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Evolution of the Constitution

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An 'analytic narrative' is the presentation of crucial historical events, using the intuitions of rational choice theory, to clarify the motivations and beliefs of the principal actors. This article attempts to understand a dilemma embedded in the Declaration of Independence: the expected costs of war against Britain far exceeded any possible benefits, if these are construed simply as the removal of colonial taxation. Furthermore, war against Britain necessitated an alliance with a potential aggressive power, France. An analysis is presented indicating that the benefits also included the enormous reward of the west and the 'costs' incorporated possible future aggression by France and Spain. The narrative is extended to the Ratification of the Constitution in 1787, to suggest that the Federalists, and Madison, justifiably feared Spanish aggression in the Mississippi Valley. In the 1790s, consensus (about credible threats by the European powers) fragmented, and this led to entirely different policy preferences by Federalists and Jeffersonian Republicans. Napoleon's imperial intentions in Louisiana were, however, thwarted by the defeat of the French forces in Haiti in 1802–03. The result was the Louisiana Purchase of 1803–04.While the necessary causes of these various constitutional transformations can be appreciated, there appears to be an element of contingency, or happenstance, embedded in the sufficient causes. The purpose of the exercise is to attempt to understand the possibly chaotic basis of rapid institutional change.

A constitution is almost a living entity, but it also incorporates institutional features, 'the rules of the game in a society, or more formally the humanly devised constraints that shape human interaction'.[1] Much more important than the rules themselves is the conceptual basis for the acceptance of these rules. To use the terminology of game theory, the beliefs that underpin the constitution must themselves generally be in equilibrium.[2] That is, under 'normal' circumstances, the rules of the constitution are grounded in what might be called

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[1] Douglass North, *Institutions, Institutional Change and Economic Peformance* (Cambridge: Cambridge University Press, 1990), p. 3.

[2] Calvert suggests that an 'institution' is an equilibrium of behaviour in an underlying game. Implictly I am extending this idea by focusing not on behaviour but on the beliefs that rationalize the behaviour. See Randall Calvert, 'Rational Actors, Equilibrium, and Social Institutions', in Jack Knight and Itai Sened, eds, *Explaining Social Institutions* (Ann Arbor: Michigan University Press, 1995), pp. 57–93.

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a 'core belief'.[3] This is not to assert that the core belief remains unchanged during normal times; if change does occur it will be gradual. In extraordinary times, however, the core belief is fractured in some fashion, typically because of the realization that the society is faced with a deep 'quandary'. Such a quandary may be due to an inconsistency, internal to the logical structure of the core beliefs, or to a disjunction between the core belief and some external aspect of social reality. When society faces a deep quandary, then mutually incompatible beliefs may populate the society; very often a new equilibrium is attained only in the aftermath of war.[4]

The core belief will generally consist of a number of components, and if one of these is called into question in a profound fashion, then the belief in the relevance of the entire constitution may fail. For example, the events of the Depression during the 1930s cast doubt on the belief in the compatibility of the free-market system and democracy. By rejecting a secondary core belief in the validity of 'the strong equilibrium hypothesis of economics', John Maynard Keynes was able to act as a 'Prophet of Chaos' to cast a new light on this Depression quandary.[5]

The re-creation of the core belief during a period when the quandary is first realized, and then resolved, is a time of great uncertainty. Since the core belief is an equilibrium, the holding of this belief by many agents in the society means that the belief itself can provide a means by which acts are mutually intelligible.[6] That is, the belief itself can provide a basis for 'common knowledge'. This feature of the belief equilibrium means that each person may have some information about others' preferences, and also know that others have knowledge about the person's own preferences and strategies. Through such common knowledge, 'Hobbesian' chaos may be avoided.[7] However, when the core belief is no longer generally tenable, then the common knowledge

[3] I use the term 'core belief' to indicate an analogy with the notion of a core in a voting game. A voting core is an outcome (or set of outcomes), unbeaten under the particular system of rules and preferences of the society. A 'core belief' is a belief (or set of beliefs) that is generally accepted in the society. This notion is developed in Norman Schofield, 'The Heart of the Atlantic Constitution: International Economic Stability, 1919–1998', *Politics and Society*, 17 (1999), 173–215.

[4] Evolutionary game theorists have formally examined the destruction of one equilibrium and the creation of a new one, but the tools they have used have been based on adaptive learning. It seems to me that the more interesting, and difficult, case is when violence rather than learning resolves the quandary. See H. Peyton Young, *Individual Strategy and Social Structure: An Evolutionary Theory of Institutions* (Princeton, NJ: Princeton University Press, 1998).

[5] See John Maynard Keynes, *The General Theory of Employment, Interest and Money* (London: Macmillan, 1936), particularly p. 349. The essence of Keynes's argument is that uncertainty may destroy the market equilibrium. Here I am interested in how uncertainty may give way to consensus. See also Schofield, 'The Heart', pp. 189–202, for a discussion of Keynes's emphasis on the importance of uncertainty.

[6] Kenneth Arrow, 'Rationality of Self and Others in an Economic System', *Journal of Business*, 59 (1986, Supplement), 385–99.

[7] See Norman Schofield, 'Anarchy, Altruism, and Cooperation: A Review', *Social Choice and Welfare*, 2 (1985), 207–19, for a discussion of this 'escape' from the prisoner's dilemma version of the Hobbesian 'Warre'.

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foundation of co-operation may fail, and the society may also fragment, with each faction engaging in acts that appear incomprehensible, or threatening, to others. It is for this reason that war, or other forms of political violence, may occur at the onset of a quandary. Sometimes, of course, the victor simply imposes a new core belief on the loser (though this is likely to lead to further war). An earlier analysis of the success of international economic institutions after the Second World War suggests that sometimes the quandary can be resolved by an 'Architect of Order' who is able to transmute, in some manner, the belief in question so that it is once again tenable, and provides the common knowledge foundation for co-operation.[8] The changes in the constitution, and its institutional apparatus, that accompany such a transmutation tend to occur very rapidly indeed, and in a fashion which at the time appears entirely unpredictable.

This conception of the slow evolution of a Constitution in normal times, and rapid change or transformation at the onset of the quandary, is obviously somewhat similar to the Kuhnian notion of scientific revolution.[9] A similar idea, that of 'punctuated equilibrium', has also been put forward in evolutionary biology.[10] However, my application, in this article, to the evolution of the American Constitution, is essentially an extension of an argument made by William Riker almost twenty years ago. To explain Riker's point of view, it is necessary to make a brief digression on the results of social choice theory obtained in the late 1970s.

The so-called 'chaos theorem' of voting has shown that majority rule equilibria can almost never occur; instead, voting cycles or disequilibria are almost certain.[11] In interpreting these theorems in 1980, Riker argued that 'in the long run, nearly anything can happen in politics'.[12]

The neo-institutionalists of that time were, however, able to use the device

[8] See Schofield, 'The Heart', pp. 197–202, for a brief interpretation of the Marshall Plan and the Bretton Woods Institutions along these lines. In this instance, of course, Truman was the Architect of Order.

[9] Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: Chicago University Press, 1962).

[10] Niles Eldredge and Steven J. Gould, 'Punctuated Equilibria: An Alternative to Phyletic Gradualism', in Thomas Schopf, ed., *Models in Paleobiology* (San Francisco: Freeman, 1972), pp. 82–115. This notion has been used to account for the very rapid evolution of the genus *Homo*. See William Calvin, *The Ascent of Mind* (New York: Bantam, 1991); and Ian Tattersal, *Becoming Human* (New York: Harcourt Brace, 1998). It has also been suggested that this rapid evolution was triggered by climatic change induced by chaotic behaviour of deep sea currents in the Atlantic; see Brian Fagan, *Floods, Famines and Emperors* (New York: Basic Books, 1999). These connections suggest that, in any evolutionary system, rapid transformation is a consequence of chaotic, or at least, contingent causes.

[11] An outline of these results on voting 'chaos' is given in William Riker, *Liberalism Against Populism* (San Francisco: Freeman, 1982), pp. 185–8. For later surveys of this literature, see Norman Schofield, *Social Choice and Democracy* (Berlin: Springer, 1986); and David Austen-Smith and Jeff Banks, *Positive Political Theory I* (Ann Arbor: Michigan University Press, 1999).

[12] William Riker, 'Implications from the Disequilibrium of Majority Rule for the Study of Institutions', *American Political Science Review*, 74 (1980), 432–446, reprinted in Peter

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of fixed and stable institutional rules to propose the existence of equilibria of tastes (or preferences), that bypassed the consequences of the chaos theorems.[13]

However, Riker conceived of an institution itself as an equilibrium. As he says,

> the losers [in a constitutional system] are likely to want to change the committees and jurisdictions in the hope of winning on another day. In the end, therefore, institutions are no more than rules and rules are themselves the product of social decisions. Consequently, the rules are also not in equilibrium. One can expect that losers on a series of decisions under a particular set of rules will attempt (often successfully) to change institutions and hence the kind of decisions under them.[14]

Riker's concern with the possibility of changing the rules of an institution led him to the notion of *heresthetic* – the art of constructing choice situations so as to be able to manipulate outcomes.[15] The essence of Riker's notion of heresthetic is the claim that, in any political context, the final outcome depends on the way choices are framed, on the precise set of alternatives, or on the details of the rules of political decision making. He used this idea to explain key events in the history of American federalism: the drafting and ratification of the US Constitution and the coming of the American Civil War.[16]

In fact, Riker's work on 'historical heresthetics' after 1980 reflected his much earlier interest in the American Constitution, particularly in the nature of the 'federal bargain' attained by the Ratification of the US Constitution in 1787–89. His first two books had introduced a distinction between the centralized federalism of the United States after 1789, and the peripheralized federalism of the Confederation of 1783–89.[17] His later book on Federalism argued that a *necessary* cause of the federal bargain was that politicians who accept the bargain perceive that the bargain overcomes an external military or diplomatic threat, or provides access to an obvious military or diplomatic opportunity.[18] By

(F'note continued)

Ordeshook and Kenneth Shepsle, eds, *Political Equilibrium* (Boston, Mass: Kluwer-Nijhoff, 1982), pp. 3–24.

[13] See, for example, Kenneth Shepsle, 'Institutional Arrangements and Equilibria in Multidimensional Voting Models', *American Journal of Political Science*, 73 (1979), 27–60.

[14] Riker, 'Implications', *Political Equilibrium*, p. 22.

[15] William Riker, *The Art of Political Manipulation* (New Haven, Conn.: Yale University Press, 1986).

[16] This work includes William Riker, *The Development of American Federalism* (Boston, Mass.: Kluwer, 1984); William Riker, 'Rhetorical Interaction in the Ratification Campaign', in William Riker, ed., *Agenda Formation* (Ann Arbor: University of Michigan Press, 1993), pp. 81–123; William Riker, 'The Experience of Creating Institutions: The Framing of the United States Constitution', in Knight and Sened, eds, *Explaining Social Institutions*, pp. 121–44; William Riker, *The Strategy of Rhetoric: Campaigning for the Ratification of the Constitution* (New Haven, Conn.: Yale University Press, 1996).

[17] See William Riker, *Democracy in America* (New York: Macmillan, 1953); and William Riker, *Soldiers of the States* (Washington, DC: Public Affairs Press, 1957).

[18] William Riker, *Federalism: Origin, Operation, Maintenance* (Boston Mass.: Little Brown, 1964), p. 13.

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a necessary cause, Riker clearly intimated that, in the absence of a threat or opportunity, a centralized federation would not come into being. While the book made a case for this general inductive hypothesis, Riker also argued that the threat of the British in the northwest, and of the Spanish in the southwest, circa 1787, to the Confederated States, together constituted the *necessary* cause for the federal bargain of the Constitution.

Various writings by Jay, Madison, Hamilton and Washington all suggested:

> the primacy of the military motive in the adoption of centralized federalism. The suggestion is, in fact, so strong that one wonders how Beard … . could ever have believed that the main issues at Philadelphia were domestic matters of the distribution of income.[19]

Much of Riker's later work up until 1980 can be seen as an attempt to develop the foundation of a positive political theory, capable of permitting a study of the possible *sufficient* cause of dramatic constitutional changes, such as the Ratification. Riker's much later focus on the notion of heresthetic is compatible with a perception that sufficent causes of such transformations may be inherently unpredictable, or *contingent*.[20]

However, in Riker's last book, published after his death and edited from his collected papers, the emphasis changed from *heresthetic* to *rhetoric*. My interpretation of this last piece of work on the Ratification is that it was intended as a detailed study of the way in which participants to the Federal bargain became persuaded as to the rationality of the constitutional change.[21] In essence, it was an examination of the sufficient cause of the bargain. The key to Riker's analysis was the assumption of risk aversion on the part of the participants. Arguments on the great costs associated with the failure of confederation to deal with outside threats were indeed credible. For most risk-averse participants these anticipated costs outweighed the costs of the 'loss of freedom' of federation. Presented in this fashion, it is clear that Riker's analysis turned on the 'beliefs' of the participants to the bargain. By 'beliefs' I mean the 'subjective probability estimates' associated with the various anticipated and possibly undesirable consequences of their choices.

To see this, consider an alternative way to model the ratification decision by postulating that the 'preferences' of the participants can be embedded in a one-dimensional policy 'space'. In this space, the *status quo* (the Articles of Confederation) is at one end of the political dimension, and a strong federal state

[19] Riker, *Federalism*, p. 19. Obviously Riker refers here to Charles Beard, *An Economic Interpretation of the Constitution of the US* (New York: Macmillan, 1913).

[20] For example, Riker traced the cataclysmic event of the Civil War to a heresthetic manœuvre by Lincoln in the Lincoln–Douglas debate in Freeport, Illinois, during the Illinois Senate race; see Riker, *The Art of Political Manipulation*, pp. 1–9. A discussion of this theme in Riker's research is offered in Norman Schofield, 'Constitutions, Voting and Democracy: A Review', *Social Choice and Welfare*, 18 (2001), 571–600.

[21] Riker, *The Strategy of Rhetoric*. This book built on an earlier article: William Riker, 'Why Negative Campaigning is Rational', *Studies in American Political Development*, 5 (1991), 224–300.

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at the other.[22] Since ratification involved voting, the standard spatial voting model would imply the existence of a political compromise point (a voting 'core') located somewhere between the two extremes.[23] However, such an interpretation gives no indication why Hamilton and Madison, for example, were Federalists (strongly in favour of Federation) in 1787, but later diverged in their opinions over the balance of power between central government and the states. Obviously enough, preferences over a strong or weak state are determined by inferences made about the consequences of each of the possibilities. Since these outcomes cannot be known with certainty, preferences of the kind just postulated are secondary to estimates of probabilities associated with these outcomes. Such an emphasis on probabilities (or beliefs) is compatible with the general model of preference under risk proposed by Leonard Savage.[24]

In this framework, fundamental preferences are the primitive parameters. In choosing between lotteries of outcomes, an individual reveals beliefs (or probability assessments) about states of the world. Given these beliefs, the individual chooses acts that are rational *vis-à-vis* fundamental preferences. In general, however, the fundamental preferences cannot be deduced from acts, unless the beliefs can also be ascertained. Moreover, since the choices over acts are made in the presence of risk, the risk posture of the individuals must also be determined. It is well known that individual choices under risk can be quite counter to traditional axiomatic choice models.[25]

It is not my intention to focus on peculiarities of decision making under risk, but rather to argue that there are situations where preferences over acts can change rapidly, as a consequence of a particular kind of transformation in belief. In the next section I shall suggest that such rapid belief transformations, or 'cascades', took place both in 1787–89 and in 1776, and resulted in these two instances of dramatic constitutional change.

CONSTITUTIONAL TRANSFORMATIONS, 1774–1789

There is good reason to accept Riker's argument that foreign threat was a necessary cause for adopting Union, a system of centralized federalism, put in place after 1789. To simplify, let us use A_1 to denote a choice for Union and A_2 the choice for the status quo. Under A_2 there was some probability, p, say, that

[22] In fact the ratification decision was indeed studied by Fink and Riker using this perspective. See Evelyn Fink and William Riker, 'The Strategy of Ratification', in Bernard Grofman and Donald Wittman, eds, *The Federalist Papers and the New Institutionalism* (New York: Agathon, 1989), pp. 220–55.

[23] See the classic treatment by Anthony Downs, *An Economic Theory of Democracy* (New York: Harper, 1957). Obviously, the particular compromise, or core, depends on the institutional voting rule and the distribution of preferred points.

[24] Leonard Savage, *The Foundations of Statistics* (New York: Dover, 1954).

[25] See, for example, Daniel Kahneman and Amos Tversky, 'Prospect Theory: An Analysis of Decision under Risk', *Econometrica*, 47 (1979), 263–91.

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Spain would implement the threat by closing the Mississippi (at a cost T, say). Under A_1 the probability of such a threat would be much reduced, indeed negligible. However, some participants feared that Union would, with high probability q, say, impose a cost F, say, of loss of freedom or autonomy. Comparing expected costs (qF) associated with A_1 and (pT) with A_2 leads to a choice, an act, for each participant. Riker's earlier argument over the federal bargain was simply that the absense of a threat ($T = 0$) implies a choice for A_2. However, this analysis does not deal with the possibility that Union would lead to pervasive factional chaos. It is clear from Madison's writings (in *Federalist 10* for example) that he considered this a real possibility. If we let r denote the probability of factionalism, and C the cost of chaos, then the choice between A_1 and A_2 turns on the values of $qF + rC$ and pT.

While there was recognition in the period 1784 to 1787 that the expected cost (pT) of the status quo was high, the general understanding of political theory at this time was that factional chaos under Union was very likely. If indeed this theory was correct, then the expected costs for Union for most participants would necessarily exceed the expected costs of the status quo. This decision problem has many of the elements of a quandary, particularly for those who favour Union. While Union is an obvious solution to the possibility of an outside threat, the likelihood that any federation would be destroyed by factional chaos made such a solution unacceptable. Madison's genius, in his essays on 'Vices of the Political System of the United States' (1786) and in *Federalist 10* (1787) was to give a theoretical argument why factional chaos need not be feared.[26] The credibility of Madison's argument would have the effect of reducing (rC), making A_1 a rational choice. The voting in the Convention in 1787–89 did result in a majority for ratification, and thus in what I have termed a *core belief* in the rationality of Union. Madison's argument can therefore be seen to be an essential element (in the presense of the outside threat) of a *sufficient* cause of the federal bargain. Of course, many complex compromises over the nature of the constitutional apparatus were put in place before the final federal bargain was made. Nonetheless, a general acceptance of the necessity of Union seems to have occurred fairly rapidly in 1787–89.[27]

If ratification of the Constitution followed as a consquence of a general acceptance of a particular balance of costs and benefits, then it also makes sense to consider the decision to declare Independence in July 1776 from a similar perspective. Understanding this earlier decision requires an estimation of the costs and benefits and plausible subjective probabilities associated with various

[26] See James Madison, 'Vices of the Political System of the United States', and 'Federalist 10', in Jack Rakove, ed., *Writings* (New York: Literary Classics of the United States, 1999), pp. 69–80 and pp. 160–7 respectively.

[27] A rapid change in beliefs of this kind has been called a 'belief cascade'. See Sushil Bikhchandani, David Hirschleifer and Ivo Welsh, 'A Theory of Fads, Fashions, Customs and Cultural Change as Informational Cascades', *Journal of Political Economy*, 100 (1992), 992–1026; and Arthur Denzau and Douglass North, 'Shared Mental Models: Ideologies and Institutions', *Kyklos*, 47 (1994), 3–32.

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outcomes. Of course, one could argue that, in 1776, a general belief that 'taxation without representation is tyranny' gained ground in the colonies in the period after the end of the seven years war in 1763. While it is plausible that such a belief cascade was indeed generated in the Colonies prior to 1776, the studies that have been carried out do not appear to give a realistic account of the motivations of the British and American decision makers. In particular, in declaring Independence, the members of the Continental Congress expressed a willingness to accept the great costs of war. To simplify greatly, each member of Congress should rationally compute the expected costs of war after such a declaration (say qC, where q is the probability of war, and C the cost) against the expected costs of the status quo (involving the probability that the British intended tyranny and T, the cost of this tyranny).[28] Presented in this fashion, it is evident that unless the magnitude of T is very high, then an 'expected utility maximizer' would not choose independence. An alternative way of interpreting this decision problem under risk is to regard the absolute value of T as some prize to be gained by the Colonies through a successful prosecution of a Revolutionary War. The Appendix argues that avoidance of taxation is simply inadequate as a sufficient prize. In contrast, I emphasize that the British attempted to close the entire Ohio Valley to settlement, by passing the Quebec Act in 1774. I argue in the next section that this can be seen as determining the prize to the Colonists, as well as making evident the nature of British tyranny. This interpretation of the Quebec Act makes intelligible the British actions: the British were themselves in a constitutional quandary over the appropriate resolution of the conflict between the Indian tribes of the Ohio Valley and the colonial settlers. This conflict had become obvious during the rebellion of many of the tribes, led by Pontiac, in 1763–65.

In line with Riker's interpretation presented above, the magnitude of the prize of the Ohio Valley was a necessary cause of the first step towards an independent federal republic. This prize is obviously not a sufficient cause, since with some subjective probability, p, say, the Colonies would lose a war with the British. I argue in the Appendix that any plausible estimation of the probability of success against the British would be too low for an expected utility maximizer to choose Independence. However, I present evidence to indicate that word of the promise of French aid reached the Continental Congress prior to July 1776. This information would have the effect of increasing the estimated probability of success. As a consequence, an overwhelming majority of the Continental Congress came to agree that a Declaration of Independence was rational. This secondary belief in the rationality of such a choice can also be termed a 'core belief' held by members of the Continental Congress. By declaring Independence, and thus transmitting a signal to the colonial population, a more general core belief in the justification of war was created.[29]

[28] The Appendix to the website version of this article gives a more precise form of this calculation.

[29] In current terminology, the signal from the Continental Congress provided information on expected costs and probabilities to a generic member of the population, leading to changes in prior probabilities. As a consequence, at least half the population agreed with the choice.

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The two instances of the 1776 Declaration and the 1787 Ratification appear to pass through a number of similar phases. As regards the declaration, it is fairly evident that general disatisfaction with British actions became manifest, but the actual intentions of the British must have been quite uncertain. It is reasonable to call such a situation a *quandary*. After the passing of the Quebec Act, uncertainty over British intentions diminished since the Act itself made these intentions clear.[30] We might interpret the situation in early 1776 as a *dilemma*, since expected costs of accepting the status quo and of declaring independence were both high, and comparable. The crucial information about French aid transformed the dilemma into a choice, associated with a core belief in the rationality of a Declaration of Independence. Of course, it should be noted that this choice depended on the decision by the French king, Louis XVI, to promise aid. As I mention below, had Louis paid attention to his finance minister, Turgot, no aid would have been provided. This cause was therefore somewhat contingent. However, Benjamin Franklin worked very hard indeed to develop contacts with the French Court, and it is not unreasonable, therefore, to regard him, in some sense, as the architect of the decision.

In a similar fashion, after 1784, the uncertainty over Spanish intentions generated a quandary over appropriate actions. Once Spanish intentions were declared through the attempt to close the Mississippi, the decision problem became a dilemma. The costs both of accepting the status quo of the Articles of Confederation, and of moving to a closer Union were high, and again perceived to be comparable. As I suggest below, Madison's arguments, about the ability of a Republic to defend against factionalism, transformed the dilemma into a choice.

These two transformations in the Constitution occurred rapidly. Other significant events in US history, such as the onset of the Civil War, may have occurred in a similar fashion through a progression from quandary to dilemma to core belief to choice.[31]

These interpretations of constitutional change, while building to an extent on Riker's work, focus on somewhat different features. It is not so much that Franklin and Madison engaged in heresthetic manœuvres in 1776 and 1787. Both had a clear understanding of the nature of the dilemmas facing the American people and acted through diplomacy and exegesis to transform the beliefs of the Continental Congress and of the Constitutional Convention.

[30] There were numerous 'prophets of chaos' who presented the case for the need for independence. Thomas Paine could, of course, be singled out. See Jack Rakove, Andrew Rutten and Barry Weingast, 'Ideas, Interests and Credible Commitment in the American Revolution' (unpublished paper, Stanford University, 1999), for a discussion of the belief cascade over British intentions.

[31] I have argued elsewhere that Lincoln's election in 1860 was the consequence of a belief cascade in the northern electorate. Lincoln's 'House Divided' speech in Illinois in June 1858, his debates with Steven Douglas from August to October 1858, and his speeches in New York and New Haven in February and March 1860, all suggested that the Dred Scott decision, by the Supreme Court in 1857, could lead to the extension of slavery to the free states. See Norman Schofield, 'Quandaries of War and Union', *Politics and Society*, 30 (2002), forthcoming.

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THE QUANDARY OF THE DECLARATION OF INDEPENDENCE

The previous section suggested that the framework of fast or slow evolution can be used to re-examine the causes of the Revolutionary War of 1776–83, as well as the origins of the Constitutional Ratification after 1787.[32] As I have noted above, the 'cause' of the Revolution can, of course, be framed in terms of the belief that 'taxation without representation is tyranny', and recent analyses have argued for the important role of such 'constitutional' ideas.[33]

However, if we accept the outline presented above on the cause of a belief cascade, then it is necessary to contrast the costs of this tyranny (T) against the costs of war (C), weighed by the subjective probabilities q, that the British intend the tyranny and p, that the Americans would lose the war.

A serious problem for understanding the rational basis for the Declaration is that Britain had shown itself, during the Seven Years War (also called the French and Indian War) of 1756–1763, to be an extremely powerful military and fiscal state. Any reasonable calculation would give high values to p and C. Even if there is some basis for believing that q was high (close to one), but T was low, then Revolution became irrational. Since there were obvious differences of opinion in the Colonies over the rationality of Revolution, it is plausible that subjective estimates of T varied in the colonial population. I contend, however, that many of the Colonial elite had good reason to believe T was high. Moreover, I shall argue that T had almost nothing at all to do with taxation. In 1774, Britain passed the Quebec Act, allocating control of the Ohio Valley to British Quebec. Many historians have commented on this Act in terms of British acceptance of French Catholicism. The real effect for the Colonies was, however, noticed by Thomas Paine.

> Should affairs be patched up with Britain, and she to remain the governing and sovereign power of America … we shall deprive ourselves of the very means of sinking the debt we have, or may contract. The value of the backlands which some of the provinces are clandestinely deprived of, by the unjust extension of the limits of Canada, valued only at five pounds sterling per hundred acres, amount to upwards of twenty-five millions, Pennsylvania currency; and the quit-rents … to two millions yearly.[34]

Marc Egnal has also argued that 'the revolutionary movement was led by an upper-class faction whose passionate commitment to the rise of the New World was evident well before 1763.'[35]

The changes in property rights implied by the Quebec Act meant that the

[32] By distinguishing between periods of slow and fast constitutional change I mean to suggest that the appropriate theoretical tools to study slow change may be very different from those appropriate to fast change.

[33] See, for example, Jack Rakove, *Original Meanings* (New York: Alfred Knopf, 1996).

[34] Thomas Paine, *Common Sense*, in Eric Foner, ed, *Collected Writings* (New York: Literary Classics of the US, 1995; orig. 1776), p. 49.

[35] Marc Egnal, *A Mighty Empire* (Ithaca, NY: Cornell University Press, 1988), p. xi. See also Kevin Phillips, *The Cousins' War* (New York: Basic Books, 1999), p. 118.

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expectations of many of the colonial elite (including Washington) of wealth from land speculation were dashed.[36]

As a recent biographer of Washington has put it,

> the French Canadian fur traders were rewarded by the extension of the provincial borders [of 'French' Canada] to the Ohio River, thus wiping out all the land grants not only of Washington but of the Franklins and other land-hungry speculators … [37]

It is interesting to note that Jefferson's draft constitution for Virginia, completed on 13 June 1776, makes no direct reference to the Quebec Act but does include, in its list of denunciations of George III of Great Britain, the assertion that the King endeavoured 'to bring on the inhabitants of our frontiers the merciless Indian savages whose known rule of warfare is an undistinguished destruction'.[38]

In the bill of indictment against George III drawn up by Jefferson in late June 1776, there is a direct reference to the Quebec Act, that the King gave his assent 'for abolishing the free system of English Laws in a neighboring province, establishing therein an arbitrary government, and enlarging it's [*sic*] boundaries, so as to render it at once an example and fit instrument for introducing the same absolute rule into these states'.[39]

This phrase was retained in the Declaration of Independence of 4 July. I contend that this cost of tyranny was enormous, and almost counter-balanced the likely costs of war. However, it was also crucial to the rational calculations of the colonial elite that an ally be found. In fact, Louis XVI of France agreed in March 1776 to help fund the Revolution to the extent of 10 million livres (over $1.6 million). This was against the arguments of the French finance minister, Turgot.

The Appendix outlines a 'game' between the American Colonies, Britain, France and Spain, which underlay the Declaration. In fact, this game is presented from the perspective of the Colonies. Some attempt is also made to formally analyse the rationality of the British and French decisions. However, questions can be raised about the British and French choices at this point.

First of all, why did Britain pass the Quebec Act (which I argue is the catalytic event of the Revolution)? I contend that the intention was not primarily

[36] See Ben Baack, 'The American Revolution: A Reinterpretation' (unpublished paper, Department of Economics, Ohio State University). He argues that the fundamental cause of the Revolution was a mercantilist conflict between Britain and the Colonies over extraction of 'rents' from the Ohio Valley. From this perspective, the cost, *T*, of British tyranny to the Colonies was enormous, but the game between Britain and America was zero-sum, so the gain to Britain of this tyranny was also enormous. I suggest below that the game, from the British side, was more complex.

[37] Willard Stern Randall, *George Washington: A Life* (New York: Henry Holt, 1997), pp. 264–5. Washington had, of course, been incensed by the earlier Proclamation of 1763. See his letter to Charles Washington (31 January 1770) in George Washington, *Collected Writings*, John Rhodehamel, ed. (New York: Literary Classics of the US, 1997), pp. 134–7.

[38] Thomas Jefferson, in Merril Peterson, ed., *Writings* (New York: Literary Classics of the United States, 1984), p. 337.

[39] Jefferson, *Writings*, p. 21.

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mercantilist, but an attempt to protect the Indian tribes of the Ohio Valley from the settlers. Pontiac's Rebellion in 1763–65 had made the depredations of the settlers on the Indians very clear to the British. The 'Proclamation of 1763', closing the west, had little effect, and the British tried to stem the flood by a series of forts. It is possible that the British attempt to defend the Indian tribes was due either to charity or to gratitude for their assistance in the war with France in 1756–63. However, I consider it more plausible that the British perceived themselves to be under a constitutional requirement to maintain the rule of law for all subjects of the King. From this perspective, the Indians were being deprived of their rights. This interpretation suggests that the British were in a constitutional quandary which they could only solve by threatening force against the recalcitrant Colonies.[40]

This issue of Indian rights is worth pursuing further. During the Indian rebellion under Pontiac all but three of the British forts in the Northwest Territory had been taken by June 1763. The Proclamation of 1763 was meant to acknowledge Indian rights and help bring about peace. The Proclamation line essentially defined a huge area between the Appalachians and Mississippi as Indian. The later treaty of 1765 with Pontiac stipulated that, though the forts were British, the land was not. As a recent commentator has put it: 'The … Crown … wanted to prevent "unjust Settlement and fraudulent Purchase" of Indian lands … A question still being argued is whether the Proclamation recognized a pre-existing title or created it.'[41]

As Dickason notes, the legal questions were still being discussed over a century later in Canada. Indeed, in 1885 the judgement of the Chancellor of Ontario was that the Indians become 'invested with a legally recognized tenure of defined lands; in which they have a present right as to the exclusive and absolute usufruct, and a potential right of becoming individual owners in fee after enfranchisement.'[42]

I argue in the Appendix that the Declaration would have been irrational on the part of the members of the Continental Congress had they not known of the

[40] Beer has discussed the differences between the notion of 'virtual representation' held in Britain and the notion of 'actual representation', as it was to be articulated in the Colonies, particularly by Madison. Under virtual representation, a member of the House of Parliament was regarded as speaking on behalf of the whole nation. He should shun 'dependence' on the electors and follow his own judgement of the public good. Rejection of this notion in the colonies is part of the explanation for the Revolution. But, of course, the welfare of the Indian tribes should be considered under the public good, if they were perceived as subjects of the King. Thus, the notion of virtual representation was, in a sense, doubly insulting to the Colonies. For these concepts of representation, see Samuel Beer, *To Make a Nation* (Cambridge, Mass.: Harvard University Press, 1993), pp. 164–6. For the activities of the British Indian Department in 1763–76 see Colin Colloway, *The American Revolution in Indian Country* (Cambridge: Cambridge University Press, 1995). For details on Pontiac's Rebellion, see Fred Anderson, *Crucible of War* (New York: Knopf, 2000), pp. 535–53.

[41] See Olive Patricia Dickason, *Canada's First Nation* (Norman: University of Oklahoma Press, 1992), p. 188; and Jack Stagg, 'Anglo-Indian Relations in North America in 1763' and 'An Analysis of the Royal Proclamation of 7 October 1763' (unpublished papers, Department of Indian Affairs, Ottawa, 1981).

[42] Quoted in Dickason, *Canada's First Nation.*, p. 188.

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promise of French assistance. There is no direct evidence that the Congress knew of the promise of French aid prior to 4 July 1776, since there are no existing memoranda of the Committee of Secret Correspondence (which, under Franklin, negotiated with France). However, Benjamin Franklin's papers include a letter, in code, from Charles-Guillaume-Frederic Dumas (in Utrecht) to the Committee, dated 30 April 1776.[43] Since the company, Roderique Hortalez, set up to supply the Americans from France, was based in Utrecht, it is a plausible inference that Franklin knew of the promise of 10 million livres of French aid, prior to 4 July 1776.

Whether this aid was rational for France to provide is difficult to determine. Turgot tried to dissuade the King, since he foresaw the fiscal problems for France that would follow.[44] In fact, economic historians tend to agree that the eventual cost to France of the support it provided to the Colonies was in excess of a billion livres. The resulting debt precipitated the French bankruptcy of 1788 and, thus, the French Revolution.[45]

Initially, of course, Louis XVI must have believed that, by providing aid to the Colonies, he could help cause Britain to lose the jewel in its Empire. However, he was careful to disguise the existence of the aid, and formal treaties of friendship, commerce and alliance with the Americans were not made until February 1778. These were approved by the US Congress in May 1778, and by June of that year France and Britain were at war. The aid provided in 1776 was, however, known to the British Cabinet through the efficient British spy network, and it was mutually convenient to both Britain and France to maintain the pretence of peace for two years after 1776. In France's case, it was a question of waiting to see whether the Revolution would succeed. If it did succeed, then the potential gain to France would be the great opportunity, again, to open up the Louisiana Territory. However, the first two years of the Revolution were difficult for the Colonies, and French aid was crucial. Once the public decision to aid the Colonies was made, continuing the costly aid by the French, in the form of men and matériel, seemed rational. We can infer that Turgot understood this and believed the gamble was too risky.

Once Louis XVI made the decision in 1776 to aid the colonies, reasonable subjective estimates by the Members of the Continental Congress, of the likely expected costs of war as against acquiescence to the British, would lead to a majority decision to declare Independence. To use the terminology proposed here, a core belief was created, within the colonial elite, that war could be justified in terms of expected utility calculations. If a majority of the Continental Congress had not accepted this belief, then Independence would not have been

[43] In William Wilcox, ed., *The Papers of Benjamin Franklin (March 23, 1775 through October 27, 1776)* (New Haven, Conn.: Yale University Press, 1982), pp. 403–12.

[44] See Daniel Roche, *France in the Enlightenment* (Cambridge, Mass.: Harvard University Press, 1998), for Turgot's reform efforts prior to his dismissal in mid 1776.

[45] Kathryn Norberg, 'The French Fiscal Crisis of 1788 and the Financial Origins of the Revolution of 1789', in Philip Hoffman and Kathryn Norberg, eds, *Fiscal Crises, Liberty and Representative Government, 1450–1789* (Stanford, Calif.: Stanford University Press, 1994), pp. 252–98.

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declared. Irrespective of the beliefs in the population as a whole, there would have been no Revolutionary War in 1776.

THE QUANDARIES OVER SECURITY AND UNION, 1784–1804

I contend that the resolution of the Independence quandary at the end of the War in 1783 led almost immediately to a 'security' quandary for the new United States. Because Spain had been ceded the Louisiana territory by France in 1763 (presumably to keep Britain out of the vast area), the Spanish had, by 1783, come to view the entire Mississippi basin as their own. The Spanish flag was planted on the *east* bank of the Mississippi in November 1780, and an expedition from Spanish St Louis later captured a British post in Michigan, and proclaimed the entire Illinois River country as Spanish. By 1784 the Spanish had sought to close the entire Mississippi to American shipping. In a long letter to Thomas Jefferson in Paris (20 August 1784), James Madison expressed his deep concerns over this Spanish threat.[46] Negotiations between the foreign secretary, John Jay, and the Spanish minister, Gardoquin dragged on for two more years. As Madison's biographer says:

> John Jay … proposed that the United States agree for twenty-five years to abandon claims for navigation of the river in exchange for a commercial treaty guaranteeing American fishermen access to the huge Spanish market and favoring American merchants suffering from British discrimination. This, Jay argued would yield immediate advantages … Jay's view reflected, ominously, a much keener awareness of the interests of the Eastern, trading portion of the new nation … To Southerners and Westerners, of course, the Jay–Gardoquin project was anathema …[47]

Congress chose, by a vote of seven to six, not to pursue the negotiations with Gardoquin.[48] That seven states had shown an approval of the treaty led Madison to believe that disagreements between the States could fracture the weak Confederation.

Madison wrote to Jefferson on 19 March 1787, expressing the opinion that 'the intended sacrifice [by Jay] of the Mississippi will not be made [but] the consequences of the intention and the attempt are likely to be very serious.'[49] Even Washington expressed the opinion (to John Jay in a letter of 18 May 1786) that the Articles of Confederation needed to be amended. As he wrote, 'something must be done, or the fabrick must fall! It certainly is tottering.'[50]

[46] In James Morton Smith, ed., *The Republic of Letters: The Correspondence between Thomas Jefferson and James Madison, Vol. I, 1776–1790* (New York, Norton, 1995), pp. 337–42.

[47] Ralph Ketcham, *James Madison: A Biography* (New York: University Press of Virginia, 1971), p. 177.

[48] Unanimity was required to ratify the treaty.

[49] Smith, *The Republic of Letters*, p. 473. Indeed Rakove quotes from Madison's autobiography that Madison's objective in returning to Congress was to cancel Jay's project. See Rakove, *Original Meanings*, p. 377.

[50] Washington, *Collected Writings*, p. 600.

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Thus, we can say that, by 1786, there was a core belief among the American elite that the Union was threatened by imperial powers, Spain particularly, probably Britain, and possibly France. An obvious solution to this threat would be to devise a stronger Union, a federal apparatus. The quandary that this posed, however, was how to balance the differing interests of the States within this Union.

The essays comprising the *Federalist Papers* (published between 27 October 1787 and 28 May 1788, by John Jay, Alexander Hamilton and James Madison, in the New York *Independent Journal*) can be seen first to express the security quandary, and then to articulate a *theoretical* solution to the problem of Union. The essays by Jay and Hamilton (particularly numbers 3, 4, 5, 8 and 24) all focus on foreign threats and the costs of disunion. In *Federalist 10* James Madison presented his famous argument that heterogeneity in a Republic would make it unlikely that factional chaos could occur.[51]

It was generally regarded that democracies would be subject to such chaos. As Adam Smith had remarked, the Colonies seemed too small to avoid chaos of this kind.

> [A union with Great Britain] would, at least, deliver them from these rancorous and virulent factions which are inseparable from small democracies, and which have so frequently divided the affections of their people, and disturbed the tranquility of their governments … In the case of total separation from Great Britain … those factions would be ten times more virulent than ever.[52]

However, in *Federalist 14*, Madison distinguished between a democracy where 'the people meet and exercise the government in person' and a republic where 'they assembled and administered it by their representatives and agents'. Thus 'a republic may be extended over a large region'.

> Under the confusion of names, it has been an easy task to transfer to a republic, observations applicable to a democracy only … [for example] that [a republic] can never be established but among a small number of people, living within a small compass of territory.[53]

Earlier in *Federalist 10*, Madison argued that

> a pure Democracy … can admit of no cure for the mischiefs of faction. A common passion or interest will … be felt by a majority of the whole … Hence it is that such Democracies have ever been spectacles of turbulence and contention; have ever been found incompatible with personal security … and have … been as short in their lives as they have been violent in their deaths.

[51] By a faction Madison meant 'a number of citizens, whether amounting to a majority or minority of the whole, who are united and activated by some common impulse or passion, or of interests, adverse to the rights of other citizens, or to the permanent and aggregate interests of the community' (Madison, *Writings*, p. 161).

[52] Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (Indianapolis, Ind.: Liberty Fund, 1981; orig. 1776), p. 945.

[53] Madison, *Writings*, p. 169.

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A Republic … opens a different prospect … The two great points of difference between a Democracy and Republic are, first, the delegation of the Government, in the latter, to a small number of citizens elected by the rest: secondly, the greater number of citizens and the greater sphere of the country, over which the latter may be extended.[54]

Madison's intuitions on democracy were given formal demonstration in the so-called chaos theorems almost two hundred years later.[55] But why should a republic differ from a democracy in the fashion proposed by Madison? Beer suggests that 'representation, which necessitates the big constituencies of the big republic, would presumably restrain passion and enhance reason in the deliberative process of popular government'.[56] As Madison says in *Federalist 10,*

it may well happen that the public voice pronounced by the representatives of the people, will be more consonant to the public good …

[E]ach representative will be chosen by a greater number of citizens in the large than in the small Republic … The other point of difference is, the greater number of citizens and extent of territory which may be brought within the compass of Republican, than of Democratic Government; and it is this … which renders factious combinations less to be dreaded in the former than in the latter …

Hence it clearly appears, that the same advantage, which a Republic has over a democracy … is enjoyed by a large over a small Republic – is enjoyed by the Union over the States composing it.[57]

Madison's argument is entirely consistent with the result now known as Condorcet's Jury Theorem.[58] Consider a number of individuals choosing between two alternatives under risk. No one knows what is the correct option (but each has some probability of making the correct guess). Assuming that the average of the probabilities exceeds one-half, then a jury, using majority rule, has a better chance of making the correct choice than an average juror. Moreover, as the jury size gets large, the probability of a correct choice approaches one. The theorem, as presented by Condorcet, depends on 'independence' of votes.[59] Voter choice is, however, likely to be 'pairwise

[54] Madison, *Writings*, p. 164.

[55] Arrow proved that turbulence was possible, while McKelvey and Schofield showed that turbulence under voting had to be expected. See Kenneth Arrow, *Social Choice and Individual Values* (New York: Wiley, 1951); Richard McKelvey, 'Intransitivities in Multidimensional Voting Models and Some Implications for Agenda Control', *Journal of Economic Theory*, 12 (1976), 472–82; Norman Schofield, 'Instability of Simple Dynamic Games', *Review of Economic Studies*, 45 (1978), 475–94, and more recently Austen-Smith and Banks, *Positive Political Theory I*.

[56] Beer, *To Make a Nation*, p. 280.

[57] Madison, *Writings*, pp. 165–6.

[58] This was first expressed by Condorcet in 1785. See the translated extracts of his work in Iain McLean and Fiona Hewitt, eds, *Condorcet: Foundations of Social Choice and Political Theory* (Aldershot, Hants.: Edward Elgar, 1994).

[59] For more modern versions of the result, see Douglas Rae, 'Decision Rules and Individual Values in Constitutional Choice', *American Political Science Review*, 63 (1969), 40–56; Michael Taylor,

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dependent.' However, if the population is heterogeneous, then average dependency may be sufficiently low for the Jury Theorem still to be valid.[60] Thus, if a constituency is large, the voter population in the constituency is likely to be heterogeneous. The representative can never appeal to widely differing preferences. In a binary choice involving risk, assuming that representatives do not pursue only the interests of their constituents, and assuming further that on average they have a better than even chance of making a wise choice, then the collective choice of the representatives will be 'wise'. Condorcet had formally presented his work on the Jury Theorem and on factional instability in voting, in 1785 in Paris, and we may distinguish between them in terms of a distinction between *belief aggregation* and *preference aggregation*.

In many ways these very different results today separate those who consider political choice to be rational or irrational. Whether Madison knew of these results by Condorcet is difficult to judge.[61] What is clear, however, is that Madison's argument against factionalism in the Republic was novel and credible. In fact the most compelling argument for its plausibility was the 'correctness' of the choice of the Continental Congress in declaring independence in 1776. As I argue in the Appendix, this decision was made in a context of risk. Different members of Congress must have formed different estimates of the probabilities and costs. However, the true state of the world was obscured. The fact that the Revolution succeeded suggested that Congress made, in aggregate, a wise choice. It is true that not everyone would draw the same connection between Madison's argument and the declaration of 1776. Risk-averse decision makers might require additional safeguards against factionalism. Nonetheless, Madison did give a credible argument supporting a belief that it was possible, in principle, to reconstruct the Constitution in such a way as to make the Union stronger against threat, while maintaining the rights of individuals and states. My view of the ratification process (from the ratification of Delaware in December 1787 to that of North Carolina in August 1788) is that it was accompanied by the creation of a core belief in the possibility of Union. Using my terminology, Madison was the Architect of Order who principally constructed the theoretical framework that made this belief tenable.

The analysis just presented allows us to examine further how a belief in the necessity of centralized federalism could change over time. Different

(F'note continued)

'Proof of a Theorem on Majority Rule', *Behavioral Science*, 14 (1969), 228–31; Norman Schofield, 'Ethical Decision Rules for Uncertain Voters', *British Journal of Political Science*, 2 (1972), 193–207.

[60] See the discussion in Krishna Ladha and Gary Miller, 'Political Discourse, Factions and the General Will: Correlated Voting and Condorcet's Jury Theorem', in Norman Schofield, ed,, *Collective Decision-making* (Boston, Mass.: Kluwer, 1996), pp. 393–410.

[61] McLean and Hewitt contend that, although Madison did receive a copy of Condorcet's major work, he either did not read through it or disagreed with it. See McLean and Hewitt, *Condorcet*, pp. 65–9.

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individuals would rationally differ in their views of the degree of threat posed by Spain or Britain. A resident of North Carolina could, for example, consider that the threat of Spain in the west could best be dealt with by local militia. John Jay, from his experiences as envoy to Spain during the Revolutionary War, had developed an intense distrust of Spain. He saw Britain as a potential ally against Spain, and later, in 1794, while chief justice, concentrated his efforts on negotiating a durable peace with that imperial power. By contrast, Thomas Jefferson believed that the threat posed by Spain, and France, after 1787, could be discounted. This belief is consistent with his belief in the adequacy of a relatively weak Union.

After 1797, of course, the United States, during the administration of John Adams, was plagued by a quasi-war with Napoleonic France. In 1802–03 this potential threat by France against the United States almost turned into a full-scale conflict. Following the 'secret' treaty retroceding the Louisiana Territory from Spain to France in 1802, and the earlier slave revolt in French Saint Dominique (Haiti), Napoleon despatched a fleet under his brother-in-law, Leclerc, with 10,000 troops to reconquer Haiti. The intention was for the fleet then to sail up the Mississippi, to St Louis, and re-establish New France on the west bank of the river.[62] President Jefferson was well aware of this threat. In a famous letter to Robert Livingston, the US Minister to France, Jefferson wrote on 18 April 1802,

> Of all nations of any consideration France is the one which hitherto has offered the fewest points on which we could have any conflict of right, and the most points of a communion of interests … Her growth therefore we viewed as our own, her misfortunes ours. There is on the globe one single spot, the possessor of which is our natural and habitual enemy. It is New Orleans, through which the produce of three-eighths of our territory must pass to market … France placing herself in that door assumes to us the attitude of defiance. Spain might have retained it quietly for years. Her pacific dispositions … would induce her to increase our facilities there … Not so can it ever be in the hands of France. The impetuosity of her temper … placed in a point of eternal friction with us … render it impossible that France and the US can continue long friends … From that moment we must marry ourselves to the British fleet and nation.[63]

Jefferson's quandary disappeared, however. The French army was reduced by disease and Toussaint's Haitian troops.[64] Napoleon was forced to sell the entire Louisiana Territory to the United States. The purchase was negotiated in New Orleans in December 1803. The Spanish governor of the Territory heard of it eventually, and on 9 March 1804, with Meriwether Lewis as the official witness, the Spanish flag was lowered, and the French Tricolor raised, to cheers.

[62] See Henry Adams, *History of the United States of America during the Administrations of Thomas Jefferson* (New York: Literary Classics of the US, 1986; orig. 1889.), p. 264.

[63] Jefferson, *Writings*, pp. 1105.

[64] See Lester Langley, *The Americas in the Age of Revolution* (New Haven, Conn.; Yale University Press, 1996), p. 132, for the story of this debacle.

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The next day 'the Tricolor was lowered, and the Stars and Stripes was raised, the documents signed … Stoddard [the official American representative] assumed the post of military civil governor of Upper Louisiana'.[65]

CONCLUSION

At the beginning of this essay I used the term 'belief cascade' to refer to changes in the consensus of a society that lead, eventually, to a rapid change in the Constitution. I suggested that such changes may be triggered by events that are unpredictable, or chaotic, perhaps induced by war, or by a decision that in some way cannot be fully 'rationalized'. In this conclusion, we may examine whether the 'analytical narratives' presented above give some justification for this view.[66]

First, the interpretation of the American Revolution presented here was that it was triggered by a change in beliefs by (a majority of) the colonial elite. This change was necessary for the Revolution, since otherwise there would have been no Declaration of Independence. The change was certainly not sufficient, because changes in the beliefs of the colonial population were also required. Historians have variously suggested causes based on religion or class for these general responses.[67] In contrast, I have asserted that the reason for this elite belief cascade was the combination of the passing of the Quebec Act and the choice by Louis XVI to provide aid. The first of these 'causes' is intelligible in terms of British constitutional understanding of virtual representation. The second 'cause', the decision by Louis XVI, is only weakly acknowledged by historians, and no one, to my knowledge, has proposed that the promise was known prior to 4 July 1776. An earlier account of Franco-American negotiations by Bemis noted that a courier was despatched from France to the Colonies in May 1776 with the news. But his ship was sunk, and the information only reached Philadelphia on 1 December 1776.[68] It is highly implausible that only one courier was despatched. Since the sea voyage was about two months, it is reasonable to infer that the promise of aid did in fact arrive at the end of June 1776. The Appendix suggests that this promise was pivotal, in the sense of making the Declaration rational. Of course, this 'cause' is highly contingent. That is to say, it is not an event that could be predicted.

The belief cascade underpinning the Ratification is also rationalizable, given we accept the plausibility of Madison's solution to the Union quandary. I do not,

[65] Stephen Ambrose, *Undaunted Courage* (New York: Simon and Schuster, 1996), p. 130.

[66] The term 'analytical narrative' was introduced by Robert Bates, Avner Greif, Margaret Levi, Jean-Laurent Rosenthal and Barry Weingast, *Analytical Narratives* (Princeton, NJ: Princeton University Press, 1998) to refer to a technique of using 'rational choice theory' in interpreting historical events.

[67] For example Philips, *The Cousins' War*, emphasizes the common threat of religious antagonism connecting the British Civil War, the American Revolution and the American Civil War.

[68] Samuel Bemis, *The Diplomacy of the American Revolution* (Bloomington: Indiana University Press, 1935).

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of course, mean to say that Madison was the architect of the complex institutional arrangements agreed to in the Constitution. Rather his arguments on the 'Republic of Reason' suggested that a solution did exist to the Union dilemma. Moreover, Madison's logic was somewhat similar to Condorcet's arguments on the rationality of collective decisions. Certainly Madison had obtained copies of Condorcet's papers from his friend, Jefferson, in Paris.[69] Historians have, of course, noted the general influence of French enlightenment ideas on the American elite, although not, perhaps, the social choice aspect of the decision.[70]

The retrocession of Louisiana to France did bring back the security quandary in a way which could have stifled American growth for decades. As it was, the defeat of French arms in Haiti was a completely contingent occurrence. Because the threat never materialized, historians have paid it little heed.[71] It is, however, obvious that the purchase of the Louisiana Territory had a profound effect on the development of the United States.

The method of 'analytical narrative' that I have deployed here is not intended to prove that historical events are chaotic. Rather my purpose has been to focus on periods during which the Constitution went through a phase of rapid evolution, and to narrow down the field of contingent events that could have instigated the change.

Riker's intuition that losers will attempt to change an institution is certainly plausible. However, the narratives presented here suggest that it is only under very particular circumstances that such change is possible. This inference provides a reason why constitutions generally appear stable. However, if we consider constitutions as general systems of social rules, together with the pattern of beliefs that give the rules intelligibility, then we are obliged to consider the possibility that belief cascades can induce instability or transformation. The analytic procedure used here could, for example, be used to make some sense of constitutional transformations that have occurred in the recent past.

[69] On the Condorcet–Jefferson–Madison connection I am indebted to Iain McLean and Arnold Urken; see Arnold Urken, 'The Condorcet–Jefferson Connection and the Origins of Social Choice Theory', *Public Choice*, 72 (1991), 213–36; and Iain McLean and Arnold Urken, 'Did Jefferson or Madison Understand Condorcet's Theory of Social Choice?' *Public Choice*, 73 (1992), 445–57.

[70] On the general influence, see for example Henry Steele Commager, *The Empire of Reason: How Europe Imagined and America Realized the Enlightenment* (New York: Doubleday, 1977).

[71] It is interesting that Henry Adams considered this event to be of great significance.

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APPENDIX: THE DECISION TO DECLARE INDEPENDENCE

One way to deal formally with the decision of the Continental Congress in July 1776 is to construct a 'Bayesian' game involving America, Britain, France and Spain. To do this, however, in a technical fashion, requires estimating preferences and Bayesian priors for the combatants. Instead, this Appendix will consider the problem in the context of decision making under risk. That is to say, we consider the problem from the point of view of an 'average' member of the Congress, estimating the likely expected costs of choosing to declare Independence. Clearly, this estimate will vary among the members of the Congress. However, formally this problem can be interpreted in terms of what is now known as a 'Condorcet Jury', and the rational choice of an average 'juror' will give insight into the choice of the Congress. To emphasize the point again, it is not so much that the members of this Congressional jury *prefer* to declare Independence or not. Rather it is a question of whether each one *believes* that it is in the best interests of the Colonies to declare independence.

First, consider the military and fiscal capability of Britain prior to 1776. As North and Weingast have shown, the 'Glorious Revolution' of 1688 induced a constitutional and fiscal revolution that better equipped Britain to borrow, and to fight wars.[72] Brewer has studied the ability of Britain to increase its debt to about £120 million, during the various wars of the first half of the eighteenth century, yet to fund an increasing proportion of the debt.[73]

During the Seven Years War, Britain demonstrated that it could solve the logistic problem of arranging for a convoy of troop ships, together with their protecting men-of-war, to arrive together and surprise the enemy. By this means, Wolfe captured Quebec City in September 1759 and British forces took Havana, Cuba and Manila in the Philippines (on 13 August and 7 October 1762, respectively). The Havana force comprised 14,000 men, of whom 10,000 became sick or died of tropical disease.[74]

Perhaps in an attempt to bluff the rebellious Colonies out of rebellion, a British fleet of over 130 ships under General William Howe arrived at the port of New York by 30 June 1776.[75] By 12 July, 32,000 troops were in position to disembark from over 170 transports, protected by twenty frigates and ten ships of the line. By August the British naval presence was over 400 transports and fifty ships of war. In the battle for New York in August 1776, Washington had less than 3,000 men.

With these facts in mind, consider the decision problem facing the members of the Continental Congress in the month prior to 4 July 1776. The probabilities involved are q (the British will attack if Independence is declared) and p (if they attack, the Colonies will lose). The costs involved are T (of tyranny) and C (of war).

Of course, since war is a risky venture, we should incorporate the risk posture of the protagonists. To keep the calculations as simple as possible, however, I shall ignore risk posture and deal only with expectations. Let us assume that the purpose of the Declaration of Independence is to avoid the costs of British tyranny. To further simplify, suppose that the prize of freedom is T dollars. We shall perform the calculations in Spanish silver dollars, each one of which is worth approximately six French livres, at that time. A pound sterling was worth about four Spanish dollars. Total French grants and aid in the initial stages of the war totalled 36 million livres, or $6 million. For purposes of illustration, let us assume that the cost of war to the Colonies, if the British attacked, could be estimated at $C = \$12$ million (excluding French aid). If the Colonies lose the cost is $C + \Delta$, where Δ is the additional cost of defeat. For example, the members of the Continental Congress could expect to be hanged for treason, after a defeat. Appropriation of property, etc. after defeat would suggest an order of magnitude for Δ approximately equal to C.

[72] Douglass North and Barry Weingast, 'Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in 17th Century England', *Journal of Economic History*, 49 (1989), 803–32.

[73] John Brewer, *The Sinews of Power* (Cambridge, Mass.: Harvard University Press, 1988).

[74] Tom Pocock, *The Battle for Empire 1756–63* (London: O'Mara Books, 1998).

[75] Benson Bobrick, *Angel in the Whirlwind* (New York: Penguin, 1997), p. 206.

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If the colonists declare, and the British attack (with probability q), then the expected utility (in dollars) for the Colonies is $q[(1-p)\ (T-C)\ +p(-C-\Delta)]$, while if the British retreat, the prize T is gained (with probability $(1-q)$).

If Independence is not declared, no prize is won. Thus Independence is a rational choice iff: $q[(1-p)\ (T-C)\ +p(-C-\Delta)]\ +(1-q)\ T>0$.

Rearranging terms we obtain $T> \dfrac{q(C+p\Delta)}{1-qp}$.

Suppose for example the beliefs 'favour' independence, in the sense that $p=q=\frac{1}{2}$, while $\Delta=0$. Then this optimistic scenario is characterized by the inequality $T>\frac{2}{3}\ C$.

Middlekauff suggests that the figure for the cost of taxation to the Colonies was \$40,000 or $T=$ \$200,000 discounted over a decade.[76] Chown suggests a figure of £16,000 or \$64,000 per annum, or perhaps \$320,000 discounted.[77] The price (of avoiding taxation) could not possibly make rational the tremendous expected costs of war (namely \$ 8 million). If the French do offer aid, then the cost of war is divided between the French and Colonies, so the cost facing the colonies is reduced to C'. Moreover, French aid can be expected to increase the probability, q (that the British attack) to nearly 1. Suppose French aid further affects the probable outcome of war, by changing the probability of defeat from $p=\frac{1}{2}$ to $p'=\frac{1}{4}$, say. Then the requirement is $T>\frac{4}{3}\ C'$. Again, avoidance of taxation is not a sufficient cause of a declaration. However, as noted above, Thomas Paine argued that the cost of tyranny was the loss of the Ohio Valley, which he put at a value of \$25 million.

For an extreme optimist ($p=q=\frac{1}{2}$) the calculation, assuming no French aid, and $C=\Delta=$ \$12 million, becomes

$$T>\tfrac{1}{2}\cdot\tfrac{4}{3}\ (12\ +6)=\$12 \text{ million.}$$

Given a prize of this magnitude, such an optimist would certainly declare independence. A more prudent member of Congress might reason that $p=q=0.9$, in which case the requirement becomes $T>\frac{0.9}{0.19}\ (22.8)$ or $T>\$108$ million. For such an agent, a declaration (without the promise of French aid) is not justified.

Suppose, however, an offer of French aid has been received, and the prudent calculator reasons that the probability of defeat will, as a consequence, fall from $p=0.9$ to $p'=0.5$. Then the calculation becomes

$$T>(0.9)\ \frac{(6\ +\frac{1}{2}\cdot 12)}{(1-\frac{1}{2}(0.9)}=\$19.6 \text{ million.}$$

Even a risk-averse calculator, unwilling to accept high costs such as C and Δ, could reason that the value of the prize exceeded the expected costs.

Some of the members of Congress, and of the population at large, could be highly optimistic and believe in the rationality of a declaration, even without the offer of aid. A more prudent calculator could reason that not only would the costs of war be reduced by French aid, but that probable French military assistance could directly increase the probability of victory.

The implict argument of this Appendix is that variation in beliefs and risk postures among the members of Congress would lead to different calculations about the rationality of a declaration of independence. Prior to news of French aid, a majority would not choose independence. After the news was received, even risk-averse members would choose independence, thus creating a *core belief* in the rationality of independence.

From the point of view of the French, it is rational to offer a 'pivotal' amount of aid, sufficient to create a majority in Congress in favour of independence. The French offer, by changing beliefs as regards p, and by contributing to the cost of war, clearly would increase the number in Congress favouring independence. A signal from the French *prior* to 4 July 1776 is, however, crucial for this transformation.

[76] Robert Middlekauff, *The Glorious Cause* (Oxford: Oxford University Press, 1982), p. 150. See also Schofield, 'Quandaries of War and Union'.

[77] John Chown, *The History of Money* (London: Routledge, 1994), p. 218.

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After France entered the War in 1778, and with Spain as its ally to help defend the French empire in the Caribbean, the flow of men and matériel rapidly increased. The crucial battle of the war, Yorktown, was won through French assistance. In fact, a French fleet from Rhode Island and one under Comte de Grasse, from the Caribbean, performed the British trick of a co-ordinated arrival at the York River in September 1781. A French army of 6,500 helped Washington lay siege to the British forces, under Cornwallis, at Yorktown, while the French fleet stopped the British ships from relieving the British army. In mid-1776 it could not be known with certainty that French forces would be supplied in this fashion. However, it was a rational hope that Louis XVI would continue to help, and that this assistance would at least exhaust the will of the British to continue the war.

On the British side, the logic of the problem involves the probability (r) that the Americans will acquiesce if the British attack, and the probability that the British will win (p) if the Americans do not acquiesce.

Using B_1 for attack, B_2 for do not, and letting u represent the expected benefits to the British we obtain $u(B_1) = (1 - r)[p(T - C) - (1 - p)\ C]\ + r(T - C')$, while $u(B_2) = 0$.

Here C' is the initial cost of attack, placing a fleet in New York in 1776 (say $100,000) while C, as before, is the cost of full-scale war. First of all let us take $T = T_0$ to be the 'benefits' of taxation, $200,000. Obviously if the British do not attack (B_2) this is lost through Independence. Using $p = 0.9$ as before, the condition $u(B_1) > u(B_2)$ requires that $r > 0.97$.

Thus, if the British have no knowledge of French aid to the Colonies, and they reasonably expect the Americans to acquiesce to force, then they should attack. This assertion depends on the calculation that British benefits were simply to do with the receipts from taxation, of the order of $40,000 per annum. Chown's higher figure of $84,000 per annum has to be offset against his estimates of $60,000 in collection costs. Using this estimate, it is totally implausible that the British actions were induced by the benefits obtained from taxation (once collection costs are included). Moreover, it is known that the British were well aware of the French promises to the colonies.[78] It is reasonable to expect that the British would rationally believe that the Americans would only acquiesce with very low probability. Consequently, under the assumption that the gain to the British was only T_0, they should rationally have acquiesced to American Independence. In fact, on 9 March 1778, the British Parliament enacted various Acts to repeal all objectionable Acts involving taxation. By then it was obvious that r was close to zero. This also suggests that taxation was not the issue.

If we set the prize T to the British for winning the war at $25 million, the costs of carrying out and winning the war at $12 million, and the costs if the war were lost at $15 million, then, assuming $r = 0$, the inequality becomes $p(25 - 12) - (1 - p)\ 15 > 0$, or $p > 0.53$.

In contrast to the calculation for the Colonies, I have assumed that the additional cost to the British of $3 million, if they lose, is substantially less than for the Colonies. Given the British ability in military affairs, it is plausible that they calculated that the probability of success, p, against both the Colonies and the French, clearly exceeded a value of 0.53.

Although I have assumed that the prize, T, was equal to Paine's estimate of the value of the Ohio Valley, it is obvious that different members of the Lords and Commons would calculate differently. For those who believed that the British had a constitutional obligation to defend the rights of the Indian peoples of the Ohio Valley, T would have higher value. For those, like Burke, who emphasized the value of trade with the colonists, the costs of war would far exceed any possible benefits.[79] It would seem plausible that George III and the Cabinet put high value on the Ohio Valley, not because of its intrinsic value, but because of a sense of obligation to maintain the rule of law and to satisfy the perceived obligations to their Indian subjects.

[78] See, for example, the discussion of the effective British secret agents, operating in Paris, in Carl van Doren, *Benjamin Franklin* (New York: Penguin, 1938); and Samuel Bemis, *American Foreign Policy* (New Haven, Conn.: Yale University Press, 1962), pp. 16–39.

[79] See for example the speeches by Edmund Burke, 'Speech on American Taxation', 19 April 1774 and 'Speech on Conciliation with the Colonies', 22 March 1775, in Peter Stanlis, ed., *Edmund Burke: Selected Writings and Speeches* (Washington, DC: Regenery Publishing, 1963), pp. 176–222. See also Steven Watson, *The Reign of George III: 1769–1815* (Oxford: Clarendon Press, 1960), p. 178.

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