all -- as the unintended consequence of human slavery to the 'passions'. Though Mandeville muddied the waters by improperly describing the pursuit of 'luxury' as 'vice', and though in consequence the *Fable* and its author were denounced from the pulpit for decades, the central message of the *Fable* was quickly assimilated by the more powerful minds of eighteenth-century Britain: Samuel Johnson, Adam Smith, Josiah Tucker, Paley, Burke, Gibbon and Malthus among many others. That message is simply that the multifarious activities of any large human society -- most notably its economic activities -- arise *and can only arise* in a gradual, unplanned, accidental, piecemeal fashion in response to the incentives to individual, self-regarding action created by others' needs, wants and desires. Mandeville's well-worn but untenable claim that the 'wealth' of a commercial society was inversely related to its 'virtue' was soon filtered out by Adam Smith's careful description in *Theory of Moral Sentiments*, following Josiah Tucker, not to mention Aristotle and the Stoics, of 'self-love' as possibly virtuous rather than certainly vicious (Smith [1759] 1976, pp. 27-8, 440-44, 487-94; Tucker [1755], cit. Shelton 1981, pp. 91-2).

Twenty years before *The Theory of Moral Sentiments*, Hume had grasped the central message and made it his own. In Part II of the *Fable* Mandeville had pointed out that 'we often ascribe to the Excellency of Man's Genius, and the Depth of his Penetration, what is in Reality owing to length of Time, and the Experience of many Generations ...' (Mandeville [1728] 1988 II, p. 142). 'Spontaneous order' is far more than a short-run economic phenomenon, a mere matching of consumers' demands with producers' outputs. The entire structure of society, Hume appears to argue -- our laws, morals, arts, science and religion -- are the outcome of a vast evolutionary process in which what has proved to be of service to human societies has survived, and what has proved unserviceable has perished. Not only the public institutions of society, but even the internalization in individual consciousness of the 'artificial virtues' of justice, truthfulness, fidelity, chastity, good manners and the like are the result of a kind of evolution (Haakonssen 1981, pp. 12-35; 1993, pp. 188-92; Hume 1994, pp. xxvi-xxvii). And as it is 'by society alone' that Man is 'able to supply his defects', and hence evolve the artificial virtues which permit the origin of justice and property, so also various other social contrivances come into being such as the 'partition of employments', later renamed by Smith, following Mandeville, the 'division of labour'. And so 'In like manner are languages gradually establish'd by human conventions without any promise. In like manner do gold and silver become the common measures of exchange' (Hume [1740] 1888, pp. 485, 490).

It would appear from this account that with respect to social theory at any rate, Hume's thinking was drastically un-Newtonian, if not anti-Newtonian. Human society is not a *mechanism*, created by a transcendent God whose attributes may be recognised in His workmanship; nor is it even the deliberate creation of wise and far-seeing statesmen, reliably informed by their reason of a Natural Law given by God to His creatures. Human society, rather, is an *organism* evolving blindly from an unknown past to an unknown and unknowable future. The scope for conscious political direction is modest, and chiefly confined to maintaining the rules defining property rights subject to tentative, incremental improvement of those rules. It is this view of society, it is now widely supposed, which informs the pronounced anti-Whig bias -- often mistaken by superficial readers for a pro-Tory bias -- in Hume's most famous work, *The History of England* (Hayek 1968, pp. 340-56; Whelan 1985, pp. 315-29; however cf. Forbes 1975, p. 61 n. 1 and chap. 9, esp. p. 318).

In view of the strong stimulus afforded by his work to Adam Smith, Ferguson, Millar and Dugald Stewart, it would further appear that the so-called 'Scottish Enlightenment' is a

clearly marked mutation of the European tradition. The ideas which Hume and his Edinburgh circle of friends and colleagues brought to the post-union debate on wealth and virtue in commercial society were almost entirely new in the history of thought. To Hume's suggestion of a causal nexus between 'technology' and 'culture' we are now in a position to turn.

III

Most of the material I shall use to reconstruct Hume's thinking on this matter is to be found in his *Political Discourses* (1752), especially the essays 'Of Civil Liberty' (1741), 'Of the Rise and Progress of the Arts and Sciences' (1742), 'Of Commerce' (1752) and 'Of Refinement in the Arts' (1752); as supplemented by those portions of the *Treatise of Human Nature* (1739, 1740) which establish his underlying conceptual framework, and occasional reference to the first *Enquiry* (1748) and the *History of England* (1754-62). I am conscious of the hazards of depending on so small a selection of Hume's writing, and have seen the *Danger! Keep Out!* notice posted at the beginning of Duncan Forbes's important study:

... Hume is uniquely difficult to interpret because no other thinker probably covers so much ground and says so much with such economy. Since one cannot be sure at any given moment just what he is saying, it is necessary to cast the net as widely as possible ... But then because significant juxtaposition is part of our art and because in Hume there are not only so many different pieces that can and must be moved about in the process of interpretation, but so many contexts, one is open to the danger of linking things together that really belong apart, using *A* to explain *B* when it does not really do so. No other thinker is such a challenge to one's intellectual honesty ... (Forbes 1975, p. ix)

I have foolhardily chosen to identify only fourteen 'pieces' to be 'moved about' in my interpretation, and can by no means be confident either than this is the necessary and sufficient set, or that I have not sometimes linked 'things together that really belong apart'. My reconstruction should be regarded as a 'bold' or at any rate rash *conjecture*, heroically exposing its unprotected neck to 'ruthless' *refutation*.

Fourteen elements, or ingredients in Hume's writing on this topic are

A. *Three methodological elements:*

- (1) What Hume calls 'general principles', including
- (2) Chance, or 'secret and unknown causes', which I shall label 'contingency', and
- (3) The possibility of a scientific study of Human Nature.

B. *Three sets of properties of Human Nature:*

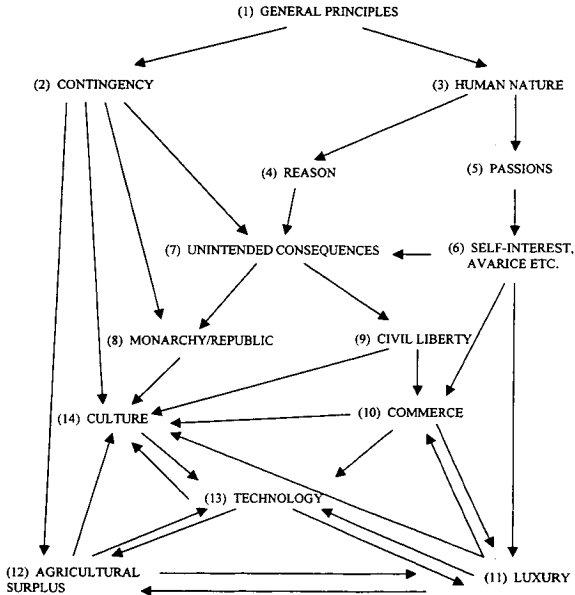
- (4) Reason,
- (5) The passions in general,
- (6) Certain passions relevant to this particular story (a subset of 5) such as Avarice, Emulation etc.

C. *Eight unintended consequences of the operation of Human Nature in face of Contingency:*

- (7) 'Spontaneous Order' as exhibited in the seven following subsets;
- (8) Political Constitution, whether Monarchical or Republican,
- (9) Political Liberty,
- (10) Commerce,
- (11) Luxury,
- (12) The agricultural, or food-producing 'Surplus',
- (13) Division of Labour and productive 'Technology'
- (14) 'Culture'.

In figure 1, I have shown diagrammatically what I think are the significant connexions between these elements in Hume's thinking as it relates to 'technology' and 'culture'. In what follows I shall consider each in turn and attempt to justify the relations exhibited in figure 1.

Figure 1. Possible Relations Between the Elements of Hume's Theory of the Technology-Culture Nexus



1. General Principles

There can be no doubt that Hume understood that scientific explanation depends upon methodological rules, of which 'Newton's chief rule of philosophizing' cited above is among the most important. A corollary of this rule appears in the essay 'Of Commerce' and seems to be an announcement of Hume's social-scientific programme: '... general principles, if just and sound, must always prevail in the general course of things, though they may fail in particular

cases; and it is the chief business of philosophers to regard the general course of things' (Hume 1994, p. 94).

2. *Contingency*

In the social sciences however, especially history, '... we must proceed with more caution, ... lest we assign causes which never existed, and reduce what is merely contingent to stable and universal principles' (p. 60). This is partly because 'chance', as rigorously analysed in the *Treatise* (I:III:xi), may appear in individual, though not in aggregative human behaviour (Livingston 1984, p. 228); partly because there are often 'secret, or unknown causes' of human social phenomena (p. 60); and partly because the circumstances of human behaviour are contingent. Such accidents as climate, for example, may have an influence on behaviour: Northerners booze, Southerners fornicate. 'Wine and distilled spirits warm the frozen blood in the colder climates and fortify men against the injuries of the weather', whereas '... the genial heat of the sun, in the countries exposed to his beams, inflames the blood, and exalts the passion between the sexes' (p. 90). In a certain sense, therefore, 'general principles' contain the principle that they 'may fail in particular cases' because of 'what is merely contingent'.

3. *Human Nature*

'Tis evident, that all the sciences have a relation, greater or less, to human nature'; all 'are in some measure dependent upon the science of MAN'. Because few readers -- even the most chicken-hearted -- give up before the third page, this is the one passage in the *Treatise* that everyone knows. It seems clear that 'general principles' of social explanation must include the principle, or methodological rule, that what we observe in human societies may be understood (in part) by means of what we can find out about 'human nature'.

4. *Reason*

One thing we can find out (with the help of Book I of the *Treatise*) is that 'reason' -- 'the discovery of truth or falsehood' -- is a property of human nature, but not quite so valuable a property as Hume's contemporaries and predecessors had supposed. It can give us no certain knowledge of causation, and no guidance in matters of ethics. 'Reason is, and ought to be only the slave of the passions'. [The other saying of Hume's that everybody knows.] It is sufficient in this context to allow it to mean that the only proper use of reason is instrumental: to 'discover the connexion of causes and effects so as to afford us the means of exerting any passion' (Hume [1740] 1888, 458).

5. *The Passions*

Whereas 'reason' provides the steering wheel and perhaps the brakes, it is the 'passions' which constitute the motor of human action. Book II of the *Treatise* contains a detailed analysis.

6. *Specific Passions: Avarice, Emulation, Self-Love etc.*

In the first *Enquiry* Hume attributes 'all the actions and enterprises which have ever been observed among mankind' to 'the same causes. Ambition, avarice, self-love, vanity, friendship, generosity, public spirit' (Hume [1748] 1902, p. 83). At various places in the essays Hume writes of 'interest' or 'self-interest' or 'self-love' (Hume 1994, pp. 17, 21-2, 24-6, 192, 233 etc.) as motivating political or economic activity. In his essay 'Of the Rise and Progress of the Arts and Sciences' Hume remarks that it is easier to explain commercial than cultural progress, for 'Avarice, or the desire of gain, is an universal passion, which operates at all times, in all places, and upon all persons' (p. 59). True to its Newtonian character remarked above, the essay 'Of the Balance of Trade' draws an analogy between the passions and

gravitation to explain how gold is drawn to 'industrious nations': 'There is a moral attraction, arising from the interests and passions of men, which is full as potent and infallible' (p. 140). Other passions relevant to the development of technology and culture include, but are not limited by, emulation (pp. 64, 101, 150-52 etc.), jealousy (p. 65), and sociability (pp. 82, 107).

7. *Spontaneous Order*

When human beings endowed with reason and driven by passion confront contingent events and circumstances there will be many unintended consequences of their actions. Though there is no reason in general to suppose that all of these will be benign, we have seen that there is widespread agreement that Hume presents a theory of spontaneous order. As he puts it in the essay 'Whether British Government inclines more to Absolute Monarchy, or to a Republic', 'Matters ... must be trusted to their natural progress and operation' (p. 32). Law, for example, 'arises late in any government, and is the slow product of order and of liberty' (p. 68). Men and women learn from their mistakes, see that what is in the public interest is often or usually or always in their own, and gradually recognise, promulgate and internalise rules of conduct which induce them to behave in socially constructive ways. Useful social arrangements come into being. 'But though this progress of human affairs may appear certain and inevitable, and ... be founded on obvious principles of human nature, it cannot be expected that men should beforehand be able to discover them or foresee their operation' (p. 22).

8. *Political Constitution: whether Monarchical or Republican*

It is evident that the 'Origin of Government' is an example of spontaneous order and indeed the previous quotation was taken from Hume's essay of that name. But whether a political constitution evolves towards a Monarchy or a Republic is very much a matter of chance. The geography of Greece permitted the coexistence of many small states in ancient times 'which soon became republics' for 'limited territories' give a stop 'both to *power* and *authority*' (pp. 65, 64). Large states, such as Russia or China (or even France?) 'soon become absolute' (p. 64). Whether a society be monarchical or republican however, is of significance for the evolution of technology and culture as we shall see.

9. *Civil Liberty*

Civil liberty is even more important, but this too is an unintended consequence of human action subject to chance. For example, 'It was an accident of history that Charles prevented the nameless Cromwell from immigrating [sic] to America, an act, which looking back, he would have done anything to have changed' (Livingston 1984, p. 231). The subsequent acts of Cromwell which moved England permanently in the direction of greater civil liberty were themselves the result of contingent circumstances: for 'the spirit of enthusiasm ... being universally diffused over the nation, disappointed all views of human prudence and disturbed the operation of every motive which usually influences society' (Hume [1778] 1983 V).

10. *Commerce*

Perhaps the most important single determinant of both technology and culture, in Hume's thinking, is commerce. The essay 'Of Commerce', which first appeared in 1752 and which in later eighteenth-century editions heads part II of the *Essays, Moral, Political, and Literary*, is the richest single source of Hume's ideas on commercial society. 'It has become an established opinion', reported Hume in the essay 'Of Civil Liberty', 'that commerce can never flourish but in a free government' (Hume 1994, p. 54). 'The three greatest trading towns ... are LONDON, AMSTERDAM and HAMBURG, all free cities, and protestant cities, that is enjoying a

double liberty' (p. 54). This is partly because commerce can only thrive where contracts are honoured and property is secure, and this may be doubtful under 'absolute government'. But with his usual perspicacity Hume notes that in fact, 'Private property seems ... almost as secure in a civilized EUROPEAN monarchy, as in a republic'. A more subtle reason why commerce 'is apt to decay in absolute governments' therefore, is 'not because it is there less secure, but because it is less honourable' (p. 55). Commerce is thus viewed as the outcome of 'avarice, the spur of industry' operating first in republics but spreading wherever property rights are secure, flourishing best wherever 'considerable traders' have access to 'privileges and honours' without having to 'throw up their commerce' (p. 55). It is also both a consequence and a cause of 'luxury'.

11. *Luxury*

With the concept of 'luxury' we arrive at the heart of the eighteenth-century debate over wealth and virtue, Hume's contribution to which gave rise to the idea of a nexus between technology and culture as yet another unintended consequence. To Hume luxury was 'a word of uncertain signification, and may be taken in a good as well as in a bad sense. In general, it means great refinement in the gratification of the senses'. To imagine that luxury 'is of itself a vice, can never enter a head, that is not disordered by the frenzies of enthusiasm' (p.105). We should note that Hume departs from Mandeville in two important respects. First, his definition is narrower than Mandeville's reductionist 'everything ... that is not necessary to make Man subsist as he is a living Creature' (Mandeville 1988 I, p. 107). Secondly, Hume denies Mandeville's tendentious assumption that 'luxury', even when defined more scrupulously, is or must be 'vice'. It is clear that luxury, viewed as a human propensity, must be a consequence of the passions. But it is powerfully stimulated by commerce. 'If we consult history, we shall find, that, in most nations, foreign trade has ... given birth to domestic luxury' (Hume 1994, p. 101). The causal link between luxury and commerce is two-way however. For as 'men become acquainted with the pleasures of luxury and the profits of commerce ... their delicacy and industry, being once awakened, carry them on to further improvements, in every branch of domestic as well as foreign trade' (p. 101). In this passage Hume recognises another of Mandeville's important economic insights, analytically quite distinct from the spontaneous order identified by Hayek. Trade depends upon reciprocal demand; increased demand leads to increased production; and where there is deficient demand, production and employment will languish. The point was analysed with exceptional clarity by Paley (1785, chap. XI; see Waterman 1996) later in the century; Malthus wrestled with it with less than complete success in his *Principles* (1820, chap. VII); and Keynes gave it prominence in the *General Theory* (1936, pp. 359-62). The other important condition of luxury in Hume's social theory is the agricultural surplus, ultimately a contingent circumstance depending on soil, climate and the like. Stating a theme reiterated by Adam Smith, Paley, Malthus and Chalmers, Hume noted that '... the land may easily maintain a much greater number of men, than those who are immediately employed in its cultivation ... If these superfluous hands apply themselves to the finer arts, which are commonly denominated the arts of luxury, they add to the happiness of the state ...' (Hume 1994, p. 95, see also p. 113).

12. *Agricultural Surplus*

This agricultural -- or more generally, food-producing -- surplus is a fundamental building block of eighteenth and early nineteenth-century economic and social theory, going back at least to Petty and probably much further, refined and popularized by Quesnay and his disciples, and central to classical political economy in which it was eventually transformed into a concept of 'surplus' in general. The surplus arises 'As soon as men quit their savage

state, where they live chiefly by hunting and fishing', and gradually increases with 'time and experience' (p. 95). Hume was neither original or particularly sophisticated in his use of this element of the argument, but he clearly recognised its importance. For it is obvious that a current surplus of production, over and above the output required as input into the next period's production at the same rate, is a necessary condition of any human activity beyond mere survival, including luxury. There is, however, a two-way connexion between luxury and the surplus, fostered by commerce. For 'where luxury nourishes commerce and industry, the peasants, by a proper cultivation of the land, become rich and independent' (p. 112).

13. Technology

The word 'technology' is a neologism which Hume did not know (nor would have used had he known it). However the idea of a *state of productive technique subject to change* makes frequent appearance in the essays. Productive technique is enhanced by the 'partition of employments' noted in Book III, Part II:ii of the *Treatise*, and is there an example of quite primitive spontaneous order. The existence of the agricultural surplus makes possible a sectoral 'partition of employments' between '*husbandmen and manufacturers*' (p. 95). There is a two-way connexion between the surplus and technology, for 'When a nation abounds in manufactures and mechanic arts, the proprietors of land, as well as farmers, study agriculture as a science, and redouble their industry and attention' (p. 99). But it is very clear that for Hume by far the most important determinant of technology is commerce. The essay 'Of the Jealousy of Trade' flatly declares that every improvement in Great Britain over the past two centuries in 'the arts both of agriculture and manufactures ... has arisen from our imitation of foreigners': an imitation only possible through the communication afforded by international trade. 'Notwithstanding the advanced state of our manufactures, we daily adopt, in every art, the inventions and improvements of our neighbours' (pp. 150, 151; see also pp. 101-2). The stimulus afforded by commerce is quite general however, and exists in domestic as well as in foreign trade. Any 'commerce with strangers ... rouses men from their indolence; and presenting the gayer and more opulent part of the nation with objects of luxury, which they had never dreamed of, raises in them a desire for a more splendid way of life than what their ancestors enjoyed' (p. 101). There is thus a two-way connexion between technology and luxury. Wherever circular causation exists (in which time is needed for some effects to work themselves out) there is in principle the possibility of dynamic process. The various interconnexions between commerce, luxury, the surplus and technology can give rise to patterns of growth, fluctuation or decline (for a simple illustration, see Waterman 1988). Though Hume does not actually say so, there are many passages in the essays which show recognition of this merely formal -- not to say mathematical -- point.

14. Culture

'Culture' is another neologism of which Hume is guiltless. According to T. S. Eliot (1948, p. 31) it now includes 'all the characteristic activities and interests of a people: Derby Day, Henley Regatta, Cowes, the twelfth of August, a cup final, the dog races, the pin table, the dart board, Wensleydale cheese, boiled cabbage cut into sections, beetroot in vinegar, Gothic churches and the music of Elgar'. Though so capacious a definition might be consistent with Hume's own way of thinking, I shall confine the term to mean what he actually wrote about in the essays: intellectual and political culture, including 'the finer arts of sculpture, painting and music' (p. 53); 'politeness and learning' (p. 64); 'the arts and sciences' (p. 61); 'the liberal arts which depend on a refined taste or sentiment' (p. 68); 'religion and politics, and consequently metaphysics and morals. ... Mathematics and natural philosophy' (p. 69); 'Laws, order, police, discipline' which maintain the security of property and therefore what Hume understands by

justice (pp. 109, 202). It would seem that Hume regarded 'culture' in this sense as a direct consequence of at least seven of the other elements so far considered: the surplus, commerce, luxury, civil liberty, whether the constitution is monarchical or republican, contingency, and technology. There is a two-way connexion between technology and culture. I shall consider each of these possible relations in turn.

(a) The surplus

Because the 'land furnishes a great deal more of the necessities of life, than what suffices for those who cultivate it' there exists what Chalmers later defined as a 'disposable population' (see Waterman 1991). In wartime this is available for national defence; 'In times of peace and tranquillity, this superfluity goes to the maintenance of manufacturers, and the improvers of liberal arts' (p. 99). Either way, the surplus is a necessary condition of 'culture'.

(b) Commerce

Hume believed that in primitive economies 'a habit of indolence naturally prevails' (p. 98). But commerce 'rouses men from their indolence'; and without it we should sink again into 'the same state of sloth and ignorance that prevails in MOROCCO and the coast of BARBARY' (pp. 98, 101, 153). A state of 'perpetual occupation', by which 'The mind acquires new vigour; enlarges its powers and faculties' (p. 106) is necessary for any 'refinement in the arts'; and such a state is produced by commerce. In general, 'nothing is more favourable to the rise of politeness and learning, than a number of neighbouring and independent states, connected together by commerce and polity' (p. 64).

(c) Luxury

Luxury too, is chiefly relevant in this context as a stimulus to mental activity. Where there is no demand for 'all the commodities, which serve to the ornament and pleasure of life ... men sink into indolence, lose all enjoyment of life ...' (p. 108).

(d) Civil Liberty

In general, Hume maintained, 'it is impossible for the arts and sciences to arise, at first, among any people unless that people enjoy the blessing of a free government' (p. 61). The crucial feature, in this context, is the rule of law. For 'From law arises security: From security curiosity: And from curiosity knowledge' (p. 63). Civil liberty is a necessary condition of the 'first growth' of intellectual culture, and always conducive to its flourishing.

(e) Political Constitution, whether Monarchical or Republican

A recent editor of Samuel Johnson's *Journey to the Western Islands of Scotland* (Johnson and Boswell 1990, p. xxix) has affected amazement that Johnson should have 'genuinely believed that civilized manners are the product of kings and their courts'. Yet on this matter at any rate, The Great Moralist was at one with his imagined adversary, The Great Infidel. In the essay 'Of the Rise and Progress of the Arts' Hume declares of the 'arts and sciences' that 'though the only proper nursery of these noble plants be a free state; yet may they be transplanted into any government; and ... a republic is most favourable to the growth of the sciences, a civilized monarchy to that of the polite arts' (p. 67). This is because 'A strong genius succeeds best in republics: A refined taste in monarchies' (p. 69). The latter arises from the fact that in monarchies 'a long train of dependence from the prince to the peasant ... begets in everyone an inclination to please his superiors, and to form himself upon those models, which are most acceptable to people of condition and education. Politeness of manners, therefore, arises most naturally in monarchies and courts; and where they flourish, none of the liberal arts will be altogether neglected or despised' (p. 70). By 'the sciences' in these passages, Hume means metaphysics, morals, mathematics and natural philosophy (p. 69): by 'the polite arts' he would seem to mean not only good manners but also the 'liberal arts', including 'sculpture, painting and music, as well as poetry' (p. 53).

(f) Contingency

'Those who cultivate the sciences in any state, are always few in number: The passion which governs them, limited: Their taste and judgment delicate and easily perverted: And their application disturbed with the smallest accident. Chance, therefore, or secret and unknown causes, must have a great influence on the rise and progress of all the refined arts' (p. 60).

(g) Technology

We are at last in a position to see why Hume maintained, in the quotation with which this paper began, that 'refinements in the mechanical arts ... commonly produce some refinement in the liberal' (p. 107). This is not a simple, one-way causal process from 'the mode of production' to 'the social, political and spiritual process of life', in the crudely Marxian sense suggested by those particular words. For '... industry is much promoted by the knowledge inseparable from ages of art and refinement' (p. 109). There is circular causation between 'technology' and 'culture'. But in a still more complex manner, the two are held together in any particular *state of society* created by the interaction of all the elements I have identified. This state Hume called 'the spirit of the age'. Even though high culture is the achievement of a few, for example, 'it is impossible but a share of the same spirit and genius must be antecedently diffused throughout the people among whom they arise' (p. 60). This is because

The spirit of the age affects all the arts; and the minds of men, being once roused from their lethargy, and put into a fermentation, turn themselves on all sides, and carry improvements into every art and science. Profound ignorance is totally banished, and men enjoy the privilege of rational creatures, to think as well as to act, to cultivate the pleasures of the mind as well as those of the body (p. 107).

My rational reconstruction of Hume's account of the nexus between 'technology' and 'culture' is complete. Samuel Johnson, observing in 1753 a spontaneous order among the thousands that swarm in the streets of London, had admired 'the secret concatenation of society, that links together the great and the mean, the illustrious and the obscure' (Johnson [1753] 1986, pp. 186, 188). In 'Refinement of the Arts', Hume employed the same image (of a chain, or a chaining together) and developed it more fully: '... *industry, knowledge and humanity*, are linked together by an indissoluble chain, and are found, from experience as well as reason, to be peculiar to the more polished, and, what are commonly denominated, the more luxurious ages' (Hume 1994, p. 107). Moreover, 'industry, knowledge, and humanity, are not advantageous to private life alone: They diffuse their beneficial influence on the *public*, and render government as great and flourishing as they make individuals happy and prosperous' (p. 108). It seems doubtful whether even Hume could have stated with any greater clarity and precision the relation between the strategic factors in economic and social development; and the connexion between these factors and the eighteenth-century debate on 'wealth' and 'virtue' in the Scotland of his day, and in the larger North Atlantic society of which Scotland was a part.

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