

**“THE GREATEST IMPROVEMENT OF ANY COUNTRY:”
ECONOMIC DEVELOPMENT IN ULLAPOOL AND THE HIGHLANDS,
1786-1835**

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**by
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ECONOMIC DEVELOPMENT IN ULLAPOOL AND THE HIGHLANDS, 1786-1835

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ABBREVIATIONS

Two systems of abbreviations deserve special mention before beginning this work. First, wherever possible I have included in the initial reference to a work the abbreviated title by which that work will be known throughout the remainder of this study. Secondly, there are a great many references to the House of Commons Sessional Papers. An example will show how these references will be treated:

House of Commons, *Sessional Papers*, edited by Edgar L. Erickson, 1802-03 Session, Paper no. 96, Vol. I, 343, "Bill to empower JPs in England to allow additional Number of Horses for drawing Carriages on Turnpike Roads."

To simplify the reference, it will be abbreviated as:

HCSP 1802-03, 96, I, 343: "Bill to empower JPs ..."

Full titles of reports and bills thus referred to may be found in the Bibliography.

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ABSTRACT

This thesis explores the possible causes underlying the failure of Ullapool to develop in the half century after its founding. The study seeks to place Ullapool within a wider context, examining several interconnected aspects of economic development in the Highlands of Scotland. Several different measures, including, but not limited to, development of social overhead capital, promotion of the fishing industry, and the construction of villages, were adopted in an attempt to encourage growth in a lagging region of Britain. These measures, and their success or failure, will be analyzed through the application of recent economic theory. The measures adopted show many striking similarities with these later theories, suggesting different results might have been possible. However, it was the lack of “the greatest improvement of any country” – roads – which ultimately doomed Ullapool to failure.

Introduction

The inhabitants of a city, it is true, must always ultimately derive their subsistence, and the whole materials and means of their industry, from the country. But those of a city, situated near either the seacoast or the banks of a navigable river, are not necessarily confined to derive them from the country in their neighbourhood. They have a much wider range, and may draw them from the most remote corners of the world, either in exchange for the manufactured produce of their own industry, or by performing the office of carriers between distant countries, and exchanging the produce of one for that of another. A city might in this manner grow up to great wealth and splendor, while not only the country in its neighbourhood, but all those to which it traded, were in poverty and wretchedness.

- Adam Smith¹

The quotation which opens this work, taken from Adam Smith's groundbreaking study *An Inquiry into the Nature and Causes of the Wealth of Nations*, was based, in part, on the economic realities of Scotland in the latter half of the eighteenth century. Two cities, Edinburgh and Glasgow, dominated the economy of the nation, and both were coastal cities. At the time, Glasgow was growing at an extremely rapid pace, relying upon increased revenue from the tobacco trade to support a burgeoning merchant community.² Seen in this light, it is possible to see Adam Smith's comments as more than a reflection of the economic reality of Glasgow; they were also the basis of multiple plans of development throughout the Highlands. Likewise, Smith's comments also anticipated the goals of a village founded twelve years after publication of *The Wealth of Nations* and situated roughly 150 miles north of Glasgow - the village of Ullapool.

Those who created Ullapool planned for the village to encourage economic development in the Scottish Highlands generally, and certainly the western coast in

¹ Adam Smith, *The Wealth of Nations*, ed. Edwin Cannan (New York: Random House, Inc., 2000), 433.

² T.M. Devine, *Scotland's Empire and the Shaping of the Americas, 1600-1815* (Washington: Smithsonian Books, 2003), 71; hereafter *Empire*.

particular. The initial stimulus towards this objective was to be the fishing industry, with a concentration on herring. For this particular industry, Ullapool seemed to be ideally placed on a sheltered loch in the northwestern Highlands in the county of Ross and Cromarty. While the founders' hopes were to be largely unfulfilled, the village remains. And although the fishing industry still maintains a presence in Ullapool today, tourism plays a large role in the modern local economy, in part because of the presence in Ullapool of the car ferry terminal for the Isle of Lewis and the city of Stornoway.

It was as a tourist that I first came to know Ullapool in the spring of 2002. The difficulties I experienced in reaching the remote village, despite modern means of transportation, first interested me in a study of Highland transportation and economic development. Four years later I have had the good fortune to be able to examine in greater detail both the village of Ullapool and transportation in the Highlands. While my initial visit to Ullapool was determined largely by a quick glance at a bus timetable, this study has required more careful planning and design. As such, I feel that a few explanatory remarks are in order before beginning.

The title of this work ("The Greatest Improvement of any Country") is extracted from a quotation by the Reverend Thomas Ross, LL.D. found in *The New Statistical Account of Scotland*: "The first and *greatest improvement of any country*, in a worldly point of view, is, to have it well opened up by good roads and bridges."³ This quotation emphasizes the two dominant themes of this work: economic development and transportation. More often than not the two will be interconnected, although economic development independent of transportation considerations will also be examined. The

³ Thomas Ross, "Parish of Lochbroom," in *Ross and Cromarty*, vol. 14, *The New Statistical Account of Scotland* (Edinburgh, 1834-45), 88. Emphasis added.

subtitle (Economic Development in Ullapool and the Highlands) reflects the specific and general aims of the work. While the village of Ullapool is the ultimate focus of this endeavor, it is not and was not located and developed in a vacuum. Similar developments occurred elsewhere, and it is hoped that a general picture of economic development in the Scottish Highlands will illuminate the unique challenges that confronted Ullapool.⁴

Two additional notes regarding the subtitle need to be made before moving on to a brief consideration of the dates chosen for this study. The Highlands are a geographically defined area of Scotland. According to Malcolm Gray, “The geologist has no difficulty in drawing the boundary line between Highlands and Lowlands; it is that line ... which runs diagonally across the country from the Firth of Clyde to the east coast just south of Aberdeen.”⁵ However, for the purposes of this study, the term “Highlands” will refer to a more



Figure 1 – Principal locations in the text.

⁴ In fact, a lack of breadth has been noted in other studies regarding Ullapool. See Ian Whyte, “Review of *The British Fisheries Society*,” *The American Historical Review* 93, no. 4 (Oct. 1988): 1059.

⁵ Malcolm Gray, *The Highland Economy, 1750-1850* (Westport, Connecticut: Greenwood Press, 1957), 3; hereafter *Highland*.

geographically compact area of Scotland lying to the north and west of the Great Glen (the line of lochs lying between Fort William in the west and Inverness in the east). Yet, even within this more compact area differences exist; as Gray notes, “Eastwards of the main land mass of the Highlands and stretching to the very northern extremity of the country runs a belt of country relatively flat, productive and adaptable.”⁶ This was emphatically not the case with the west coast, and this difference should be kept in mind.

Having defined the area meant by the “Highlands,” it is also necessary to define “economic development.” Part of this definition must be an explanation as to why “development” is the focus rather than “growth.” Fortunately Charles P. Kindleberger and Bruce Herrick have supplied a definition that will be standard usage in this work: “economic *growth* means more output [, while] economic *development* implies not only more output but also different kinds of output than were previously produced, as well as changes in the technical and institutional arrangements by which output is produced and distributed.”⁷ Using this definition gives us a range of investigation relating to development much wider than strictly economics would allow. “Technical and institutional arrangements” implies alterations in society, governance, infrastructure, technology, types of goods being produced, and the list could go on. While economic growth is certainly important, the wider range of inquiry provided by studying development makes it the logical choice for a work of this nature.

⁶ Gray, *Highland*, 3.

⁷ Charles P. Kindleberger and Bruce Herrick, *Economic Development*, 4th ed. (New York: McGraw-Hill Book Co., 1983), 21. Yujiro Hayami provides nearly the same definition: “the analysis of economic growth is concerned mainly with measuring of growth in economic variables and identifying their interrelationships such as between the national income growth rate and the speed of capital formation.... If so, in addition to the analysis of economic growth, the study of economic development must investigate the influences of institutional and cultural factors on economic growth as well as the

Before moving on from the title and subtitle to a brief sketch of the structure and content of this work, a few comments regarding the dates used for this work seem necessary. The starting date, 1786, was chosen because that was the year in which “The British Society for Extending the Fisheries and Improving the Sea Coasts of the Kingdom” was founded.⁸ This institution was the driving force behind the creation of “modern” Ullapool. However, 1786 cannot be considered an absolute barrier, for many of the subjects to be discussed were issues in the Highlands well before the creation of the British Fisheries Society.

The choice of an “ending” date presented many more problems. Five possible solutions presented themselves, making the ultimate choice more arbitrary than one would like. The most obvious solution would have been to end with the sale of Ullapool for 5,000 guineas in July 1847.⁹ However, this point was reached well after the period in which the village began its decline, and several years after one of the directors of the British Fisheries Society began to consider encouraging emigration from the village.¹⁰ Another possible end point was 1831, when the first “railroad” north of the Firths of Forth and Clyde opened in Dundee.¹¹ This date was not satisfactory because Ullapool has never been connected to a rail network, making dating on the basis of railroad developments elsewhere problematic. I do not mean to deny that railroads revolutionized

impacts of economic growth on those factors” (Yujiro Hayami, *Development Economics* (Oxford: Clarendon Press, 1997), 3).

⁸ Jean Dunlop, *The British Fisheries Society, 1786-1893* (Edinburgh: John Donald Publishers, Ltd., 1978), 1. From this point forward in the text, I will refer simply to “the British Fisheries Society.”

⁹ *Ibid.*, 181.

¹⁰ *Ibid.*, 180. The director mentioned was the Earl of Rosebery, emigration was advocated in 1838.

transportation before the development of automobiles and aircraft, but the major impact of railroads came well after the sale of Ullapool, and were never a factor in that region of the country.

The three remaining choices for a concluding date all derive from road transport, for it is with road development and its connection to economic development that this work is primarily concerned. Using 1836 as an ending point would have been another logical choice, for this was the year in which last Parliamentary Act for a new turnpike trust (in England and Wales) was issued.¹² However, using road transportation developments in England and Wales as a basis of dating is as problematic as using railroad developments in other regions of Scotland, if not more so. Another option was 1834, the year in which Thomas Telford, the civil engineer who had constructed many of the roads throughout the Highlands (and many of the ports as well) died.¹³ This solution must be rejected on the grounds that while Telford certainly did much to improve communications in the Highlands, there were others engaged in the same work; work that continued well past his death. Ultimately, the solution to the issue of which date should close this investigation was found in the continuation of the quotation which supplied the title. When Reverend Ross wrote his report in 1835, it will be recalled that he argued that “The first and greatest improvement of any country, in a worldly point of view, is, to have it well opened up by good roads and bridges.”¹⁴ He went on to point out that “of

¹¹ John Thomas and David Turnock, *The North of Scotland*, vol. 15, *A Regional History of the Railways of Great Britain* (Newton Abbot: David & Charles, 1989), 9; hereafter *North*.

¹² William Albert, *The Turnpike Road System in England, 1663-1840* (Cambridge: Cambridge University Press, 1972), 223; hereafter *System*.

¹³ A.R.B. Haldane, *New Ways through the Glens*, (Exeter: SRP Ltd., 1995), 198; hereafter *Glens*.

this improvement, not one parish in Scotland stands nearly so much in need, as the parish of Loch-broom.”¹⁵ While it may seem counter-intuitive to end at a point where more roads were being pleaded for, little had changed in roughly forty years. In the first *Statistical Account of Scotland*, completed between 1791 and 1799, the description of the Parish of Lochbroom stated that additional roads “are indeed highly necessary.”¹⁶ In this sense, this study is concerned with examining the causes of failure, for clearly the work of improving transportation around Ullapool had not been completed.

The body of this work is arranged something like a pyramid, starting with the general and narrowing to the specific. The choice of arranging the work in this manner was based on a need to provide perspective. Ullapool was not the only village founded by the British Fisheries Society; Parliament was engaged in road construction; individual land owners were promoting improvements. All of these efforts formed a background to and influenced the development of Ullapool. Thus, to understand Ullapool as the sum of these other efforts, we must build upon them, layer upon layer. If this work is to be a pyramid, a brief description of the building materials is in order.

The first chapter sets out a theoretical framework for the remainder of the work. The focus of the chapter is on how to move from one stage of growth to another. I argue that two competing theories known as the balanced and unbalanced theories of growth provide the strategy for doing this by offering ideas of how to generate capital in a

¹⁴ Thomas Ross, “Parish of Lochbroom,” in *Ross and Cromarty*, vol. 14, *The New Statistical Account of Scotland* (Edinburgh, 1834-45), 88.

¹⁵ *Ibid.*

¹⁶ Roderick Macrae, “Parish of Lochbroom,” in *The Statistical Account of Scotland*, vol. 10 (Edinburgh, 1791-99), 466.

lagging economy. Additionally, there is a discussion of the role of transportation and other forms of social overhead capital in development.

The study of transportation continues into the second chapter, where the focus turns to the historical development of road transportation in Scotland in general, and the Highlands in particular. Three distinct periods of development emerge in a history of Scottish road transportation. The first covers the military roads, built in response to the Jacobite risings in 1715 and 1745. Following the military roads, road development was mostly in the form of turnpikes, although their impact (for reasons that will be discussed later) was limited in the Highlands. Finally, the work of the Highland Roads and Bridges Commission, in which Thomas Telford played a large role, will be examined.

The third chapter is concerned with two intertwined aspects of economic development, particularly in the Highlands. The first was the fishing industry in Scotland, which placed a special emphasis on the herring fishery. The second was the rise of planned villages in Scotland, many of which (particularly in the Highlands) were developed to take advantage of the fishing industry. The plans of the British Fisheries Society certainly touched on both developments.

In the final chapter, chapter four, the work of the previous three chapters is blended into one for a more detailed analysis of the village of Ullapool. The discussion in this chapter will show some areas in which there were successes, and some in which there were failures. As was mentioned earlier, this work is primarily a study of failure, for the village never fulfilled the expectations of the British Fisheries Society. Yet Ullapool itself cannot, in the long run, be considered a failure, for it is now the largest

town on the west coast of Scotland north of Fort William.¹⁷ While this later success is certainly noteworthy, we turn now to the first fifty years of the settlement.

¹⁷ Scottish population statistics from the 2001 census (the most recent) are available online at <http://www.scot.nhs.uk>. In 2001, Ullapool's population stood at 1,308. The only two larger towns in the west and north of Fort William, Stornoway and Portree, are both located on islands. Portree (off the west coast on the Isle of Skye) had 1,917 people in 2001. Unfortunately, Stornoway (on the Isle of Lewis in the Outer Hebrides) is not given as a separate location. The official census data puts the population of the Isles of Lewis and Harris combined at 19,918. The tourist information center for the Hebrides (www.visithebrides.com/faq/) puts the population of Stornoway at over 6,000.

Chapter One

THEORY

Though all capitals are destined for the maintenance of productive labour only, yet the quantity of that labour, which equal capitals are capable of putting into motion, varies extremely according to the diversity of their employment; as does likewise the value which that employment adds to the annual produce of the land and labour of the country.

- Adam Smith¹⁸

Adam Smith, often seen as one of the most influential individuals to ever write on economics, was concerned in this passage and the pages that followed to study the impact of capital when employed in different fields: rude produce, manufacturing, transportation and distribution.¹⁹ However, what happens when there is insufficient capital to undertake improvements or investments in any of these areas? Should a state of insufficient capital occur, Smith believed that a nation should seek improvement by employing the limited capital available “in the way that affords the greatest revenue to all the inhabitants of the country, as they will thus be enabled to make the greatest savings.”²⁰ The savings accrued could then be used for greater investments, creating a process of self-sustained growth.

The search for a comprehensive, workable theory of economic growth did not end with Adam Smith. Following the Second World War an emerging consciousness of the poor economic conditions in much of the world sparked a new wave of theories. In some cases these theories were concerned with explaining development that had already occurred, particularly in Europe in the eighteenth and nineteenth centuries. Other

¹⁸ Smith, *The Wealth of Nations*, 390.

¹⁹ *Ibid.*, 390-1.

²⁰ *Ibid.*, 397.

theorists sought models or strategies that could be applied to developing areas to stimulate growth. Still others sought to examine detailed aspects of the development process, both in history and as prescriptive measures.

This chapter will examine aspects of all three groups. The first section examines two competing “models” of economic growth. The first is usually termed “balanced growth,” while the second is known as “unbalanced growth.” Their usefulness is primarily as competing strategies for raising a society from a state of capital deficiency to one in which enough capital exists to pursue development instead of simply growth. The second section examines the numerous theories regarding transportation’s role in economic development. A final section looks back at some of the conclusions reached in the preceding sections and begins to apply them to Scotland.

Before beginning, I think it is necessary to justify my use of recent economic theory in a study of eighteenth and nineteenth century development. While it is true that the British Fisheries Society and others who sought to develop the Highlands did not have access to these theories or strategies, they do provide a powerful analytical tool that can be used to assess where the developers might have gone wrong. This approach has been adopted by other historians recently, including Simon P. Ville²¹ and Friedrich Lenger.²² Furthermore, many of the theories in question were developed with historical

²¹ Simon P. Ville, *Transport and the Development of the European Economy, 1750-1918* (New York: St. Martin’s Press, 1990), 1-12; hereafter *Transport*. Ville is concerned with transport’s role in economic development, although he also discusses some aspects of the balanced v. unbalanced growth debate.

²² Friedrich Lenger, *Industrielle Revolution und Nationalstaatsgründung*, vol. 15, *Handbuch der deutschen Geschichte*, ed. Rolf Häfele, 10th ed. (Stuttgart: Klett Cotta, 2003), 33-5; hereafter *Industrielle*. Lenger is concerned with Rostow’s stages of growth and their application to German history. He comes to a separate conclusion about the dating of Germany’s “take-off;” dating the start to the mid-1840s, while Rostow dates the start to 1850 (page 35).

evidence in mind. With that in mind, this study turns first to the future-oriented theorists of the 1940s and 1950s.

Balanced versus Unbalanced Growth

The theories of balanced and unbalanced growth provide two competing methods for advancing the creation of capital. Both theories developed after the Second World War as strategies for the underdeveloped²³ nations of the world to experience economic development. Both agreed that one of the central problems of underdeveloped nations is a lack of adequate capital formation²⁴; and both sought to address that deficiency through inducement mechanisms. The differences, as we shall see, arose from the inducement mechanisms envisioned and the method of responding to them.

An examination of balanced versus unbalanced growth theories has five components that will form the structure of this section. First, balanced growth theory will be discussed, as it was the first theory to emerge.²⁵ Following that, unbalanced growth

²³ This term is used carefully. I use it, in part, because it is common in the literature with which this chapter deals. Additionally, it captures the sense that some economic progress has been made, unlike “undeveloped” which implies no economic progress. The former, as will be shown, applies more strongly to Scotland. However, as Walter Johnson, “Time and revolution in African America: temporality and the history of Atlantic slavery,” in *A New Imperial History*, edited by Kathleen Wilson (Cambridge: Cambridge University Press, 2004), 199 notes, great caution must be used when applying a term as loaded with meaning as underdeveloped: “Recent work in the humanities and social sciences has emphasized the darker side of the temporal conventions that have framed many western histories of the rest of the world: their role in underwriting global and racial hierarchy. Concepts like primitiveness, backwardness, and *underdevelopment* rank areas and people of the world on a seemingly naturalized timeline – their ‘present’ is our ‘past’ – and reframe the grubby real-time politics of colonial domination and exploitation as part of an orderly natural process of evolution toward modernity. More than a fixed standard of measure by which the progress of other processes can be measured, time figures in these works as, in the words of Johannes Fabian, a culturally constructed ‘dimension of power.’” Emphasis added.

²⁴ Although balanced and unbalanced growth are theories of economic development (dealing as both do with issues outside purely economic matters), the term growth is used as this section is primarily concerned with capital formation, not development. In this connection, growth is the more appropriate term.

will be considered. A third component of this discussion is the attempts that were made to reconcile the two theories. As a fourth area of consideration, some discussion of both balanced and unbalanced growth in history is needed. Finally, a short discussion of the applicability of both theories to regional economics is in order.

The theory of balanced growth was born in a short (ten-page) article by P.N. Rosenstein-Rodan in 1943. Concerned with the future of Eastern Europe after the end of the Second World War, he advocated development as the preferable alternative to emigration.²⁶ Development in this area would include both industry and agriculture. As Rosenstein-Rodan argued: “One might consider the industrialisation of these countries as one chapter of agrarian reconstruction, or one might treat the improvement of agrarian production as one chapter of industrialisation. What matters is to remember that the two tasks are interconnected parts of one problem.”²⁷ Thus, development is necessary in multiple sectors at once. Advancement in agriculture without a corresponding increase in industrial production is unlikely to succeed because there would be no outlet for rising farm wages.²⁸ Three problems arise from this recognition. First, how quickly should each sector be encouraged to develop? Second, why must both sectors develop instead of developing along the lines advanced by Ricardo and the theory of comparative advantage? Finally, where is the necessary capital to initiate development to be found?

²⁵ For a more detailed discussion of the development of balanced growth than will be offered here, see Jose Maria Dagnino-Pastore, “Balanced Growth: An Interpretation,” *Oxford Economic Papers*, New Series, vol. 15, no. 2 (July 1963): 164-8; hereafter “Interpretation.”

²⁶ P.N. Rosenstein-Rodan, “Problems of Industrialization of Eastern and South-Eastern Europe,” *The Economic Journal*, vol. 53, no. 210/211 (June – September 1943): 202; hereafter “Problems.”

²⁷ Rosenstein-Rodan, “Problems,” 202 n. 2.

In seeking an answer to these questions, Rosenstein-Rodan identified two different methods of industrialization available at the time. The first he called the “Russian model,” by which he meant that a nation should attempt to construct all stages of industrial production (heavy, machine and light industry) without recourse to foreign investment in the hopes of rapidly achieving self-sufficiency.²⁹ However, Rosenstein-Rodan argues that three problems would arise if this strategy of development were to be adopted. First, it is a very slow and expensive strategy for achieving economic development. Next, were development to be achieved, attainment of self-sufficiency would reduce the international division of labor, resulting in an actual reduction in material well-being worldwide. Finally, creation of heavy industries would add to the existing worldwide surplus of heavy industrial capacity, making the investment redundant and wasteful.³⁰

The alternative to the “Russian model” may be termed the “International model.” Rosenstein-Rodan conceived of it being “based on substantial international investment or capital lending.”³¹ The use of foreign capital would allow any nation following this strategy to avoid the problems Rosenstein-Rodan identified for the “Russian model.” However, by creating an “International model” of development theoretically able to avoid the costly process of forming heavy industry by relying on the existing world surplus,

²⁸ Of course, this assumes that advancement in the agricultural sector will automatically raise wages. Why is it not equally possible that agricultural advancement will come about as the result of technological change that actually lowers the labor force required, thus lowering overall wage averages?

²⁹ Rosenstein-Rodan, “Problems,” 203.

³⁰ Ibid. It should be noted that this last objection against the “Russian model” was a product of the mid-twentieth century. At the time with which this study is concerned, no surplus heavy industrial capacity existed.

³¹ Ibid.

Rosenstein-Rodan seems to have made a mistake. While a surplus capacity of heavy industry capable of supplying a developing nation might have existed, eventually the lack of domestic heavy industry would leave the developing nation vulnerable to boycotts, blockades, embargoes, and even high tariffs. Although this mistake might prove to be minor, it should be kept in mind in the following discussion of the development strategy Rosenstein-Rodan proposes.

A third path to growth seem to grow out of the second problem posed earlier, namely, why not take advantage of comparative advantages to generate capital and spur investment? As David Ricardo noted, “It may be said, then, of two countries possessing precisely the same quantity of all the necessaries and comforts of life, that they are equally rich, but the value of their respective riches would depend on the comparative facility or difficulty with which they were produced.”³² Thus, if value is based in part on ease of production, resource availability becomes a key factor, as does trade. Ricardo considered the proper course of action for a society looking to develop to be the increase of production without increasing labor; in other words, increasing quantity without increasing value.³³ Applying this to the real world, an example would be a country, or region, specializing in the production of grain to offset the cost of importing steel. Both countries benefit from producing more of whatever good they have in abundance, despite the usual effect of increased production decreasing prices and/or value.

There are, however, three possible reasons that may have led Rosenstein-Rodan to omit such a plan from his proposals, despite the possibility of generating sufficient capital

³² David Ricardo, *The Principles of Political Economy and Taxation*, Everyman’s Library Edition (London: J.M. Dent & Sons, Ltd., 1911 (1960 reprint)), 185; hereafter *Political Economy*.

³³ *Ibid.*, 186.

to avoid large external capital influxes – a potential problem with the “International model.” First, as mentioned before, reliance on trade to replace one part of a balanced economy could leave a nation vulnerable in a time of war or blockade. Secondly, unless the good that is being exported is sufficiently valuable, the nation risks sliding into a position almost akin to colonial dependence as capital flows out of the country. Because an underdeveloped nation or region is unlikely to be able to set up a high-tech, high-value industry at the beginning of a program of development, they are most likely to focus on an extractive industry such as mining that leaves little, or no, capital for continued investment once imports have been paid for. Finally, although Rosenstein-Rodan admits a leading sector is necessary, as this study will show, the above more closely resembles unbalanced growth than balanced growth. Thus, Rosenstein-Rodan adopted as his “model” of choice the “International model.”

One of the first steps in the process of industrialization, according to Rosenstein-Rodan, is the training of labor to work in the new industries.³⁴ Training is necessary because most of the labor is to be drawn from the pool of “disguised unemployment,” and will have little or none of the necessary skills for industrial occupations.³⁵ However, private investment in social overhead capital, which would encompass training, is unlikely due to both the expense and the lack of resultant profit. Thus, training of labor in an industrializing nation should fall to the state as the only institution capable of expending the required capital without concern for profit.

³⁴ Rosenstein-Rodan, “Problems,” 204.

³⁵ Ibid., 202. The term disguised unemployment refers to “unemployment masking as employment; idleness that looks like work; long hours and low, even zero, productivity” (Kindleberger and Herrick, *Economic Development*, 510). Usually disguised unemployment is found in agriculture where some people are producing at or near subsistence level – in other words, there is no surplus for the market.

Once a potential labor force has been trained, there remains the question of which industries to invest in; in other words, what is to be the leading sector? Rosenstein-Rodan offers no concrete answer to this question, but he does provide one crucial general guideline. He argues that of fundamental importance is the creation of a large industrial sector comprised of complementary industries. He advocates, in other words, deliberate creation of external economies as the guiding principle for industrial development.³⁶ Yet, as he mentioned, these external economies must be complementary so that the expansion of one industry creates demand in another industry which causes the second industry to expand, creating greater demand in a third industry, and the process goes on. The deliberate creation of such a system is necessary for Rosenstein-Rodan's plan to encourage investment because it overcomes the lack of knowledge most investors possess.³⁷ If investors in an industry producing dining utensils know that as part of the industrialization plan a factory producing plates and another producing cookware are being constructed, they are more likely to invest. In Rosenstein-Rodan's argument, this is particularly the case when one industry would not be profitable on its own, but is rendered so by the existence of complementary industries.³⁸ The strategy is to "create a sufficiently large investment unit by including all the new industries of the region, [in which] external economies will become internal profits out of which dividends may be paid easily."³⁹

The assumption is that removing such individuals would supply labor for industry and land for commercial farming operations (or simply farm consolidation) that would increase agricultural yields.

³⁶ Rosenstein-Rodan, "Problems," 206.

³⁷ Ibid.

³⁸ Ibid., 207.

The theory of “balanced growth” is implied in Rosenstein-Rodan’s arguments, rather than explicitly stated. The essential point is that Rosenstein-Rodan (and balanced growth theory in general) sees industrialization as a process of creating multiple industries simultaneously to provide a vigorous domestic market arising from complementary external economies. To put it another way, there should not be one leading sector with a host of supplementary sectors following in its wake. Instead, there should be two or more leading sectors expanding simultaneously (although not necessarily at the same rate), each with their own trail of supplementary sectors, all providing a stimulus to growth to each other. Balanced growth thus seeks to avoid shortages in both supply and demand through the mechanism of external economies.

The importance of external economies to this debate is such that it is necessary to give the concept some more space before proceeding to further developments in the theory of balanced growth. It is possible to define “external economies” as the actions of one firm, both in consumption of resources and production of goods, impacting the profits of another firm through the first firm’s influence on consumption and production of the second firm.⁴⁰ However, it should also be noted that this was only one definition of external economies derived from work on industrialization in underdeveloped nations. Should one be so quick to discredit other definitions of external economies?

In some ways, the answer is unclear. The definitions of external economies derived from general equilibrium theory and industrialization are not very different, but the assumptions underlying them are. According to Scitovsky, in general equilibrium theory, it is assumed that there is perfect competition and perfect divisibility of inputs and

³⁹ Rosenstein-Rodan, “Problems,” 207.

outputs.⁴¹ These assumptions generate “the main conclusion of general equilibrium theory, viz., that the market economy leads to a situation of economic optimum (in Pareto’s sense), provided that every economic influence of one person’s (or firm’s) behavior on another person’s well-being (or firm’s profit) is transmitted through its impact on market prices.”⁴² Thus, as long as the market is the sole factor influencing the use of inputs and outputs in various industries, equilibrium should hold. It is when interdependence outside of the market’s operations enters the equation that equilibrium breaks down. Scitovsky identifies five cases in which this can occur:

- (1) The individual person’s satisfaction may depend not only on the quantities of products he consumes and services he renders but also on the satisfaction of other persons.... This is known as the ‘interdependence of consumers’ satisfaction.’
- (2) A person’s satisfaction may be influenced by the activities of producers not only through their demand for his services and supply of the products he buys but also in ways that do not operate through the market mechanism. These may be called the producer’s ‘direct’ (i.e., nonmarket) influence on personal satisfaction...
- (3) The producer’s output may be influenced by the action of persons more directly and in other ways than through their offer of services used and demand for products produced by the firm....
- (4) The output of the individual producer may depend not only on his input of productive resources but also on the activities of other firms. This is a counterpart of case 1 and may be called ‘direct interdependence among producers’ but is better known under the name of ‘external economies and diseconomies.’⁴³
- (5) A fifth and important case, which, however, does not quite fit into the above classification, is that where a society provides social services through communal action and makes them available free of charge to all persons and firms.⁴⁴

The fourth case is obviously the one most closely resembling the definition adopted earlier. The only difference is that the definition Scitovsky derives from industrialization substitutes “profit” for “output” in the formulation above.⁴⁵

⁴⁰ Tibor Scitovsky, “Two Concepts of External Economies,” *The Journal of Political Economy*, vol. 62, no. 2 (April, 1954): 143-51; hereafter “Concepts.”

⁴¹ *Ibid.*, 143-4.

⁴² *Ibid.*, 144.

⁴³ *Ibid.*

⁴⁴ *Ibid.*, 144 n. 3.

How can one account for such a difference, and is it meaningful? Scitovsky's explanation of the difference is that the use of "profit" allows the definition to include, "in addition to direct interdependence among producers, [...] interdependence among producers through the market mechanism."⁴⁶ It will be recalled that equilibrium theory assumed that external economies arose whenever there was interdependence *outside* of the market mechanism. Thus, if profit replaces output in the definition of external economies, as it does when studying industrialization, one must look for external economies within the market mechanism, making it possible for entrepreneurs to "create" external economies through their actions. How would this work? Scitovsky argues that it would happen as:

Investment in an industry leads to an expansion of its capacity and may thus lower the prices of its products and raise the prices of the factors used by it. The lowering of product prices benefits the users of these products; the raising of factor prices benefits the suppliers of the factors. When these benefits accrue to firms, in the form of profits, they are pecuniary external economies⁴⁷ - Marshall called, or would have called, them (together with the benefits accruing to persons) consumers' and producers' surplus, respectively. According to the theory of industrialization, these benefits, being genuine benefits, should be explicitly taken into account when investment decisions are made; and it is usually suggested that this should be done by taking as the maximand not profits alone but the sum of the profits yielded and the pecuniary external economies created by the investment.⁴⁸

For example, returning to the example of the dining utensil factory from earlier, suppose it added a second production line. Obvious external economies would arise for consumers through lower cost utensils (more supply) and producers through increased prices for steel (more demand). Less obvious are the external economies that result from

⁴⁵ Scitovsky, "Concepts," 146.

⁴⁶ Ibid.

⁴⁷ "Pecuniary external economies" is Scitovsky's term for external economies arising in the market; in other words, those external economies found in the case of underdeveloped nations as they industrialize (146). He uses "technological external economies" to denote those that arise in equilibrium theory (145).

the increased consumer purchasing power as more people are hired to work the second line. Similarly, the lowered cost of utensils may spur consumers to purchase new plates as well, thereby demonstrating an indirect external economy for the manufacturers of plates.

This broader definition of external economies and Scitovsky's argument for its importance in theories of industrialization planning should call Rosenstein-Rodan's argument to mind. The existence of pecuniary external economies makes industrial planning in a balanced fashion a necessity due to the interconnectedness of industries through the market mechanism. While it is possible for spontaneous external economies to form through the normal market mechanism, planning is necessary to ensure resources are in place to take advantage of these external economies. This is the case even where no direct linkage is discernable through factors or products. The apparent paradox in the last statement can be resolved by recognizing that the wages paid to the workers in one industry allow them to consume goods produced in a completely unrelated industry. However, should only a lone industry modernize, little overall good for a nation or region's economy will result because the goods the workers will want to consume will need to be imported. In other words, the external economy will have been wasted. A wider definition of external economies that examines profits rather than simply outputs makes balanced growth in multiple sectors a necessity in order to ensure adequate demand for all products.

The concept of balanced growth, which has re-appeared in the discussion of external economies, underwent more formal codification in the fifteen years following Rosenstein-Rodan's influential article. The two main proponents of the doctrine over

⁴⁸ Scitovsky, "Concepts," 147.

that time were Ragnar Nurske and W. Arthur Lewis. The two authors will be dealt with in the chronological order in which their works appeared in order to preserve some of the rhythm of the formulation of the theory.

The first of these two authors to contribute a clarification to balanced growth theory was Ragnar Nurske. His aim was to provide an explanation of how underdeveloped nations could escape “the vicious circle of poverty.”⁴⁹ The challenge for escaping the vicious circle, at least on the demand side, was to encourage investment. As Nurske saw it, “*The inducement to invest is limited by the size of the market.*”⁵⁰ This statement applied primarily to the domestic market,⁵¹ for Nurske saw little hope for developing countries to be able to expand exports of primary products in the modern market to meet the capital requirements of industrialization.⁵² The problem, of course, is that expansion of the domestic market in an underdeveloped country is limited by a lack of incentives to invest. Nurske, like Rosenstein-Rodan before him, recognized that “At least in principle, the difficulty vanishes in the case of a more or less synchronized

⁴⁹ Ragnar Nurske, *Problems of Capital Formation in Underdeveloped Countries* (New York: Oxford University Press, 1953), 4; hereafter *Capital*. The vicious circle is expressed on both the supply and demand sides of the production function. On the supply side, there is little chance for savings which results from low real incomes caused by low productivity which is a reflection of a lack of capital – the lack of capital being caused by a low rate of savings (5). The vicious circle on the demand side is the result of the lack of incentives to invest because of low purchasing power caused by low real incomes; which, as we have already seen, is caused by low productivity resulting from low capital inputs into production – low capital inputs being a reflection of a lack of incentives to invest in production (5).

⁵⁰ Nurske, *Capital*, 6.

⁵¹ *Ibid.*

⁵² *Ibid.*, 21. Nurske goes on to argue that “so long as [domestic] development increases the level of productivity and hence of real purchasing power, it will tend in the long run to help rather than hinder the growth of international trade” (22). In the late 1950s, Nurske came to believe that “balanced growth is necessary only if export demand is not ‘sufficiently’ expanding” (Ragnar Nurske, “Notes on ‘Unbalanced Growth,’ *Oxford Economic Papers*, New Series, vol. 11, no. 3 (October 1959): 295; hereafter “Notes.”). The apparent paradox is removed if one remembers that Nurske said exports of *primary products* were unlikely to be possible in the modern world economy – exportation of industrial products was another matter.

application of capital to a wide range of different industries.... People working with more and better tools in a number of complementary projects become each others' customers."⁵³ This assumption, which is the founding principle of balanced growth, is based on the view that "Human wants being diverse, the people engaged in the new industry will not wish to spend all their income on their own products."⁵⁴ Thus, as was argued in the above discussion on external economies, the wages paid to the employees of one industry represent an external economy for another industry if one uses the pecuniary external economy definition. Nurske recognized this aspect when he argued that "This real-income effect, although it may have depressive monetary repercussions in the short run, is indeed the sum and substance of long-run economic progress – provided of course that the composition of the increased consumable output corresponds, by and large, to the pattern of consumers' demands."⁵⁵ Put another way, consumers do not want to spend all of their wages on the good they are producing, but they also do not want to spend their wages indiscriminately on whatever happens to be being produced.

If the expansion of the domestic market were to be undertaken by expanding a range of industries satisfying consumer demand, one would assume that individual investors could recognize the profit potential of creating such industries and act upon that. However, if one remembers that one of the essential problems of underdeveloped nations is a lack of purchasing power, and that the producers of one good will not want to spend all their income on that good, it becomes apparent that the creation of one industry

⁵³ Nurske, *Capital*, 11.

⁵⁴ *Ibid.*, 9. One should note that this idea is also found in Rosenstein-Rodan's article, page 205.

⁵⁵ *Ibid.*, 13. "Consumers' demands," however, did not extend to social overhead capital projects. Balanced growth was to be confined to "directly productive investment" (Nurske, "Notes," 295).

will not create a large enough market for an individual investor to realize a profit.⁵⁶ This lack of a foreseeable profit tends to minimize individual investment, despite the potential social benefits the creation of even one industry would produce (such as training). Thus, Nurske returns to the problem of imperfect knowledge first encountered in the discussion of Rosenstein-Rodan's ideas on balanced growth. As Nurske argued, "Where any single enterprise might appear quite inauspicious and impracticable, a wide range of projects in different industries may succeed because they will all support each other... In this way the market difficulty, and the drag it imposes on individual incentives to invest, is removed or at any rate alleviated..."⁵⁷ Balanced growth thus is a theory not only for achieving industrial complementarity and external economies, but it is a strategy for overcoming deficiencies of knowledge and savings.

Before examining Lewis's ideas of balanced growth, one final note should be made regarding the argument balanced growth makes in favor of a diversity of industries. The requirement of a diverse range of industries aimed at meeting domestic demand and provided with a "synchronized application of capital"⁵⁸ implies the sub-theory that has come to be known as the "big push."⁵⁹ Albert O. Hirschman argued that two different

⁵⁶ This should not be taken to mean that "individual investment projects will not be profitable in the absence of balanced expansion" (John Sheahan, "International Specialization and the Concept of Balanced Growth," *The Quarterly Journal of Economics*, vol. 72, no. 2 (May 1958): 188; hereafter "Specialization."). Individual investment would only be precluded in cases where investment will cause decreasing returns (a drop in price to maintain a situation of equilibrium) or where no technological innovation to lower production costs was possible (188-9). Nurske himself recognized this fact when he stated: "Isolated advance is not impossible. A solitary process of investment and increased productivity in one industry alone will certainly have favorable repercussions elsewhere in the economy" (Ragnar Nurske, *Equilibrium and Growth in the World Economy*, ed. Gottfried Haberler and Robert M. Stern (Cambridge, Massachusetts: Harvard University Press, 1961), 247-8; hereafter *Equilibrium*).

⁵⁷ Nurske, *Capital*, 13.

⁵⁸ *Ibid.*, 11.

forms of investment could be known as the “big push:” “A big push could, of course, result from one or a few big projects, or from a large number of projects of varying size that dovetail with one another.”⁶⁰ Thus, the big push is something similar to transporting the “lumpy” characteristic of social overhead investment to industrial investment: balanced growth requires a lumpy investment so that a large number of industries begin growing simultaneously. Balanced growth is thus not a series of sequential investments; it must be undertaken simultaneously or not at all.⁶¹

Traditionally, W. Arthur Lewis is considered one of the earlier proponents of balanced growth along with Rosenstein-Rodan and Nurske.⁶² However, while the previous discussion showed considerable agreement between Rosenstein-Rodan and Nurske, Sutcliffe notes, and this discussion will show, that Lewis’s conception of balanced growth is different. For Lewis, balanced growth is the need “that the various sectors of the economy must grow in the right relationship to each other, or they cannot grow at all.”⁶³ In this sense, balanced growth has become a more broadly defined term

⁵⁹ As near as I can tell, the term “big push” derives from a 1957 paper submitted to the Rio Roundtable of the International Economic Association entitled “Notes on the Theory of the Big Push” by Rosenstein-Rodan (cited in Albert O Hirschman, *The Strategy of Economic Development* (New Haven: Yale University Press, 1958), 51 n. 2; hereafter *Strategy*).

⁶⁰ Hirschman, *Strategy*, 51.

⁶¹ This point should not be taken too far. The “big push” need not cover the entire economy. In fact, if one accepts that growth will have leading sectors, then the “significance [of the big push] in terms of national effort depends not only on the intensity of the push in the bundle of ‘leading sectors’ but also on the proportion of the economy covered by this balanced bundle” (Dagnino-Pastore, “Interpretation,” 172).

⁶² Robert B. Sutcliffe, “Balanced and Unbalanced Growth,” *The Quarterly Journal of Economics*, vol. 78, no. 4 (November 1964): 624; hereafter “Balanced.”

⁶³ W. Arthur Lewis, *The Theory of Economic Growth* (Homewood, Illinois: Richard D. Irwin, Inc., 1955), 276; hereafter *Theory*. The “right relationship” seems to be maintenance of a constant relative price between industry and agriculture, implying that production of commodities in each sector must expand or contract to maintain the relative price (Ronald Findlay, “International Specialization and the Concept of Balanced Growth: Comment,” *The Quarterly Journal of Economics*, vol. 73, no. 2 (May 1959): 340-1;

that seeks external economies in all economic aspects, not just industry. Lewis argues for three broad sectors that must all expand if a balanced economy is to be created or maintained: agriculture, manufacturing and exports.⁶⁴ Why is this the case?

According to Lewis, “an expansion of M [manufacturing] must be accompanied by an expansion of either A [agriculture] or X [exports], or by import substitution if it is to continue.”⁶⁵ Agriculture must expand with manufacturing both to supply food to the growing industrial labor force and to increase agricultural incomes to provide a greater domestic market for the manufactured goods. Exports must expand if agriculture fails to expand in order to provide a market for the manufactured goods as a means of generating capital to purchase imports to correct the agricultural shortfall. Alternatively, import substitution provides a method of increasing capital from domestic sources while simultaneously lowering capital lost to the purchasing of imports. “Similarly,” Lewis argues, “an expansion of A [agriculture] must be accompanied by an expansion of either M [manufacturing] or X [exports], or by import substitution.”⁶⁶ A similar range of arguments as those presented for manufacturing make this necessary.

hereafter “Comment.”). A word of caution: Findlay argues that this is not possible in an economy in which labor is growing faster than capital (345).

⁶⁴ Lewis, *Theory*, 277. One potential problem with using sectors as broad as “manufacturing,” “agriculture” and “exports” is that technical progress is likely to proceed faster in one area than the others, which creates problems with “balance” if “balance” is taken to be maintenance of relative prices (S.K. Nath, “The Theory of Balanced Growth,” *Oxford Economic Papers*, New Series, vol. 14, no. 2 (June 1962): 141; hereafter “Balanced.”).

⁶⁵ Ibid. “Import substitution” is “the replacement of imports by locally made goods; a popular development strategy in the 1950s and 1960s. Since imports to LDCs [less developed countries] were largely manufactured products, industrialization is an implicit part of the strategy” (Kindleberger and Herrick, *Development*, 514). However, we should insert a warning regarding import substitution. In Nurske’s view, import substitutes may be more costly to produce and consume (due to inefficient production) which leads to a declining real income of consumers, creating investment problems (Nurske, *Equilibrium*, 256).

⁶⁶ Ibid., 277-8.

Exports are the exception to this pattern. Lewis asserts that “It is only X [exports] which can expand continuously by itself without being checked by a failure of either A or M to expand; for the demand generated by an expansion of exports can be met by imports, for which the exports provide the foreign exchange.”⁶⁷ Lewis may or may not be correct, but one aspect that he overlooks is the value of the exports. If a developing nation expands exports of primary products, such as mining or agricultural goods, the increased revenue may not cover importation of more advanced, high-tech goods. However, Lewis does provide a word of caution: “Though the expansion of exports has the advantage of being the easiest means of starting the economy on its growth, over-concentration upon exports is just as disadvantageous as over-concentration on any other sector.”⁶⁸ Lewis further modifies his position with respect to open economies (those for which foreign trade is possible):

The open economy is more complicated, since the growth of manufactures for home consumption can be balanced by the growth of manufactures for export, instead of by the growth of agricultural production (or *vice-versa*, substituting ‘agriculture’ for ‘manufactures’), so in the real world we have to keep a balance between imports, exports, manufactures and agriculture, and not just between any two of them.⁶⁹

Hence, a three sector model of balance only applies in closed economies, although even there balance should not be taken to mean identical rates of growth.⁷⁰ In an open economy, four sectors must be balanced. However, should agricultural expansion prove impossible, or an extremely long process, then rapid expansion of the export and import

⁶⁷ Lewis, *Theory*, 278.

⁶⁸ *Ibid.*, 281.

⁶⁹ *Ibid.*, 278.

⁷⁰ *Ibid.*

sectors can offset the agricultural deficiency, returning us to a three-sector model of balance.⁷¹

How does Lewis's conception of balanced growth relate to that advanced by Rosenstein-Rodan and Nurske? One could argue that Lewis's definition is simply an abstracted version of that proposed by Rosenstein-Rodan and Nurske. In other words, where they were concerned with balanced industrialization as the means of achieving economic growth, Lewis sees overall economic growth (or development) as the means by which to achieve industrialization. In this view, the sectors produce external economies instead of individual firms or industries. A hint of this viewpoint can be found in Lewis's writing: "Moreover, exports create new effective demand for other commodities, and so stimulate all the industries producing for the home market."⁷² The conclusion is then that Lewis's conception of balanced growth is not necessarily incompatible with Rosenstein-Rodan and Nurske's ideas, but somewhere closer to being "advice (wise, no doubt) to avoid food shortages, inflation and balance-of-payments problems," in Sutcliffe's opinion.⁷³ In other words, Lewis's theory of balanced growth may be too vague to be of any practical use, other than a reminder of certain potential problems if overall balance is not maintained.

Based on this discussion of the three "founders" (four if one includes Scitovsky), what can be concluded about balanced growth? As a theory, it is concerned with expanding markets in order to increase demand. This may be accomplished through the

⁷¹ Lewis, *Theory*, 278.

⁷² *Ibid.*, 280. This assumes that monies raised via exports are spent, at least in part, on domestically produced goods.

⁷³ Sutcliffe, "Balanced," 624.

creation of external economies domestically via the creation of several vertically integrated production sectors, or the expansion of the export industry. The overall point is to maintain balance both between sectors and within sectors⁷⁴, with balance understood to mean primarily the creation of external economies sufficient to ensure investment capable of preventing supply or demand problems in all sectors. The creation of sufficient external economies to make growth a general condition of the economy requires a big push, which will probably stimulate a range of industries simultaneously. The choice of which industries will be part of the big push is determined in part by the prospects of growth in the agricultural sector and consequently the expected increase in domestic purchasing power caused by expansion in both agriculture and industry.⁷⁵

To this point, the issue of imperfect knowledge has only been dealt with tangentially. In Rosenstein-Rodan's argument, it was proposed that the planning of a number of complementary industries at once overcame the lack of knowledge. It will be recalled that Nurske expressed a similar opinion. It is interesting to note, however, that neither discussed a lack of power. Yet, in the following discussion, it is easy to see how power could be substituted for knowledge. The implication of suggesting planning on this level is that a planning body of some sort should have control over economic decisions.⁷⁶ This is necessitated by the amount of knowledge that would have to be

⁷⁴ In other words, "Balanced growth has a horizontal and a vertical aspect" (Paul Streeten, "Unbalanced Growth," *Oxford Economic Papers*, New Series, vol. 11, no. 2 (June 1959): 170; hereafter "Growth.>").

⁷⁵ A word of caution is necessary in this case. Rising domestic incomes and demand created by an expanding domestic market should not lead one to advocate domestic balance alone (Sheahan, "Specialization," 191-93, 196-7). Rather, the aim should be closer to Lewis's idea that sectors can be unbalanced with foreign trade supplying the requisite products to achieve balance. In other words, there should be international balance.

gathered and disseminated if balanced growth were to be followed. Scitovsky implicitly recognized this argument in the following discussion of the market mechanism as an effective indicator of potential investment decisions:

In an economy in which economic decisions are decentralized, a system of communications is needed to enable each person who makes economic decisions to learn about the economic decisions of others and co-ordinate his decisions with theirs. In the market economy, prices are the signaling device that informs each person of other people's economic decisions; and the merit of perfect competition is that it would cause prices to transmit information reliably and people to respond to this information properly. Market prices, however, reflect the economic situation as it is and not as it will be. For this reason, they are more useful for co-ordinating current production decisions, which are immediately effective and guided by short-run considerations, than they are for co-ordinating investment decisions, which have a delayed effect and – looking ahead to a long future period – should be governed not by what the present economic situation is but by what the future economic situation is expected to be.⁷⁷

Thus, a decentralized economy needs a better system of communications, while a centralized, or planned, economy in theory does not suffer from a lack of information. This debate over the existence of a lack of knowledge, as well as the best way to correct it, has important implications for balanced growth theory; and, as we shall see, unbalanced growth theory as well.

Why “Cannot we assume that investors, or a sufficient number of them, will anticipate the repercussions of new investment?” asked J.A. Stockfish.⁷⁸ No investor,

⁷⁶ Nath goes so far as to argue that the theory of balanced growth “asserts that if at least some investments have SMPs [Social Marginal Products] greater or smaller than their PMPs [Private Marginal Products], then if there exists in the economy no authority to consider all investment proposals in the light of one another, the rate of growth of the net national product would be slower than it need be, if such an authority existed in the economy” (Nath, “Balanced,” 142). In other words, balanced growth is a strategy for maximizing growth through central planning. A quick word on SMPs and PMPs: SMPs refer to the value a given investment has to society, while PMPs refer to the value an investment has to the individual or firm making the investment. There is considered to be a need for central planning when the amounts of these differ. If SMP is greater than PMP, then the investment is beneficial to society, but not necessarily to the investor (education for instance). If SMP is less than PMP, then the investment is harmful to society, despite its appeal to the investor (a toxic waste dump in a residential neighborhood would be an extreme example).

⁷⁷ Scitovsky, “Concepts,” 150.

⁷⁸ J.A. Stockfish, “External Economies, Investment, and Foresight,” *The Journal of Political Economy*, vol. 63, no. 5 (October 1955): 447; hereafter “External.”

according to Stockfisch, makes an investment without some “hunch” as to what the future market conditions will be.⁷⁹ For example, market performance over the past several months of a particular commodity may lead some to invest in it. The assumption is that the past market performance will continue, and thus investment is based on assumptions of future market conditions. This point was illustrated by John Sheahan when he argued that “The trick would seem to be to invest in production of goods people want at the level of income they will have when the investment project is carried out.”⁸⁰ If private investment decisions are based upon hunches of future market performance and income levels, how is central planning to be any different? The actions are still being undertaken by humans, and no concrete data on disposable income resulting from the investment is possible. Stockfisch identifies two assumptions underlying prescriptions for central planning: “(1) that those who run the planning agency are better decision-makers than the average private investor or (2) that central planning *as a process* is inherently less susceptible to committing ‘errors.’”⁸¹ Thus, although both theories tend towards endorsement of central planning⁸², one should not automatically assume that such a direction produces better knowledge or leadership. To the degree that central planning should exist, it is likely to be most effective as a sort of information service, ensuring that both public and private investors have as much information as possible. In other words, there should be balance in information as well.

⁷⁹ Stockfisch, “External,” 447.

⁸⁰ Sheahan, “Specialization,” 186.

⁸¹ Stockfisch, “External,” 449.

⁸² For balanced growth, see: 1. Lewis, *Theory*, 376-83, 2. Nurske, *Capital*, 15-7, 3. Rosenstein-Rodan, “Problems,” 206-7, and 4. Scitovsky, “Concepts,” 149-51. For unbalanced growth, see: 1.

While some, mostly proponents of balanced growth, have used the problems arising from imperfect knowledge and a lack of information to justify planning, other theorists have used the same problems as the genesis of a different theory. Codified as unbalanced growth by A.O. Hirschman, he saw the process as follows:

In other words, the balanced growth that is revealed by the two still photographs taken at two different points in time is the end result of a series of uneven advances of one sector followed by the catching-up of other sectors. If the catching-up overreaches its goal, as it often does, then the stage is set for further advances elsewhere. The advantage of this kind of seesaw advance over 'balanced growth,' where every activity expands perfectly in step with every other, is that it leaves considerable scope to *induced* investment decisions and therefore economizes our principal scarce resource, namely, genuine decision-making.⁸³

Although, as was shown before, Hirschman does not deny central planning a role in the development process, he seems to reach the conclusion (shared in many ways by Stockfish) that central planning may not be the most efficient way to make decisions. Rather, inducing investment decisions through a path of growth resembling stairs may be more economical, relying as it does on private investors being compelled to act.

How, in Hirschman's theory, does this inducement mechanism work? If one regards all of "development as a chain of disequilibria,"⁸⁴ then "each move in the sequence is induced by a previous disequilibrium and in turn creates a new disequilibrium that requires a further move.... At each step, an industry takes advantage of external economies created by previous expansion, and at the same time creates new external economies to be exploited by other operators."⁸⁵ While never discussed, a

Hirschman, *Strategy*, 202-5, and 2. Paul Streeten, "Unbalanced Growth: A Reply," *Oxford Economic Papers*, New Series, vol. 15, no. 1 (March 1963): 68; hereafter "Reply."

⁸³ Hirschman, *Strategy*, 63. Investment planning in unbalanced growth then requires a "choice ... between (1) a current sacrifice, in the form of distortion of demand or shortage combined with surplus capacity, for greater cost reductions in the future, and (2) optimum current use with higher costs later" (Streeten, "Growth," 177).

⁸⁴ *Ibid.*, 65.

“chain of disequilibria” implies a chain of equilibria lacking the inducement mechanisms to prompt individual investment. The reader will recall that in the discussion of external economies, it was argued that balanced growth was necessitated by the need to plan for external economies to ensure adequate demand. A part of this argument was Scitovsky’s assertion that expansion of one industry will lower the price of its output for those industries that use it, while possibly raising the price of those goods used in the expanded production process.⁸⁶ His assertion rests upon an assumption that there are adequate supplies of inputs to support expansion in the first industry. Hirschman assumes that there is not sufficient excess supply,⁸⁷ leading to a situation where expansion of an industry relying on that supply will necessitate further investment in the supply industry to meet the increased demand. This process would continue down the line until every industry has expanded adequately. However, as he noted, the “catching-up” may “overreach,”⁸⁸ in which case the price of the output may drop, inducing investment up the ladder to take advantage of the lower priced goods.

The ability of the inducement mechanism to travel both up and down the production ladder is an extremely important point, for it brings Hirschman to a discussion of forward and backward linkages. Forward and backward linkages are broader instances

⁸⁵ Hirschman, *Strategy*, 67. Another statement of this position would be “Unbalanced growth provides the inducement mechanism for breaking through the constraints, overcoming the conditioning factors and bursting through the pre-existing external frame of the economy by means of innovations...” (V.V. Bhatt, “Some Notes on Balanced and Unbalanced Growth,” *The Economic Journal*, vol. 75, no. 297 (March 1965): 90; hereafter “Notes.”).

⁸⁶ Scitovsky, “Concepts,” 147.

⁸⁷ Streeten’s conception of unbalanced growth makes the shortage of supply more explicit: “Bottlenecks may not only, in some conditions, hold back production, but they may also, in other conditions, powerfully stimulate the growth of the complementary activity that has lagged behind” (Streeten, “Growth,” 171).

⁸⁸ Hirschman, *Strategy*, 63.

of the inducement mechanism applicable in the directly productive activities, for they produce linkages of varying strength that may or may not actually induce investment.⁸⁹ More familiar are backward linkage effects, which arise when the creation of a new “nonprimary economic activity, will induce attempts to supply through domestic production the inputs needed in that activity.”⁹⁰ To use a familiar example, the expansion of the railroad industry created backward linkages that induced expansion in the steel, iron and coal industries.

Forward linkage effects are a more difficult concept to grasp because it appears impossible to induce demand. This is particularly true if the product expected to create forward linkages could be imported.⁹¹ Nevertheless, the concept has merit for “every activity that does not by its nature cater exclusively to final demands,” for such activities, according to Hirschman, “will induce attempts to utilize its outputs as inputs in some new activities.”⁹² Thus, while an industry that has a backward linkage effect may be producing directly for the satisfaction of public demand, forward linkages can only exist in intermediate or primary production. An example, borrowed from Hirschman’s discussion, would be the creation of a cement plant inducing the creation of a cement block factory.⁹³

⁸⁹ Hirschman, *Strategy*, 100-1.

⁹⁰ *Ibid.*, 100.

⁹¹ *Ibid.*, 99-100. Hirschman gives three reasons why domestic production may be more desirable than imports in creating further economic development: One, importing can be difficult (and slow); two, importing is impacted by exchange rate fluctuations; three, those who produce the good domestically are likely to advocate and invest in industries that utilize that good (*Ibid.*). I would also add the necessity of avoiding the negative economic impact of such events as war or boycotts, especially in industries related to military capabilities.

⁹² *Ibid.*, 100.

⁹³ *Ibid.*, 102.

Special terms exist for those industries created as a result of forward and backward linkages. If the importance of the linkage is small, but the strength is high, then Hirschman describes such an industry as a “satellite.” If the opposite is true, where the strength of the linkage is low but the importance is high, then the industry is said to be a “nonsatellite.”⁹⁴ Nonsatellites lack the following three characteristics of satellites:

- a. it [the satellite] enjoys a strong locational advantage from proximity to the master industry;
- b. it uses as principal input an output or by-product of the master industry without subjecting it to elaborate transformation, or its principal output is a – usually minor – input of the master industry; and
- c. its minimum economic size is smaller than that of the master industry.⁹⁵

Satellites are thus much more likely to be set up because of their direct dependence on the master industry, a point Hirschman recognizes.⁹⁶ However, nonsatellites, although they are less likely to be created as a direct result of expansion in the master industry, may prove to be far more important overall. This is because, according to Hirschman, a nonsatellite would produce or consume an input of the master industry, but the master industry is not the sole (or most important) customer for that good.⁹⁷ The obvious problem with nonsatellite industries is that they are unlikely to be created if the linkage is too weak, despite their potential necessity for the master industry.

The weakness of the linkage effect for nonsatellite industries leads to an important point. As Hirschman asserts, “the joint linkage effects of two industries ... considered as a unit, are likely to be larger than the sum of their individual linkage effects, since some

⁹⁴ Hirschman, *Strategy*, 102. A warning for cases where the importance of the second industry is *extremely* high: “In extreme cases of complementarity the investment without its complement is bound to be abortive” (Streeten, “Growth,” 176).

⁹⁵ *Ibid.*

⁹⁶ *Ibid.*

⁹⁷ *Ibid.*, 102-3.

of the *xp* [important and strong links, respectively] products which are omitted in computing the individual effects because the *p*'s are below the critical value will exceed this value if added together for both industries."⁹⁸ Thus, where an individual industry is not likely to create sufficient linkage effects, a group of industries may create the linkages. This point should not be pushed too far. Hirschman is not advocating a big push⁹⁹ or even planned complementary investment. Rather, and this is particularly true if foreign sources of supply or demand exist, he is simply explaining why some industries fail to develop domestic sources of supply (or consumption) despite obvious need. It is only when a "critical value" is reached that domestic industry will expand to consume or produce the good – induced decision making at work.

Two further important discussions emerge from Hirschman's work. The first is a discussion of the nature of investment in social overhead capital versus investment in directly productive activities and the implications such a distinction has for the theory of unbalanced growth.¹⁰⁰ This discussion will be dealt with in the second section of this chapter. The other important point is the concept of "growing points" (also known as growth poles) and their application to unbalanced (and balanced) growth theory,

⁹⁸ Hirschman, *Strategy*, 103-4. It should be noted that Hirschman considers this joint linkage effect as an accelerant of economic growth, not a method to achieve faster growth (Ibid., 104). The reason appears straightforward: while he recognizes its desirability, planning of expansion in multiple industries at once to take advantage of joint linkages is basically balanced growth. This, as we have seen, Hirschman rejects as an inefficient way of achieving economic growth because it monopolizes decision-making and thus prevents necessary investment decisions in other areas. Joint linkages will be created, in unbalanced growth, through the induced decision making mechanism creating the necessary conditions for private investors to invest.

⁹⁹ Streeten is more willing to allow a big push: "The idea that a big advance on a few fronts is more successful than small advances on many fronts simultaneously is supported by the remarkably high correlation between rates of production growth and rates of productivity growth in manufacturing industry" (Streeten, "Growth," 182).

¹⁰⁰ Hirschman, *Strategy*, 76-97.

particularly in regards to regional development.¹⁰¹ This important topic will be taken up later in this section, following a discussion of the attempts to reconcile the theories of balanced and unbalanced growth and a discussion of the role of each in history.

Before moving on to the attempts at reconciliation, it may be useful to briefly restate what is meant by “unbalanced growth.” Simply stated, unbalanced growth is a theory of growth that assumes the necessary components of investment, except a sufficient capacity to make decisions, exist in a country. Unbalanced growth seeks to spur investment by creating situations in which individual investors, who possess insufficient decision-making capabilities, are compelled to act to alleviate shortages in the production process. This is done through inducement mechanisms, which usually take the form of bottlenecks resulting from supply or demand deficiencies. The resolution of the bottlenecks through investment produces forward and backward linkages that spur further investment in satellite and nonsatellite industries. Growth then proceeds along a path resembling a staircase.

With a conception of what is meant by balanced and unbalanced growth, it is necessary to look for points of similarity between the two theories to expand their usefulness. Though some attempts had been made to reconcile the two competing doctrines while the controversy was at its height, most of these attempts had focused on forcing the rival theory to admit it was little more than a different interpretation of whichever theory was being held up.¹⁰² Starting in the early 1960s attempts began to be made to reconcile the two theories, or at least to explore the supposed differences between them. One of the first authors to attempt this was Robert Sutcliffe, whose article

¹⁰¹ Hirschman, *Strategy*, 183-201.

“Balanced and Unbalanced Growth” has already been mentioned. One of the easiest points of contention to remove was the idea that balanced growth required simultaneous investment among several industries while unbalanced growth permitted staggered or widely separated investments based on induced decisions. Sutcliffe’s argument was that if there is flexibility in the meaning of “simultaneous,” which is likely given “that unbalanced growth is permitted to lead to balance in even a fairly short time,” then there is no reason to assume that balanced and unbalanced growth require different time frames for investment.¹⁰³

Sutcliffe found a second point of attack in the theory of growing points.¹⁰⁴ Streeten had argued that “the crucial question is not whether to create unbalance but *where* to create unbalance and *how much*.”¹⁰⁵ While this is obviously a defense of unbalanced growth, the theory of the big push that was outlined in relation to balanced growth is not incompatible with this definition. Sutcliffe also recognized this point, arguing that “The question is not to attack every possible consumer industry but only a number of them chosen, presumably, according to which group of industries, while in accordance with future tastes, are also” likely to exhibit strong incentives to further investment.¹⁰⁶ Assuming Sutcliffe is correct, the difference between the two theories

¹⁰² For one particularly good example of this trend, see Nath, “Balanced,” 144-53.

¹⁰³ Sutcliffe, “Balanced,” 628. For admission that unbalanced growth may ultimately lead to balance, see Streeten, “Growth,” 177 and Hirschman, *Strategy*, 93.

¹⁰⁴ *Ibid.*, 629. I had intended to delay discussing growing points until dealing with balanced and unbalanced growth at the regional level, but a brief definition appears to be necessary. In Hirschman’s argument, growing points are “one or several regional centers of economic strength” necessary for “lift[ing] itself [the economy] to higher income levels” (Hirschman, *Strategy*, 183). It will be apparent from the ensuing discussion that Sutcliffe is using “growing points” as an alternate term for leading sectors; which can be seen as an economic version of geographic “regional centers.”

¹⁰⁵ Streeten, “Reply,” 66. Also quoted in Sutcliffe, “Balanced,” 629.

seems to be one merely of scale, with unbalanced growth theory taking a narrow view of growing points (a small bundle of industries) and balanced growth taking a broader view (a wide range of industries). This point Sutcliffe also recognizes, but he relates it to the theory of the big push, not growing points.¹⁰⁷ In fact, Sutcliffe comes to the conclusion that both theories are merely special cases of the big push.¹⁰⁸

On the basis of the two attacks that he mounts, namely those against differences regarding the definition of “simultaneous” and the breadth of “growing points,” Sutcliffe determines that “If Hirschman and Nurske were both asked to compose a development strategy for the same country at the same time, I doubt whether there would be many differences.”¹⁰⁹ This seems to be a very small set of conclusions on which to base an assumption of this magnitude. The conclusion becomes even more problematic, however, when Sutcliffe states on the following page that unbalanced growth is a more general theory encompassing all of economic development while balanced growth is concerned with removing “a possible obstacle to economic development rather than with the whole process.”¹¹⁰ This difference is the result of the type of external economy each theory assumes to be more powerful. Balanced growth is likely to create external economies that are “horizontal, extensive, ‘departing’ and (individually) weak.”¹¹¹ The

¹⁰⁶ Sutcliffe, “Balanced,” 629.

¹⁰⁷ Ibid. Although it should be noted that he seems to be using them almost interchangeably.

¹⁰⁸ Ibid., 634. Of course, this then raises the question of how development proceeds after the push.

¹⁰⁹ Ibid., 629. One possible reason would be that even in balanced growth, there may be a need “to create surplus capacity for products which have a long gestation period, even if they are, in principle, importable and let imports soften the impact of shortages of domestically produced goods which have a fairly small gestation period,” in order to avoid “adversely affect[ing]” the rate of growth (Bhatt, “Notes,” 92).

¹¹⁰ Ibid., 630.

horizontal nature of the external economies is a reference to their impact being primarily in industries that satisfy a demand rather than a shortage of supply. For example, creation of a factory producing chairs, according to balanced growth theory, is more likely to spur investment in a factory producing tables than a lumber mill. Their extensive and weak natures are self-explanatory, while the term “departing” means that the external economies of the industry do not return to it in the form of external economies of another industry. Unbalanced growth, on the other hand, is expected to create (through investment in social overhead capital)¹¹² external economies that result in a “reduction in costs and enlargements of the market,” while investment in directly productive activities creates external economies that are “predominantly vertical” with both forward and backward linkages.¹¹³ While the external economies are still relatively extensive, they are vertical in nature, stronger, and more likely to be “returning;” in other words, in unbalanced growth the external economies of one firm are expected to generate external economies in another firm that then return to the first.

While Sutcliffe attempted to find unity between the doctrines through a redefinition of “simultaneous” and the scale and nature of growing points, V.V. Bhatt returned to the ultimate aim of unbalanced growth. Recall that both Hirschman and Streeten recognized the ultimate result of unbalanced growth might be a situation of balance. Bhatt took this admission a step further, arguing that “since the rationale of creating an unbalance lies in generating forces which can correct this unbalance,” the

¹¹¹ Sutcliffe, “Balanced,” 632.

¹¹² Balanced growth, in Sutcliffe’s opinion, produces less social overhead capital investment because it does not meet a demand.

¹¹³ Sutcliffe, “Balanced,” 633.

ultimate aim of unbalanced growth is essentially balanced growth.¹¹⁴ His conception of unbalanced growth is a cyclical process which creates an imbalance, seeks a correction through investment and increased production, and in the process creates further imbalances that need correcting. Eventually, this spiral will tend towards a balanced outcome. However, there is a potential problem with this line of reasoning. Suppose the correction of the imbalances only causes the economy to grow by a small amount. How then has the state of affairs improved beyond Nurske's vicious circle? One possible answer would be to consider "unbalanced growth" as "the necessary motivation which the latter [balanced growth] lacks and thereby makes it possible for an economy to widen its horizon with respect to growth potentialities."¹¹⁵ In other words, unbalanced growth should be seen as a method for providing the initial impetus to break free of the vicious circle, while balanced growth may provide a better strategy once the circle is broken for raising the prosperity of the maximum number of people.

Ashok Mathur took the "achievement of the maximum possible rate of growth" to be the ultimate aim of both theories in his 1966 article.¹¹⁶ However, a common ultimate aim does not relegate the two theories to the status of mirrors. Fundamental differences exist between the theories. In Mathur's view, three propositions define balanced growth. The first may be termed the horizontal aspect of balanced growth; essentially, it is the

¹¹⁴ V.V. Bhatt, "Theories of Balanced and Unbalanced Growth: A Critical Appraisal," *Kyklos*, vol. 17 (1964): 612; hereafter "Theories." See also Bhatt, "Notes," where Bhatt says: "unbalanced growth has justification only in the perspective of balanced growth, and the movement of the economy towards balanced growth is not inconsistent with, and may actually be facilitated by, a strategy of unbalanced growth" (88). Also see Bhatt, "Notes," 94.

¹¹⁵ Bhatt, "Theories," 622.

¹¹⁶ Ashok Mathur, "Balanced v. Unbalanced Growth – A Reconciliatory View," *Oxford Economic Papers*, New Series, vol. 18, no. 2 (July 1966): 138; hereafter "View."

prescription that investment should be spread over a number of industries.¹¹⁷ The second, which Mathur identifies as the most important, is concerned with vertical growth, especially in relation to expansion to meet “the aggregate of envisaged demand for that output.”¹¹⁸ Finally, the third proposition draws the conclusion that the existence of external economies necessitates some form of planning to maximize growth under the balanced growth theory.¹¹⁹

It should be immediately apparent that because demand is rarely (if ever) static, the second proposition leads to the conclusion that some sectors, which experience greater demand than others, will expand faster.¹²⁰ Since this would then be essentially unbalanced growth, there must be other points to distinguish the theory on. Mathur identifies two, with one being the assumption that shortages can induce investment (and are therefore to be encouraged) and the other being the use of growing points, either in the geographic or economic sense.¹²¹ A third point might be that unbalanced growth advocates creation and development of either comparative advantage or economies of scale.¹²² However, both of these ideas would appear to be special conditions of growing points.

Taking the three propositions for balanced growth one at a time, Mathur sought to eliminate the apparent division between the two theories. The first proposition, that

¹¹⁷ Mathur, “View,” 139.

¹¹⁸ *Ibid.*, 140.

¹¹⁹ *Ibid.*, 140-1.

¹²⁰ *Ibid.*, 141. This is particularly true when dealing with envisaged demand, a situation that could lead to poor investments based upon incorrect forecasting.

¹²¹ *Ibid.*, 142.

investment needs to be broad, could be attacked and eliminated on the basis of the big push requirement. The main argument for eliminating division on this point is that both theories accept the need for a big push; the push only varies in size and coverage.¹²³ Jumping ahead to the third proposition, which deals with the existence of external economies and thus the need for planning, it will be recalled that both theories admit planning may be necessary. Mathur seizes upon this point to argue that the two theories both require some form of central planning to maximize growth.¹²⁴ While the exact form and scope of the planning may differ, it is clear that if maximum growth is defined to be the ultimate aim of both theories, then planning is a point of unity between them.

The second proposition, “that there should be a continuous equilibrium between supply and demand for each output, so that bottlenecks and shortages may be avoided,” would seem to prevent a merging of the theories.¹²⁵ Before examining if this point is really incompatible with one or both theories of growth, it is necessary to take a closer look, as Mathur does, at what a shortage may be. He identifies three types of shortages: “semi-growth-promoting shortages,” “growth-thwarting shortages,” and “real growth-promoting shortages.”¹²⁶ The first would appear to be somewhat similar to the conditions necessary for setting up Hirschman’s “satellites,” while the second resembles instances where a nonsatellite is called for, but the linkage is too weak to lead to investment.

¹²² Mathur, “View,” 143.

¹²³ *Ibid.*, 143-5. This point was also raised by Sutcliffe. It should be noted that Sutcliffe used the idea to argue that balanced and unbalanced growth were merely part of a big push, while Mathur argues that the big push is part of the theories.

¹²⁴ *Ibid.*, 155-7.

¹²⁵ *Ibid.*, 145.

¹²⁶ *Ibid.*, 148.

“Real” shortages are those where a factor of production is being produced at the utmost capacity with no hope of expansion *except* through technological innovation; a process Mathur sees as akin to the historical expansion of the British textile industry.¹²⁷

How do these definitions of shortages help to reconcile balanced and unbalanced growth? First, as Mathur notes, the removal of shortages, even if they induce investment rapidly, takes time, which means that growth would have been faster had the shortages been avoided.¹²⁸ However, it should be obvious that shortages cannot always be avoided; factories may burn down, shipments of necessary inputs may be destroyed, and contracts can be broken. Acknowledgement that growth would have been faster if shortages had been avoided simply implies the need for planning, which corresponds with proposition three. On the other hand, both theories of growth agree that unbalanced growth (in the form of the deliberate creation of excess capacity) is necessary in the case of overhead capital because, according to Mathur, overhead capital is the most likely example of a growth-thwarting shortage.¹²⁹ The solution, as seen by Mathur, would appear to be something similar to that envisaged by Bhatt. In Mathur’s words, “both these principles are mutually supporting ones, instead of being contradictory, and adherence to both of them would increase the potential rate of growth above what would otherwise have been possible.”¹³⁰ His assertion that they are mutually supporting translates into a theoretical framework of “balance within imbalance.”¹³¹ For Mathur, balance within imbalance is

¹²⁷ Mathur, “View,” 147-8.

¹²⁸ *Ibid.*, 146.

¹²⁹ *Ibid.*, 149-50.

¹³⁰ *Ibid.*, 150.

¹³¹ *Ibid.*

taken to mean that balance between supply and demand (the second proposition) should be used to guide investment in those industries selected to push ahead to create imbalance and induce further investment; further investments which would also be guided by the principle of balance between supply and demand.¹³²

Before moving on to brief discussions of the historical records of balanced and unbalanced growth and the regional dimension of each theory, a summary of what can be considered “growth along balanced and unbalanced lines” is called for. Growth along balanced and unbalanced lines is probably consistent with a need for a big push to start the growth process. In order to avoid shortages and maximize growth, central planning of some sort is needed. Furthermore, while growing, some sectors should push ahead to create inducements to invest in other industries or sectors. However, as these imbalances are being created, there should be balance between supply and demand in those sectors that are expanding (vertical balance) and between sectors (horizontal balance). The ultimate strategy of growth should thus be “balance within imbalance.” In terms of ultimate aims, the strategy of balance within imbalance should eventually tend towards balance, with balance taken to mean sustained economic growth in all sectors (although the rate of growth need not be identical in all sectors).

Theories of balanced and unbalanced growth, or notions of growth along balanced and unbalanced lines, seem to have great merit in theory, but how have they fared in history? Above it was argued that the ultimate strategy of growth should be balance within imbalance. At first glance, it would seem that J.R.T. Hughes would express considerable dismay at this conclusion based on the historical record. He concluded that:

¹³² Mathur, “View,” 151.

It is crucial that one realize that this balanced growth was an end result produced and maintained by the ceaseless ebb and flow of innovations and changing factor combinations. It was not a phenomenon created by the simultaneous expansion of mutually supporting sectors. The mutually supporting sectors were in fact the survivors of a persistent war of attrition, the intensity of which was made possible by continued response to new profit possibilities. Individual sectors or industries plunged ahead, sometimes carrying the system along, sometimes destroying important parts of the old way of doing things. The net result was an increase in per capita output, but the cost to the losers could be high indeed. Hence, while it may be clear, as Professor Lewis argues, that the logic of simultaneous growth is as ‘... unassailable as its simplicity ...,’ it is equally clear that an appeal to the history of successful industrial nations is no place to look for empirical support for simultaneous growth as an economic policy for the underdeveloped countries.¹³³

However, one should note that Hughes seems to be operating under a different assumption of balanced growth than this study has chosen to adopt. While he took balanced growth to be the simultaneous expansion of industries to provide mutually reinforcing markets, this discussion has taken balanced growth to mean expansion that maintains balance between supply and demand. Admittedly, Hughes did not have access to several of the later theorists this conclusion is based on. However, Hughes’s article did appear after the publication of Hirschman’s work, and in many ways the above quotation can be seen as an attempt at empirical support for the theory of unbalanced growth.¹³⁴ If, however, one accepts that balance (defined as continued growth) is the ultimate aim of growth along balanced and unbalanced lines, then Hughes’s conclusions do not rule out growth along balanced and unbalanced lines in the past.

Emerging from the same meeting of the American Economic Association was another paper that attempted to examine the role of balanced growth in history. In

¹³³ J.R.T. Hughes, “Foreign Trade and Balanced Growth: The Historical Framework,” *The American Economic Review*, vol. 49, no. 2, Papers and Proceedings of the Seventy-first Annual Meeting of the American Economic Association (May, 1959): 334-5; hereafter “Framework.” The quotation from Lewis is from page 283 of *The Theory of Economic Growth*.

¹³⁴ This conclusion is strengthened by a statement of the growth process that sounds very much like Hirschman’s: “Either by trade or by domestic investment (or both) market demand created by imbalance was filled. But it was filled by further expanding the market – by raising productivity in new or

examining balanced (and by implication, unbalanced) growth in history, Ohlin concludes that one should “expect to find sharp discontinuities in economic growth – industrial revolutions or take-off periods of the kind Rostow has attempted to identify.”¹³⁵ Historians, however, face a difficult challenge when looking for such breaks in history. Ohlin notes that “The records which enable us to gauge the rhythm of economic change are themselves one of the new products in the growth process. Whenever they start, rates of growth in total as well as per capita product are fairly substantial.”¹³⁶ The implication is that reliance on firm economic data usually misrepresents the actual start of the take-off (or industrialization) by a potentially long period.

Thus, according to Ohlin, historians and economists usually fall back onto traditional indicators of industrialization: “the prevalence of the factory system, the switch from charcoal to coke, the number of steam engines, the construction of railroads, the vigor of promotion, the turning points in state policy, and so forth.”¹³⁷ The problems with using this method to date the industrialization process are readily apparent. There is no guarantee that any of these changes caused, or indeed even closely followed, the rapid increase in the rate of growth; a point Ohlin also recognized.¹³⁸ The conclusion one

in cognate lines of industry. Imbalance, by offering profit incentives, gave new enterprise a chance to strike a new balance” (Hughes, “Framework,” 336).

¹³⁵ Goran Ohlin, “Balanced Economic Growth in History,” *The American Economic Review*, vol. 49, no. 2, Papers and Proceedings of the Seventy-first Annual Meeting of the American Economic Association (May, 1959): 340; hereafter “History.”

¹³⁶ *Ibid.*, 343.

¹³⁷ *Ibid.*, 344.

¹³⁸ *Ibid.*

should reach from this, according to Ohlin, is that an “eruptive start” (big push) was probably not the impetus to market and (external) economies formation in the past.¹³⁹

If history does not indicate any big push, what was the process by which new markets and external economies were found? Ohlin argues that in Britain “What made the difference was steam power, and the fact that it created a link between a consumer goods’ industry [textiles] with a relatively price elastic demand and the metallurgical industries which faced a much more inelastic demand.”¹⁴⁰ Thus, one sees an innovation that enabled output in multiple sectors to expand to meet demand, both foreign and domestic. It would appear, however, that the historic record does not support a case for a big push being a necessary event to start the growth process. While this does not rule out a big push, it does mean that the lack of a big push can be ruled out as a cause of failure.

Ohlin has less to say about what this study regards as the other components of growth along balanced and unbalanced lines.¹⁴¹ One conclusion, however, does have some merit for this discussion. Ohlin argues that one “striking” aspect of Western development has been “the role of the investment and export sectors and the role of

¹³⁹ Ohlin, “History,” 345.

¹⁴⁰ Ibid., 347. Kindleberger and Herrick define elasticity as the “general measure of response to a given stimulus, where both are expressed in percentage terms. Thus price elasticity of demand equals proportional change in quantity demanded associated with a given percentage change in price; income elasticity of demand for imports equals proportional change in demand for imports associated with a given percentage change in income, etc.” (Kindleberger and Herrick, *Development*, 511). Inelasticity would then be if little or no response to a given stimulus occurred; for example, increased prices would cause no change in demand.

¹⁴¹ On the other hand, Sutcliffe seizes upon one of these points to rule out unbalanced (or balanced) growth in English history: “Secondly, it must not be forgotten that the doctrine of unbalanced growth is primarily proposing a *strategy* to be followed *consciously* by underdeveloped countries. Insofar as this is not how England set about the process of growth, it cannot be held up by the high priests of the doctrine as an *example* of the strategy but, at most, of a paradigm case of a successful development which justifies the strategy” (Sutcliffe, “Balanced,” 638-9).

agricultural development.”¹⁴² This statement approaches this work’s understanding of Lewis, where balance between sectors was taken to be key. However, that approach has since been modified, to be maintenance of a balance between supply and demand in both horizontal (Lewis’s idea) and vertical linkages. Ohlin’s conclusions do not seem to contradict the idea that there can be horizontal balance of supply and demand, or even vertical balance, within an overall framework of imbalance. Essentially, aspects of the discussion that followed his contribution must temper Ohlin’s conclusions. This study accepts that unbalanced growth is possible, even desirable, while he did not.¹⁴³

Has the work of Hughes, Ohlin, and Sutcliffe altered this study’s conclusions about growth along balanced and unbalanced lines? Three qualifications would seem justified. First, there is clearly no historical case to be made for simultaneous investment or expansion in a range of industries. However, this does not rule out a conception of “balance” that only seeks balance between supply and demand. Secondly, there is no indication in history that a big push is necessary. This does not eliminate the usefulness of the theory, but one should be cautioned against prescribing one in all cases of economic “backwardness.” Finally, the discussion of the historical evidence for balanced and unbalanced growth made clear the problems with using England as an example of either strategy. Although this formulation of growth along balanced and unbalanced lines does not strictly adhere to either doctrine, the point regarding England does raise some problems for the use of balanced and unbalanced growth theory in whatever form as an

¹⁴² Ohlin, “History,” 351.

¹⁴³ However, as Sutcliffe rightly points out, we should be wary of using England as an example of unbalanced growth in the sense that Hirschman or Streeten understood it, because inventions are not the same as investments. This seemingly trivial point is relevant to the application of unbalanced growth outside of England in the eighteenth and nineteenth centuries because development in underdeveloped

analytical tool for Scotland. However, before ruling them out completely, a study of what each theory (and the merged theory) has to say about regions may provide a solution.

The reader will recall that in the discussion of Hirschman's conception of unbalanced growth, the discussion of growing points was delayed. However, it was necessary to define the term at the time, and perhaps it would be best to repeat the definition again. According to Hirschman, "growing points" are the "one or several regional centers of economic strength" needed for "an economy, to lift itself to higher income levels."¹⁴⁴ In the brief discussion of growing points previously offered, the concern was with growing points in the economic rather than geographic sense. However, Hirschman concludes that the "need for the emergence of 'growing points' or 'growth poles' in the course of the development process means that international and interregional inequality of growth is an inevitable concomitant and condition of growth itself," clearly a case of geographic concern, not purely economic.¹⁴⁵ If Hirschman states that growth poles and growth generally cause regionally unbalanced growth, what do the proponents of balanced growth have to say about regional development? Nurske has surprisingly little to say on the issue, although he implicitly admits that even with balanced growth there will be inequality between regions.¹⁴⁶ Lewis, on the other hand, states quite clearly that regional inequality will exist:

areas can draw, through investment, on a technology pool created through invention by more advanced nations (Sutcliffe, "Balanced," 636).

¹⁴⁴ Hirschman, *Strategy*, 183.

¹⁴⁵ *Ibid.*, 183-4.

In every country some regions are richer than others, and some (not necessarily the richest) are developing more rapidly than others. To make a plan which gave equal emphasis to every square mile, or spent an equal sum on every inhabitant, would be quite uneconomic. In the first place, different areas have different growth potential; some have minerals, or water, or good natural harbours, while others are poorly favoured. And secondly, even if all areas started with equal resources, it would pay to concentrate development in relatively few places, because of the economies of geographical concentration.¹⁴⁷

In fact, from Lewis's viewpoint, it becomes clear that a proponent of balanced growth is not willing to extend the same precepts to the area of geography. Balanced growth is meant to be a strictly economic concept, with regional disparity and growing points held to be the key to national economic development.

One problem still exists with respect to growing points: If, in unbalanced growth, inequalities are supposed to induce investment decisions, why do regional inequalities not generate the same response? Hirschman attributes it to the tendency of entrepreneurs in the growing point area to concentrate on exploiting all opportunities revealed by and immediately surrounding the growing point before moving on to other areas.¹⁴⁸ However, there do exist certain "trickle-down effects," such as increased consumption by the expanding region of the lagging region's goods, which will tend to improve economic conditions in the poorer region even in the absence of conscious investment.¹⁴⁹ Hirschman is careful to not attribute too large a role to these effects. In part, this is due to the impact of "polarization effects," such as internal migration, that tend to counteract the

¹⁴⁶ Nurske, *Capital*, 78. His implicit recognition of regional inequality is found in the following statement: "There exists a mechanism that tends automatically to produce transfers of resources from the richer to the poorer regions within a given country."

¹⁴⁷ W. Arthur Lewis, *Development Planning: The Essentials of Economic Policy* (New York: Harper & Row, Publishers, 1966), 68-9; hereafter *Planning*.

¹⁴⁸ Hirschman, *Strategy*, 184-5.

¹⁴⁹ *Ibid.*, 188.

trickling-down of economic progress and retard growth in the lagging region.¹⁵⁰ The problem, of course, is to minimize the polarization effects while maximizing the trickle-down effects.

Care must be exercised when attempting to maximize the trickle-down effects, however. There is a tendency for the lagging region, which is most probably an area that produces mainly primary products (such as agricultural goods), to concentrate on the production of inputs needed in the industries of the growing point area. Harvey Perloff and Lowdon Wingo, Jr., argued that “Regional growth typically has been promoted by the ability of a region to produce goods or services demanded by the national economy and to export them at a competitive advantage with respect to other regions.”¹⁵¹ However, over-reliance on such production can create problems for the lagging region. According to Perloff and Wingo, “while export of resource products provides the basis for regional economic development, extensive and continued growth can be expected to take place only in those regions which achieve sizeable regional (internal) markets.”¹⁵² Essentially, their point seems to be that while regional inequality in development is inevitable, exportation of primary products to the more advanced regions could create and perpetuate a situation of lagging economic development.

¹⁵⁰ Hirschman, *Strategy*, 188. However, Bernard Okun and Richard W. Richardson postulate that internal migration *out* of those areas they term as “low stagnant” towards either “low growing” or “high growing” will tend to have short term benefits in narrowing the income gap between regions; while long term there would appear to be benefits to the “low stagnant” region, although it is unclear whether or not the other regions receive any benefit from the migration *into* their areas (Bernard Okun and Richard W. Richardson, “Regional Income Inequality and Internal Population Migration,” in *Regional Development and Planning: A Reader*, ed. John Friedmann and William Alonso (Cambridge, Massachusetts: The M.I.T. Press, 1964), 303-18; hereafter “Income.”)

¹⁵¹ Harvey Perloff and Lowdon Wingo, Jr., “Natural Resource Endowment and Regional Economic Growth,” in *Regional Development and Planning: A Reader*, ed. John Friedmann and William Alonso (Cambridge, Massachusetts: The M.I.T. Press, 1964), 224; hereafter “Endowment.”

¹⁵² *Ibid.*, 230.

Obviously, for reasons of internal political security, some effort must be made to increase the position of the lagging regions. Lewis argues that a strategy that closely resembles the creation of new growing points in the lagging regions would help to close the gap. However, these new growing points should not be towns with over 500,000 people or towns with fewer than 5,000. At the upper limit, concentration is difficult and congestion provides an impediment to further growth, while at the lower end demand is insufficient to warrant some facilities.¹⁵³ Lewis's strategy has one important point – the need for a big push. The new growing points need to be supplied with “the full range of infrastructure.”¹⁵⁴ This application of the big push theory is needed to increase interest in investing in the region. However, it says little about where the growing point should be located. Lewis's only criterion is that the growing points “should be cities which by reason of their location and natural resources (including easy transport and access to plenty of fresh water) clearly have development potential.”¹⁵⁵ One obvious question seems to be: Why must the growing point be an existing city?

Lewis recognizes this question, and does admit the possibility of building a new town “if location and resources are specially favourable.”¹⁵⁶ However, this prescription remains too vague to be of much practical use. William Alonso provided a more thorough examination of determining the location of a new firm in his essay “Location Theory.”¹⁵⁷ Obviously, locating a firm involves variables not applicable in locating an

¹⁵³ Lewis, *Planning*, 72-4.

¹⁵⁴ *Ibid.*, 73.

¹⁵⁵ *Ibid.*

¹⁵⁶ *Ibid.*

entire town, but for locating a growing point that will probably include both firms and population, there are several important conclusions. Intuitively one would expect the ideal location of a firm to be midway between the source of resources and the market. However, as Alonso notes, transportation costs influence the desirability of certain locations. In some cases, it then becomes much more desirable to locate the new firm (or town) at the source of materials or the location of the market.¹⁵⁸ Obviously, cases of building a town where a market already exists are rare, but this does not mean that new growing points should automatically be created at the location of resources. According to Alonso, one particularly attractive location for a growing point would be what he terms “transshipment points;” in other words, those locations (such as a port) where a good must switch from one mode of transportation to another and thus an opportunity for processing exists.¹⁵⁹ This would indicate a return to a situation where the new growing point should be at some midpoint between resource and market, provided the growing point then focuses on processing and shipping industries. In this way, one can eliminate Lewis’s requirement of favorable resources. In fact, Alonso argues that “regional considerations may in some cases justify higher costs from the point of view of the project in pursuing such goals as the development of a depressed region.”¹⁶⁰ These higher costs will tend to take the form of increased transportation costs. Increased transportation costs, however, tend to reinforce Lewis’s argument for a favorable location

¹⁵⁷ William Alonso, “Location Theory,” in *Regional Development and Planning: A Reader*, ed. John Friedmann and William Alonso (Cambridge, Massachusetts: The M.I.T. Press, 1964), 78-106; hereafter “Location.”

¹⁵⁸ *Ibid.*, 84-5.

¹⁵⁹ *Ibid.*, 86.

¹⁶⁰ *Ibid.*, 102.

in the sense that developed transportation connections will be needed. This returns the discussion to the need for a big push in infrastructure or social overhead capital creation.

Social Overhead Capital and Development

As was seen above, growing points, if used in the geographic sense in an attempt to aid regional development, require adequate transportation connections to overcome locational limitations. Such a reliance on transportation brings about a return to the discussion of social overhead capital investment that was delayed in the case of both balanced and unbalanced growth. The frequent argument that investment in social overhead capital has been one of the primary spurs of economic development makes it necessary to delay this important discussion no longer.¹⁶¹

Before beginning, a clearer definition of social overhead capital is needed. A simplistic definition of social overhead capital would be those aspects of the economy that do not have a directly productive function but nevertheless play an important role in the economy. A.J. Youngson provides a more useful and concrete definition:

Briefly, capital may be regarded as overhead capital (1) *to the extent that it is a source of external economies*, either in the Marshallian or in the wider Pigovian sense; (2) *to the extent that it has to be provided in large units, ahead of demand*. Capital expenditure involving *either* of these two properties should be regarded as expenditure in the creation of overhead capital. *Both* indicate the desirability of at least a certain amount of public investment or subsidisation¹⁶²

¹⁶¹ From this point forward, unless otherwise specified, “social overhead capital” and “transportation,” “transport,” “transport sector,” and so forth will be used interchangeably. While other forms of social overhead capital such as schools and hospitals certainly exist, transportation is our overwhelming focus, and that area of social overhead capital that has generated the most literature. The reasons for this will be found in the subsequent discussion.

¹⁶² A.J. Youngson, *Overhead Capital: A Study in Development Economics* (Edinburgh: Edinburgh University Press, 1967), 68; hereafter *Overhead*. By “Marshallian” Youngson means: “those economies available to a firm (or group of firms), for which it does not pay, resulting from the growth of some other firm (or group of firms)” (44). “Pigovian” is taken to mean: “those effects which are in some sense external to the investments themselves and which arise because of a general, and not a particular, divergence between social marginal net product and private marginal net product” (44).

While the first proposition appears to make any investment a potential example of overhead capital, in regards to transportation it is a limiting factor. In other words, the choice of transportation system can only be justified to the extent that it generates forward and backward linkage effects. As such, the creation of overhead capital re-enters the balanced and unbalanced growth theories.

Nurske gave relatively little attention to social overhead capital formation and investment. His view, it seems, was that social overhead capital investment should be planned, should be constructed ahead of demand, and should “provide a skeleton structure into which the economy must be encouraged to grow through less lumpy and more widely diffused investments of capital.”¹⁶³ The most important point is to recognize the admission that the lumpy nature of social overhead capital investment prevents balanced growth in this area. In fact, as has already been noted, in a later article Nurske explicitly excludes social overhead capital from the discussion, choosing instead to focus solely on directly productive activities.¹⁶⁴

Hirschman considered the role of social overhead capital in much greater detail than Nurske. While he recognized the (often) leading role played by the railroad sector in the nineteenth century, Hirschman was very cautious in attributing too much power to social overhead capital development. His caution was expressed in three doubts about social overhead capital. First, the attractiveness of investment in social overhead capital may have been due, in part, to its safety. Often investment in this area is immune from quantification that could make failure obvious because it is difficult to determine a level of traffic that justifies the creation of a road, particularly in the absence of a toll.

¹⁶³ Nurske, *Problems*, 152-4.

Secondly, investment in social overhead capital is generally perceived as impacting the national economic landscape instead of the local, making it a more attractive area of development politically. Finally, social overhead capital is the one area of economic development that has not, traditionally, been the province of private investors. Thus, those who create the overall development plans for a country or region are the same individuals who are ultimately responsible for social overhead capital development.¹⁶⁵

With those reservations regarding the true importance of social overhead capital investment in mind, Hirschman turned to two competing ideas of how investment should be undertaken. His idea was that growth could proceed along two paths: If expansion in social overhead capital capacity (and here transport is the primary concern) occurred first and caused an expansion in directly productive activities, then this was “development via excess capacity.” If, however, directly productive activities expanded first and caused an increase in social overhead capital investment, then there was a situation of “development via shortage.”¹⁶⁶ Although development via excess appears more likely given the lumpy nature of social overhead investment, it is not necessarily the most appropriate strategy.

Hirschman’s argument was that:

The principal characteristic of the two varieties of unbalanced growth which we have described is that they yield an extra dividend of ‘induced,’ ‘easy-to-take,’ or ‘compelled’ decisions resulting in additional investment and output. Excess capacity of SOC, ‘building ahead of demand,’ is expected to create this demand by making a country, region, or city attractive to DPA investors. If, on the other hand, DPA is allowed or is made to run ahead of SOC, strong pressures are set up for the provision of SOC in a subsequent period. Development via shortage is an instance of the ‘disorderly,’

¹⁶⁴ Nurske, “Notes,” 295.

¹⁶⁵ Hirschman, *Strategy*, 84-5.

¹⁶⁶ *Ibid.*, 88. Hirschman also recognizes the possibility of a third path blending the two described above. Essentially, there would be an increase in directly productive activities that would stimulate social overhead capital investment. If this investment created an excess capacity, then directly productive activities would expand to take advantage of the lower costs. Assuming that this expansion proceeded far enough to create a shortage of social overhead capital, the process would start again (89).

‘compulsive’ sequence discussed earlier in this chapter. Development is speeded up because an intermediate stage that is being jumped over can be filled in with comparative ease as pressures and needs arise from the already realized stages. The absence of the intermediate stage is now felt as a shortage and the decisions to remedy it are more readily taken than before the shortage arose.¹⁶⁷

This argument points to a preference for development via shortage because this route exhibits stronger linkage effects. Not only that, but, as Hirschman notes, development via excess is likely to be the more expensive route since little can be known ahead of time about the potential demand for the service.¹⁶⁸ In this sense, development via excess has a greater potential for mistakes than development via shortage. This is not to say that development via shortage does not have problems as a working strategy, for certainly the time lag between the shortage being felt and the completion of the investment to social overhead capital capacity could slow, or stop altogether, the pace of economic growth.¹⁶⁹ However, as Hirschman argues, this situation would not prevent further investment in directly productive activities, since those activities may still be profitable even as costs associated with social overhead capital rose.¹⁷⁰ Nevertheless, despite this potential

¹⁶⁷ Hirschman, *Strategy*, 89-90.

¹⁶⁸ Ibid., 94. This is true because, as Richard B. Heflebower argues, “Capacity changes are ordinarily a ‘one-way street;’ they can be increased but are not often decreased (except by lack of maintenance) as long as the transport mode is used at all on a given route” (Richard B. Heflebower, “Characteristics of Transport Modes,” in *Transport Investment and Economic Development*, ed. Gary Fromm (Washington, D.C.: The Brookings Institution, 1965), 38; hereafter “Modes”).

¹⁶⁹ Wilfred Owen considers this potential to be such an impediment to economic growth that he discounts any possibility of development via shortage if such a shortage were to cause a decrease in DPA output due to lack of available SOC capacity (Wilfred Owen, “Transportation and Economic Development,” *The American Economic Review*, vol. 49, no. 2, Papers and Proceedings of the Seventy-first Annual Meeting of the American Economic Association (May 1959): 181; hereafter “Transportation”).

¹⁷⁰ Hirschman, *Strategy*, 96. It is interesting to note that Owen sees the potential for investment in DPA to decrease the necessary capacity of SOC. His example is a grain silo to relieve demand for rail transport as soon as a shipment arrives in port (Owen, “Transportation,” 183-4).

problem, development via shortage appears to be the route that offers the potential for maximum growth.¹⁷¹

Development of social overhead capital via shortage is acceptable as an overarching strategy, but in practice more detailed theories are needed to guide investment. It is important to keep in mind that the lumpy nature of social overhead capital investment creates a situation in which these theories are geared towards a central planning body. With that in mind, two questions need to be answered: First, how should investment in social overhead capital (transportation) be planned and carried out? Secondly, how does transportation development impact regional development?

In planning transportation investment projects (or any investment projects), Gary Fromm argues for a six step process. In the first stage, goals are set with both the minimum and desired rate of growth clearly defined for five year periods reaching out to about forty years. The second stage is to create a development plan encompassing a long period approximating the time frame the goals are defined over. Following this, there should be creation of a set of “near-term plans” that are more responsive to changing investment conditions than the long-range plan. As a fourth stage, a cost-benefit analysis of those investments planned in the near-term plan should be carried out. The next stage should be an attempt to measure the non-economic factors that influence the investment plans previously developed, and to adjust the plans accordingly. Finally, the final step is to integrate the results of the previous five steps and to prepare alternate plans for the

¹⁷¹ It is important to note that development via shortage is *not* a strategy that can be undertaken from the beginning. As Hans Heymann Jr. argued: “Obviously some transport investment which provides access to an area is indispensable before other economic activities can unfold there” (Hans Heymann, Jr., “The Objectives of Transportation,” in *Transport Investment and Economic Development*, ed. Gary Fromm (Washington, D.C.: The Brookings Institution, 1965), 31; hereafter “Objectives”).

possibility of rejection by the investors.¹⁷² Clearly, a vast amount of work is needed to plan and carry out investment in transportation, regardless of whether or not this method is adopted.

Fromm's first stage of planning was the setting of goals for the investment. With transportation investment, this poses a problem. As Hans Heymann Jr. argues, "The fact that transportation objectives are competing, incommensurate, and often incompatible with one another raises a serious dilemma for the economist trying to develop an optimal system."¹⁷³ The competition among objectives is created by the dual nature of transportation. While some objectives are economic, others, Heymann notes, are noneconomic, such as providing rapid mobility for defense purposes.¹⁷⁴ This problem is further complicated by the nature of the growth process itself. This reality is reflected in Fromm's third stage of development plan formation, which calls for a set of near-term plans that can respond to changing investment conditions. Heymann also recognized this point when he said: "It would be a serious error for the transportation planner to accept the community's current objectives and values as given and to try to build an optimal transportation system to match them. It would be an error because the goals will almost certainly be fundamentally changed by the social transformation that goes with growth and by the very transportation path that will be followed."¹⁷⁵ Thus, there exists a need for

¹⁷² Gary Fromm, "Introduction: An Approach to Investment Decisions," in *Transport Investment and Economic Development*, ed. Gary Fromm (Washington, D.C.: The Brookings Institution, 1965), 6-12; hereafter "Introduction." It should be noted that Fromm considers this planning sequence to be "somewhat idealistic" (6).

¹⁷³ Heymann, "Objectives," 19.

¹⁷⁴ *Ibid.*, 18.

¹⁷⁵ *Ibid.*, 24-5.

both short- and long-term development plans capable of responding to the social changes development will bring about.

The issue of development creating changes that alter the future path of development is an important one that should be remembered in future discussions of economic development. This point is also particularly important in choosing which mode of transportation to create for a given location. Obviously, this choice will be profoundly influenced by such factors as technology and geography. Yet, as Richard Heflebower notes, “the choice among transport modes” also involves “the economic-technological characteristics of each mode and its adaptability to the types and volume of expected traffic.”¹⁷⁶ If, however, development creates changing objectives, the choice should also include some consideration of future alternatives and how such alternatives are likely to impact the desirability of the current mode of transportation.¹⁷⁷ This is not a prescription for building a railroad alongside a road at the start, as it is likely that both will operate at less than capacity and thus have wasted resources. Rather, it is a warning against building a multi-lane highway instead of a two-lane road in an area that is likely to be well served by a rail line should certain market centers develop as transportation improves.

However, as Heflebower argues, it is important to realize that “different modes appear to be optimal for various parts of a system, but the choice does not rest solely on the efficiency of each segment of the transport system considered separately.”¹⁷⁸ Rather,

¹⁷⁶ Heflebower, “Modes,” 34.

¹⁷⁷ As Owen notes, this point should also be extended to include “the potentials of transport innovation which may alter transport cost and quality in the foreseeable future” (Wilfred Owen, “Transport and Technology,” in *Transport Investment and Economic Development*, ed. Gary Fromm (Washington, D.C.: The Brookings Institution, 1965), 80; hereafter “Technology”).

while a road may be the best choice for a more remote region, it may not be the most economic choice to extend that road through a more developed region. Instead, existing roads in the developed region should be upgraded and a new port or railroad should be planned. However, these developments “must,” argues Fromm, “be devised concurrently with other development sectors which transport is designed to support and promote. However, it must also be structured partly from particular economic, political, and social facts and directions of the country’s economy.”¹⁷⁹ Thus, in the interest of increasing social and political unity, the road might be extended through the more developed region despite costs that would appear to make the investment undesirable.

A consideration of noneconomic issues such as political unity brings about a discussion of a second topic – the role of transportation in regional development. One of the first issues to realize when dealing with regional development, according to Mitchell Harwitz, “is the idea that when a commodity is not produced in a particular place, the reason is that it is unprofitable to produce it there and not necessarily that it is impossible to do so.”¹⁸⁰ Obviously, some limitations still apply; it is not possible to produce oil where no reserves exist, for example. Additionally, there is a need to consider exactly what is defined to be the region, for this will have important implications on the type of transport being planned. Howard L. Gauthier identified three types of regions for development purposes: the homogeneous, the polarized, and the programmed. The

¹⁷⁸ Heflebower, “Modes,” 64.

¹⁷⁹ Gary Fromm, “Design of the Transport Sector,” in *Transport Investment and Economic Development*, ed. Gary Fromm (Washington, D.C.: The Brookings Institution, 1965), 89; hereafter “Sector.”

¹⁸⁰ Mitchell Harwitz, “Regional Development Policy,” in *Transport Investment and Economic Development*, ed. Gary Fromm (Washington, D.C.: The Brookings Institution, 1965), 146; hereafter “Policy.”

homogeneous region is uniform and not marked by internal differences, while the polarized region is a region defined by growing points and the links between them. Finally, the programmed region is a region “created” to meet certain development goals; in this sense, it is similar to the creation of a planned growing point on a regional scale.¹⁸¹ It is important to note that the programmed region is not incompatible with the other types of regions because it is user-defined. A programmed region may contain sub-regions that resemble homogenous and polarized regions. Such flexibility makes it more useful in economic analysis, and thus this study will make use of programmed regions.

The goal of transportation development is to make previously unprofitable investments profitable by lowering the costs associated with moving inputs and outputs from the source and to the market, respectively. Gauthier recognized two possible outcomes of a transportation policy aimed at achieving this goal. First, transportation investment could create sectorial changes based on those sectors whose prices are impacted by the new investment. Alternately, or additionally in some cases, investment in transportation could result in spatial changes, shifting population and industry. While the second possibility is appealing, it should be tempered by awareness of the two-way aspect of transportation. While it may open up a new region, it may also aid in the concentration and dominance of the existing growing points by allowing people and goods to flow more freely from a lagging region.¹⁸² From this it is possible, and probably correct, to conclude that transportation can be both beneficial and harmful to regional development. However, recall that it was argued that some level of transportation must

¹⁸¹ Howard L. Gauthier, “Geography, Transportation, and Regional Development,” *Economic Geography*, vol. 46, no. 4 (October 1970): 616; hereafter “Geography.”

¹⁸² *Ibid.*, 616-7.

exist in a region before economic development could take place; in other words, development via shortage is not an option from the start. Given that this is true, the potential negatives of increased transportation development are considerably less important than improving regional communications generally.

What then can be said about the development of social overhead capital as part of economic development? It is clear that initially there should be a deliberate creation of excess social overhead capital capacity, particularly in transportation, to encourage development in previously unexploited areas. Once development of directly productive activities begins in the programmed region, development via shortage, although potentially growth slowing (although usually not growth stopping), is most likely to result in an appropriate amount of social overhead capital investment that preserves scarce resources for use elsewhere. The changing nature of the “appropriate” amount will also be reflected in the type of social overhead capital to be created at different levels of economic development. This creates a need to invest in types of social overhead capital that are flexible and likely able to respond to changing technology and demand conditions in the future. Furthermore, the type and amount of social overhead capital should fit into the larger development plan and provide a means of expanding growing points and facilitating factor, good, and population movement between regions.

Summary and Application

More could be said about the role of transportation in development, but as the next chapter deals with transportation, many of the issues are best covered at the appropriate time in a study of transportation history in Scotland. However, before

moving on to such a discussion, two issues must be dealt with. First, the length and scope of the preceding discussion has obscured to some degree the relevant analytical tools to be used in the remainder of this study, necessitating a brief review of the more important points. Secondly, it is necessary to identify the state or condition of Scotland at the beginning of the period with which this study is concerned. The two tasks are interrelated, for it was argued that the strategies of growth discussed in the preceding pages can be seen as strategies for advancing from one level of development to the next.

This discussion has argued that while some initial social overhead capital creation is necessary, development via a shortage of social overhead capital is likely to result in the maximum rate of growth. Of particular importance is initial social overhead capital creation during early stages of growth, but one should also recognize that social overhead capital creation is likely to be an unending process that exists in all stages of growth as a result of the increased demand caused by growth itself.

Growth, and thus the transition from one stage to the next, this work has argued, should proceed along balanced and unbalanced lines. Growth along balanced and unbalanced lines is probably consistent with a need for a big push to start the growth process; although, it should be remembered that this study agreed that no historical evidence for a big push in stimulating industrial development existed. The argument thus adopted was that a big push is probably helpful in starting growth (particularly if applied to social overhead capital), but it is not necessary. In order to avoid shortages and maximize growth, central planning of some sort is needed. Furthermore, while growing, some sectors and regions should push ahead to create inducements to invest in other industries or sectors, or possibly even regions. However, as these imbalances are being

created, there should be balance between supply and demand in those sectors that are expanding (vertical balance) and between sectors (horizontal balance). This need for horizontal (and to a more limited degree vertical) balance increases the need for adequate social overhead capital (primarily transportation) at all stages of development to ensure adequate factor and population mobility for the growth process. However, this prescription should not be taken as an endorsement of development via excess capacity in social overhead capital; rather, it should be a reminder that development via shortage is only a viable strategy if it preserves the balance between supply and demand in the sectors social overhead capital supports. The ultimate strategy of growth should thus be “balance within imbalance;” with balance in this case taken to mean balance between supply and demand both in and between sectors. In terms of ultimate aims, the strategy of balance within imbalance should eventually tend towards balance, with balance taken to be sustained economic growth in all sectors (although the rate of growth need not be identical in all sectors).

The application of such a strategy, or search for components of such a strategy, in the history of Scotland necessitates a clear idea of the stage at which growth was starting. This is a complicated task for several reasons. First, as was noted previously, Ohlin argues that the economic data most likely to assist in dating an industrial revolution (or take-off) is itself a product of that revolution. Secondly, this study is complicated by the divisions this work is artificially inserting into the available data. To speak of a Scottish economy is really to speak of something that had not (and has not) existed since 1707. To speak of a Highland economy is to speak of something that has never really existed. Rather, what is being attempted is the creation of programmed regions, to use Gauthier’s

phrase, out of data not created or organized along similar lines. Essentially the structure of this study has condemned it to offer a brief analysis of which stage three different economies¹⁸³ were in over the one hundred years from 1750 to 1850.

At first glance, it would appear that the simplest to categorize would be the British economy. Nevertheless, it should not be difficult to see, owing to the mere fact that the discussion must subdivide the British economy, that the picture is not so simple. When one speaks of the “British economy,” what exactly is being described and how much is being included? If one accepts Linda Colley’s arguments regarding the creation of “Britishness” in a cultural sense, then the process of national integration was certainly not complete even by 1837.¹⁸⁴ Despite the point that her work examines the creation of national identity in cultural rather than economic terms, other authors have expressed similar viewpoints regarding continued differences in economic and social conditions.¹⁸⁵ Yet whenever the take-off is discussed in Rostow’s works, it is discussed with reference to all of Britain, and is dated explicitly to 1783.¹⁸⁶ However, should one look close enough, cracks begin to appear that allow a glimpse of “Scottishness” to return to the debate, even within Rostow’s writing.¹⁸⁷

¹⁸³ British, Scottish, and Highland.

¹⁸⁴ Linda Colley, *Britons*, 2nd ed. (New Haven, Connecticut: Yale Nota Bene, 2005), 372-3. One of the conclusions that she reaches is that “By 1837, Scotland still retained many of the characteristics of a distinct nation, but it was comfortably contained within a bigger nation. It was British as well as Scottish.”

¹⁸⁵ For example, see Harold Perkin, *Origins of Modern English Society* (London: Routledge, 1969), 97-8; hereafter *Origins*. He confines his discussion of the industrial revolution and resulting formation of class society on the basis of a description of the “Celtic fringe” that sounds much like Rostow’s description of the traditional society.

¹⁸⁶ See W.W. Rostow, *The Stages of Economic Growth*, 3rd ed. (Cambridge: Cambridge University Press, 1990), 38; hereafter *Stages*; also W.W. Rostow, *How it All Began: Origins of the Modern Economy* (New York: McGraw-Hill, 1975), 167-76; hereafter *Began*.

The take-off of the Scottish economy is generally assumed to be roughly simultaneous with that of the English economy (and thus the British economy as a whole). As Gayer, Rostow and Schwartz expressed it in their monumental *Growth and Fluctuation of the British Economy*, “Although behind in agriculture, Scotland fully shared the industrial advance which began in 1784.”¹⁸⁸ According to their data, over “223,000 spinners and weavers” were working in the Scottish cotton industry by 1790.¹⁸⁹ T.M. Devine, in a recent general history of Scotland, dates the start of the fundamental changes in Scottish society to the 1760s, but he also notes that the massive increase in textile production in Scotland was a process that began in the 1780s and carried the economy to the 1830s.¹⁹⁰ Thus, it is possible to say with respect to the textile industry at least that Scotland experienced the take-off into sustained growth at nearly the same time as its neighbor to the south. Nevertheless, two points must temper, and perhaps even alter, this conclusion. The first, simply, is that “there is no very satisfactory way to extract the Scottish element from the British totals.”¹⁹¹ In other words, by looking only at such data as customs and excise records that do not specify the *regional* origins of goods, there is tremendous difficulty in the absence of reliable records from the firms involved in attempting to discover when and to what extent Scottish industry expanded. The

¹⁸⁷ Rostow, *Began*, 173 where he wonders how “one [can] explain the disproportionate role of Scotsmen as inventors and innovators?”

¹⁸⁸ Arthur D. Gayer, W.W. Rostow, and Anna Jacobson Schwartz, *The Growth and Fluctuation of the British Economy, 1790-1850*, vol. 1 (Hassocks, Nr Brighton, Sussex: The Harvester Press, 1975), 17; hereafter *Fluctuation*. It should be noted, of course, that this dating does not match up with the date of 1783 used to as the start of the take-off in other of Rostow’s works. No reason is given for this difference.

¹⁸⁹ *Ibid.*

¹⁹⁰ T.M. Devine, *The Scottish Nation* (New York: Viking, 1999), 107-11.

second point that raises doubts about a simultaneous take-off in England and Scotland is the regional dimension.

As a region, the Highlands most certainly did not undergo the take-off at the same time as both England and the portions of Scotland lying further south. Yet, it was not an area without industry. As Malcolm Gray argued, “Industry in 1750 was part of the life of every Highland home. But every home also remained founded on the land and little of the product of this effort ever went beyond the cottage walls.”¹⁹² The problem, essentially, was that the Highlands “had but one material to contribute to the great industrial expansion that was transforming the south: this was kelp, an alkaline seaweed extract used in the manufacture of soap and glass.”¹⁹³ From a purely economic standpoint, the situation of the Highlands became more like an internal colony and less like an autonomous region capable of growth similar to that experienced elsewhere in Britain.¹⁹⁴ In this sense, the Highlands of Scotland in 1783, assuming they can truly be regarded as an internal colony, were still stuck in the period of the preconditions for take-off. And, like a colonial society, they could not help but be influenced by an economically imperial power which brought “about transformation[s] in thought, knowledge, institutions and the supply of social overhead capital which moved the colonial society along the transitional path; and they often included modernization of a

¹⁹¹ Peter M. Solar, “Agricultural Productivity and Economic Development in Ireland and Scotland in the Early Nineteenth Century,” in *Ireland and Scotland, 1600-1850*, ed. T.M. Devine and David Dickson (Edinburgh: John Donald, 1983), 71; hereafter “Productivity.”

¹⁹² Gray, *Highland*, 107.

¹⁹³ *Ibid.*, 124.

¹⁹⁴ For a useful summary of all characteristics of an internal colony, see Michael Hechter, *Internal Colonialism: The Celtic Fringe in British National Development* (New Brunswick, New Jersey: Transaction Publishers, 1999), 33-4; hereafter *Internal*.

sort as one explicit object of colonial policy.”¹⁹⁵ Changes in thought, knowledge and institutions are largely outside the scope of this work, but the important role of social overhead capital in economic development has already been discussed. If, as A.R.B. Haldane has argued, “communications through nearly the whole vast area [of the Highlands] were little better than they had been for many centuries, moor, glen and mountainside traversed only here and there by the paths of men and the tracks of beasts,”¹⁹⁶ then a more comprehensive study of social overhead capital (transportation) development is needed to assess the colonial nature of the Highlands in the eighteenth century, and the attempts to bring about economic development in that region as well.

¹⁹⁵ Rostow, *Stages*, 27.

¹⁹⁶ Haldane, *Glens*, 4.

Chapter Two

TRANSPORTATION

Good roads, canals, and navigable rivers, by diminishing the expence of carriage, put the remote parts of the country more nearly upon a level with those in the neighbourhood of the town. They are upon that account the greatest of all improvements. They encourage the cultivation of the remote, which must always be the most extensive circle of the country. They are advantageous to the town, by breaking down the monopoly of the country in its neighbourhood. They are advantageous even to that part of the country. Though they introduce some rival commodities into the old market, they open many new markets to its produce.

- Adam Smith¹⁹⁷

The central place accorded to transportation by Adam Smith was echoed by Thomas Ross, author of the description of the parish of Lochbroom found in the *New Statistical Account* and source of this work's title. While his assertion that roads were "The first and greatest improvement of any country,"¹⁹⁸ certainly reads like a more detailed version of Smith's dictum covering all transport modes, it is unfortunately impossible to know if Ross had ever encountered Smith's work. However, it is clear that those interested in economic development in the late eighteenth and early nineteenth centuries placed a great deal of emphasis on transportation. Yet, as was noted at the close of the last chapter, as late as 1783 most of the Highlands were lacking in improved transportation of any sort.

The focus of this chapter is the development of road transportation in the Highlands over much of the eighteenth and early nineteenth centuries. Certainly, the history of canal building is the other great story of transportation improvement at this

¹⁹⁷ Smith, *The Wealth of Nations*, 170.

¹⁹⁸ Thomas Ross, "Parish of Lochbroom," in *Ross and Cromarty*, vol. 14, *The New Statistical Account of Scotland* (Edinburgh, 1834-45), 88.

time, but the geography of Scotland limited their application.¹⁹⁹ If canals, or alternately improved rivers, could not bring large areas of Scotland within fifteen miles of viable shipping,²⁰⁰ roads remained the only option for moving goods and people overland until the coming of the railroads, despite the much higher cost of road carriage.²⁰¹

Yet, as was previously noted, little had been done to improve transportation before 1783. The first section of this chapter will discuss one of the earliest attempts at improvement, the military roads of General George Wade and his successors. The second section details the turnpike road system and offers some reasons for its limited scope and impact in the Highlands. A final section describes the most comprehensive road construction program, the work of the Highland Roads and Bridges Commission and its engineer, Thomas Telford.

¹⁹⁹ Bruce Lenman, *An Economic History of Modern Scotland, 1660-1976* (Hamden, Connecticut: Archon Books, 1977), 148 (hereafter *Modern*), especially where he notes that “Not all major investments in communications in Scotland in this period were an economic proposition, even in this [rental rates and land values] indirect sense. The extreme example is provided by canal development. Geographically most of Scotland was wildly unsuitable for canals....”

²⁰⁰ T.S. Willan, *River Navigation in England, 1600-1750* (London: Frank Cass & Co., Ltd., 1964), 133 n.2; hereafter *River*. Willan notes that “The distance of 15 miles is derived from the Ordinance for the sale of Crown lands (1649), which stipulated that naval timber within 15 miles of a navigable river should be excepted from sale.” He goes on to note that twenty miles was likely the maximum distance naval timber could be moved overland in one day. In terms of application to Scotland, Willan notes that while “The consumer and merchant might favour improved river navigation, ... the farmer seems rarely to have supported it” (137). This perspective, when added to the geographic limitations of Scotland, may help to explain the lack of serious investment in canals and river works, particularly in the Highlands.

²⁰¹ T.S. Willan, *The inland trade: Studies in English internal trade in the sixteenth and seventeenth centuries* (Manchester: Manchester University Press, 1976), 1; hereafter *inland*. Willan argues that “He [Sir Robert Southwell] asserted that the ‘ordinary proportion’ between the cost of carriage by sea and by wheel carriage was 1:20, and between inland water carriage and wheel carriage 1:12. Thus he concluded that the cost of land to water carriage was 16:1.” Although Southwell had written in 1675, Willan argues that his ratios hold until the start of the railroad age.

The Military Roads

In the early eighteenth century, the dominant problem facing any member of the British government who examined the Highlands was one of law and order, not economic development. Jacobite risings in 1715 and 1719 had worried the administration, with the 1715 Rising posing a significant threat initially, but the failure of each had lessened the government's anxiety and response. As Bruce Lenman notes,

The situation was very much altered in favour of the Hanoverian regime by 1720, but primarily by the effect which events had had on the minds of its subjects. Since 1715 Jacobitism had lacerated itself with a succession of self-inflicted wounds, starting with the appalling handling of the '15 but thereafter continuing through the sordid shambles of the Swedish intrigue, to the mixture of tragedy and comedy which was the '19. No sensible man, whatever his private views, could entertain much hope for an exiled dynasty which had become the dupe rather than the tool of foreign powers.²⁰²

Yet, as Lenman implies, no action undertaken by the government had contributed to the diminished Jacobite threat. Similarly, there had been very little government action to ensure the continued suppression of hostility. However, "By 1724," writes Rosalind Mitchison, "the government had become sufficiently worried about [renewed] jacobitism in the Highlands to give the area real attention."²⁰³

The government's worry and attention was expressed by dispatching General George Wade to Scotland as the new Commander-in-Chief; a post he took up in 1725.²⁰⁴ While his primary responsibility was to enforce the Disarming Act,²⁰⁵ Mitchison argues that his commission went further, including investigations of "the whole state of the

²⁰² Bruce Lenman, *The Jacobite Risings in Britain, 1689-1746* (London: Eyre Methuen, 1980), 195; hereafter *Jacobite*.

²⁰³ Rosalind Mitchison, "The Government and the Highlands, 1707-1745," in *Scotland in the Age of Improvement*, ed. N.T. Phillipson and Rosalind Mitchison (Edinburgh: Edinburgh University Press, 1970), 32; hereafter "Government."

²⁰⁴ Lenman, *Jacobite*, 222.

Highlands, the need for Highland Companies, roads, more and better barracks, [and] to consider the question of the Lieutenancies and the Justices of the Peace, to see how operative was the Disarming Act, and to report.”²⁰⁶ Recognizing that efforts to enforce the Disarming Act were likely to impact clans loyal to the government more than those that wished to remain hostile, Wade re-organized the loyal clans into what T.C. Smout called “a vigilantes patrol.”²⁰⁷ This group, later known as the Black Watch, was charged with tracking down both Jacobites and cattle thieves; tasks they performed admirably until being withdrawn to serve as a regular line unit in the British Army on the continent.²⁰⁸

Despite this patrol, the garrisons in the Highland barracks (either pre-existing or constructed by Wade) were confined to virtual isolation due to the lack of roads. Wade recognized the need for improved roads to quickly move troops between the garrisons at Inverlochy,²⁰⁹ Killichiumen,²¹⁰ Bernera,²¹¹ and Ruthven.²¹² A need also existed for at

²⁰⁵ According to Lenman, *Jacobite*, 210, “In 1716 a Disarming Act had been passed whereby Highlanders were forbidden under penalties to carry weapons in public. Now [1725] Westminster had passed a tighter piece of legislation which demanded that all weapons be surrendered to the government.”

²⁰⁶ Mitchison, “Government,” 34.

²⁰⁷ T.C. Smout, *A History of the Scottish People, 1560-1830*. (London: Fontana, 1981(c1969)), 208; hereafter *People*. Lenman, *Jacobite*, 210, makes a similar point about the Disarming Act, noting that “In the event the new Disarming Act turned into a counter-productive comedy, for only the Hanoverian clans made any attempt to obey it, while their Jacobite fellow-Highlanders either evaded it entirely, or surrendered rusty, broken relics, some reputedly imported for the purpose after being bought abroad as scrap.” However, Lenman does not connect the impact of the Disarming Act with Wade’s actions with the irregular companies, preferring to see Wade’s work as a simple plan of military rationalization (221-2).

²⁰⁸ Smout, *People*, 208. See also Haldane, *Glens*, 23.

²⁰⁹ Inverlochy is better known as Fort William and is situated at the western end of the Great Glen. For a brief history of the fort, see John Gifford, *Highlands and Islands*, in *The Buildings of Scotland*, ed. Nikolaus Pevsner and Colin McWilliam (London: Penguin Books, Ltd., 1992), 241-2; hereafter *Islands*.

²¹⁰ Killichiumen is better known as Fort Augustus, situated roughly at the midpoint of the Great Glen.

least one road running south to the Lowlands (and possibly beyond) in order to rapidly move reinforcements into the Highlands. While the roads constructed by General Wade before his departure in 1740 did connect Fort William, Fort Augustus, Inverness and Ruthven, the barracks at Bernera remained unconnected to the military road network until Wade's successors completed a road sometime after the 1745 Rising.²¹³

While the primary purpose of the roads was undoubtedly military in nature, a secondary purpose can be described as cultural. In A.R.B. Haldane's words, "The roads, it was said [by critics], opened the country to strangers and weakened the attachment of the clansmen to the chieftains, while remote districts were laid open to invasion; but the feeling was not entirely one of opposition."²¹⁴ In a sense, what have come to be known as the military roads were designed as invasion routes for armed forces, a purpose they never served, and cultural forces, a purpose they did. It was as such a conduit for ideas that "Together, roads and [the] written and printed commodities" that passed over them, according to Gregory Laugero, "became invested with the task of implicating themselves into increasingly minute locations in order to draw those locations into a national unity – economic and otherwise."²¹⁵ Part of the purpose of the roads was thus to expose the

²¹¹ Bernera was the only one of the four barracks to be located north of the Great Glen. Its location was at the narrowest point between the mainland and the Isle of Skye and thus guarded the most logical crossing point.

²¹² Ruthven Barracks were located near the village of Kingussie, to the south and east of Killichiumen. Wade's recognition of the needed road repairs can be found primarily in Lenman, *Jacobite*, 221.

²¹³ Henry Hamilton, *An Economic History of Scotland in the Eighteenth Century* (Oxford: Clarendon Press, 1963), 231; hereafter *Economic History*.

²¹⁴ Haldane, *Glens*, 7.

²¹⁵ Gregory Laugero, "Infrastructures of Enlightenment: Road-Making, the Circulation of Print, and the Emergence of Literature in the Eighteenth and Early Nineteenth Centuries" (PhD diss., State University of New York at Stony Brook, 1994), 217; hereafter "Infrastructures."

uninformed Highlander to those cultural shifts occurring in England and the Lowlands that formed one aspect of economic development.²¹⁶

Yet, this secondary purpose seems to have had little impact on the design and routes of the roads, or at least a far lesser impact than purely military considerations. The most pressing need was to secure the Great Glen to prevent incursions southward by the northern Highland clans. The road that formed part of this plan was begun in 1725 with the thirty-mile section from Fort William to Fort Augustus, with work starting on the thirty-one mile continuation from Fort Augustus



Figure 2 – The Military Roads

to Inverness the following year.²¹⁷ In 1732, large sections of this route were replaced by a new road on the east side of Loch Ness following the discovery that the original route was too easily blocked by snow.²¹⁸ The original route was complete by 1728 when Wade made the following report:

I presume further to Report to Your Maty, That the great Road of Communication extending from the East to the West Sea, through the middle of the Highlands, has been successfully carried on upon the South side of the Lakes from Inverness to Fort William, being near 60 miles in length, and is made practicable for the march of Artillery or other Wheel Carriage, as may appear from my having travell'd to that Garrison the last

²¹⁶ For agreement with the idea that the military roads served as conduits of knowledge, see J.B. Salmond, *Wade in Scotland* (Edinburgh: The Moray Press, 1934), 198 (hereafter *Wade*) where he says that “They [the roads] may have been made for military purposes, but they were ways for light and learning – for folk moving out of the Highlands to learn about the world, for folk moving in from the world to learn about the Highlands.” Bruce Lenman, *Jacobite*, 223, provides an opposite view when he argues that Jacobitism survived in the Highlands not because of hope, but “Rather was it the product of deep-seated intellectual attitudes and social structures which, protected to some extent by sheer distance from the metropolitan heart of Whig and Hanoverian authority....” If his view is correct, the military roads did little to spread ideas conducive to Hanoverian control.

²¹⁷ Salmond, *Wade*, 108.

²¹⁸ Ian and Kathleen Whyte, *The Changing Scottish Landscape, 1500-1800* (London: Routledge, 1991), 190; hereafter *Landscape*.

Summer in a coach and Six Horses to the great Wonder of the Inhabitants, who, before this Road was made, could not pass on Horseback without Danger and Difficulty. This work was very troublesome from the Interposition of Rocks, Bogs and Mountains; Yet was perform'd by Your Maty's Troops Quarter'd in those parts without Assistance from the People of the Country. The Non-Commission Officers and Soldiers are allow'd double pay during the time they are employed in this Service; And if it is Your Maty's pleasure to continue the same allowance out of the contingencies of the Army as was granted by his late Maty for the two proceeding years, with some Addition for erecting Stone Bridges, where they are wanting, a Military Way may be made through the Mountains from Inverness Southwards as far as Perth, which will open a short and speedy Communication with the Troops Quarter'd in the Low Country, Contribute to civilize the Highlanders, and in my humble opinion will prove the most effectual Means to continue them in a due Obedience to Your Maty's Government.²¹⁹

Wade's comment that the roads would "civilize the Highlanders" seems to imply recognition of what was labeled the cultural role of the roads. Nevertheless, his report also clearly emphasizes the military role of the roads as their primary function, even to the point of overshadowing economic concerns.

While the road was certainly an improvement, the difficulty faced by the soldiers in constructing the road became legendary. Travelling through the Highlands in 1769 and again three years later, Thomas Pennant left perhaps the most famous description of the work:

These roads, by rendering the highlands accessible, contributed much to their present improvement, and were owing to the industry of our soldiery; they were begun in 1723, under the directions of Gen. *Wade*, who, like another *Hannibal*, forced his way through rocks supposed to have been unconquerable: many of them hang over the mighty lakes of the country, and formerly afforded no other road to the natives than the paths of sheep or goats, where even the Highlander crawled with difficulty, and kept himself from tumbling into the far subjacent water by clinging to the plants and bushes of the rock. Many of these rocks were too hard to yield to the pick-ax, and the miner was obliged to subdue their obstinacy with gunpowder, and often in places where nature had denied him footing, and where he was forced to begin his labors, suspended from above by ropes on the face of the horrible precipice. The bogs and moors had likewise their difficulties to overcome; but all were at length constrained to yield to the perseverance of our troops.²²⁰

Pennant was not the only traveler in the late eighteenth century that marveled at the methods employed in building the military roads, particularly the road running the length

²¹⁹ General George Wade, "Report of 1728," quoted in Salmond, *Wade*, 76-7.

²²⁰ Thomas Pennant, quoted in A.J. Youngson, *Beyond the Highland Line: Three Journeys of Travel in Eighteenth Century Scotland* (London: Collins, 1974), 160; hereafter *Beyond*.

of the Great Glen. Arriving in the Highlands roughly twenty years after Pennant, I. Lettice echoed Pennant's amazement in many of the same words.²²¹

The courage and determination needed to construct this route was matched only by the courage and determination often needed to travel it. Recalling a journey undertaken shortly before 1800, Sarah Murray described one particularly trying section of the road:

The road on the south side of the lake is a military road, made under the direction of General Wade, which must have cost his men infinite labour. From the foot of the lake to General's Hut (so called from Wade), the road runs through an almost uninterrupted wood of young oaks, birch, alders, mountain ash, etc., climbing from the water's edge to the very summits of the boldest rocks. Indeed the wood wants to be thinned, as it screens the beauties of the lake far too much. The road sometimes descends to the margin of the lake, and again rises to a high shelf, winding round and up very steep masses of projecting rock, blown up for the purpose of making the road, whose towering fragments, huge and solid, hang over the narrow way just the width of a carriage. At about ten miles from Inverness, I came within sight of the Black Rock, and it seemed as if it were impossible to pass by it; in truth, it does require courage and steady horses to venture upon a very narrow shelf blown out of the rocks; and to get upon it you ascend a road almost as steep as the ridge of a house, winding round a huge projecting mass, that looks as if it were ready to crush the bold adventurer who dares come under its brow: for it actually hangs over part of the carriage in passing it. Trees are branching, shrubs and bushes bending over and sprouting from every chink of the rocks, which tower almost to

²²¹ I. Lettice, "Letters on a Tour through parts of Scotland, in the year 1792," 315-22 (hereafter "Letters"), quoted in R.H. Campbell and J.B.A. Dow, eds., *Source Book of Scottish Economic and Social History* (New York: Barnes and Noble, Inc., 1968), 252 (hereafter *Source*), where he writes that "On the decayed parts of the road [from Lochaber to Fort William], at pretty frequent intervals, we met with peasants repairing, or improving them. Where the base of these mountains runs down precipitately into the water of Lochiel, or Loch Yell, as some of the geographers call it, the road has been cut out of the solid rock, with infinite labour and expence, and made sufficiently wide for the safe passage of meeting carriages; but the greater part of this road, almost from our entrance into Lochaber quite to Fort William, and thence to Fort Augustus, and beyond that toward Inverness, though shaped out of the mountains consists of earth and larger stones, rather than solid rock. To have made a road of such considerable length, it being sixty-eight miles to Inverness from Beilichelish [Ballachulish], had otherwise been impracticable. The undertaking, when you consider, that the level is almost wholly artificial, was a very arduous one. The first steps towards its execution were highly daring. The [place on which to stand] which Archimides wanted for the removal of the whole earth, was here as much wanted for the removal of rocks and precipices, handing directly over the water. And there was no proper access to them for the engineer and his men, but by descending from the ridges of several of the loftiest mountains in the Highlands, and down their most rapid declivities; sometimes, in the tracks of goats and sheep, and often where no footstep of man or beast had ever been set, by clinging to the roots of trees and shrubs, and sometimes hanging to one another in their dangerous descent. When they at last arrived near enough to the bottom to commence their operations, where the ground proved impenetrable to the mattock, pickaxe, or bar of iron, workmen, suspended by ropes among the precipices, were obliged to bore, or undermine the rocks, and then to blow up their solid masses by the application of gunpowder. Notwithstanding the immense labour, difficulty and danger to be encountered in the progress of this work, projected by General Wade, and carried on by his troops, and under his inspection, it was, after ten years, happily accomplished..."

the sky; and on the right hand feathering down to the water, over a rocky precipice of perhaps eighty or a hundred feet perpendicular; and no security whatever, either in climbing to the shelf, or upon it, should the horses there take fright.²²²

Despite the obvious danger involved in traveling the road, it was certainly an improvement over the paths “where,” as Pennant noted in the above quotation, “even the Highlander crawled with difficulty.”

The difficulties encountered both in constructing and traversing the military roads illustrates two of their essential defects: poor planning and construction. In terms of planning, Ian and Kathleen Whyte note that “The roads were laid straight across country, like Roman ones, where topography permitted and tended to follow high ground as far as possible to make drainage easier. This sometimes led to steep descents to river crossings with gradients of up to one in six.”²²³ Despite the extreme grades in some locations, Henry Hamilton concluded: “The Wade roads ... were certainly an improvement.”²²⁴ Poor planning thus represented only a minor problem.

A much greater concern was the quality of the roads resulting from poor construction. Hamilton thought that the poor quality of the roads resulted first and foremost from the speed at which they were constructed.²²⁵ The building season, subject as it was to the vagaries of the Scottish climate, generally only lasted from April²²⁶ to October; consequently, each soldier was required to complete about one and a half yards

²²² Sarah Murray, *A Companion and Useful Guide to The Beauties of Scotland* (Hawick, Roxburghshire: Byway Books, 1982 (1799)), 69-70.

²²³ Whyte, *Landscape*, 191.

²²⁴ Hamilton, *Economic History*, 229.

²²⁵ *Ibid.*

²²⁶ Haldane, *Glens*, 5, disagrees with this conclusion, asserting that the building season began in May.

of road per day.²²⁷ The road was constructed, according to Hamilton, by “the removing of boulders before putting down a layer of large stones on which smaller stones were spread, followed by two or three feet or more of gravel on top to fill up the interstices and to form a smooth and binding surface. Drains were constructed along the higher side of the slope. On boggy ground the soft vegetation had to be removed and tree trunks laid down to form a foundation.”²²⁸ The width of the road could vary, with sixteen feet being standard, but widths of thirty feet could be found in some southern locations, while some sections in the north narrowed to ten feet.²²⁹ Although Wade did construct numerous bridges (of both wood and stone), most smaller streams seem to have been originally crossed by fords.²³⁰ The construction work was done almost entirely by soldiers²³¹ quartered in tent cities²³² and barracks²³³ along the routes. Although they did not receive extra rations²³⁴ for their work, they did receive extra pay.²³⁵

Other routes quickly followed the road through the Great Glen. From 1727 to 1729, work proceeded on the main artery to the south, the 102-mile long road from

²²⁷ Whyte, *Landscape*, 191.

²²⁸ Hamilton, *Economic History*, 229-30.

²²⁹ Salmond, *Wade*, 114.

²³⁰ For the initial use of fords, see: Haldane, *Glens*, 6; Salmond, *Wade*, 116; Whyte, *Landscape*, 191.

²³¹ For the assertion that the work was done by soldiers alone, see: Haldane, *Glens*, 5; Whyte, *Landscape*, 191. For an argument that specialized labor was brought in from other areas, see Hamilton, *Economic History*, 230.

²³² For the argument that the soldiers lived in tent cities, see Whyte, *Landscape*, 191.

²³³ For the view that the soldiers lived in barracks, see Salmond, *Wade*, 116.

²³⁴ On the issue of extra rations, see Whyte, *Landscape*, 191.

²³⁵ The use of extra pay is argued by Haldane, *Glens*, 5, and seems to follow the assertion by Wade in his 1728 report to the same effect, quoted in Salmond, *Wade*, 76-7.

Inverness to Dunkeld.²³⁶ A third road, forty-three miles in length, linked the cattle town of Crieff to Dalnacardoch, where it joined the second road mentioned above.²³⁷ A fourth road, constructed entirely in 1732, connected Dalwhinnie (on the second road) to Fort Augustus over the Corrieyairack Pass.²³⁸ Although the eighteen switchbacks required to reach the top of the pass certainly qualify as an engineering feat, this road seems to have been an exceptional example of poor planning: for the most of the year, snow made it impassable.²³⁹ One final eight mile spur route connected the barracks at Ruthven (which lay just off the second route) with Catcleugh (on the Corrieyairack road), although the date of its construction remains unknown.²⁴⁰ Wade himself estimated the total length of the roads at 250 miles; Haldane and Salmond both arrive at a figure of about 242 miles.²⁴¹ The cost of such an extensive road network was high, working out to £23,316 0s. 6d.²⁴²

However significant the cost, no road had been built north of the Great Glen. In time, as part of the expansion of the road network carried out variously by Major

²³⁶ The construction of this road is given as 1727-29 by Salmond, *Wade*, 108; Haldane, *Glens*, 5. Hamilton, *Economic History*, 229, suggests that construction started in 1728.

²³⁷ Haldane, *Glens*, 5; Hamilton, *Economic History*, 229; Salmond, *Wade*, 108.

²³⁸ Haldane, *Glens*, 5; Hamilton, *Economic History*, 229; Salmond, *Wade*, 108; Whyte, *Landscape*, 190.

²³⁹ Whyte, *Landscape*, 190.

²⁴⁰ Haldane, *Glens*, 5; Salmond, *Wade*, 108.

²⁴¹ Haldane, *Glens*, 5; Salmond, *Wade*, 108. It is interesting to note that Haldane argues that if one includes the road from Ruthven, then the total is about the 250 miles Wade claims. However, Salmond includes this road and still comes to a total mileage of 242.75 miles. The difference may lie in Salmond's use of the original route through the Great Glen, which was altered in 1732, although I can find no account of how this may have changed the mileage. Haldane does not specify from which year he takes his measurements.

Caulfield, General Clayton, Sir John Cope and others, two roads would be built to the north.²⁴³ The first connected the barracks at Bernera to Fort Augustus, while the second linked the port of Poolewe to Contin (both towns in Ross-shire).²⁴⁴ For a network that Wade's successors ultimately expanded to nearly one thousand miles, these two roads were an extremely limited amount of work.²⁴⁵ By 1799, less than six hundred of these miles were being maintained.²⁴⁶ Fifteen years later, the government turned over control of the military roads to local parties.²⁴⁷

The impact of the military roads was mixed. Certainly, as was mentioned earlier, they provided a cultural invasion route, although the time frame for such a shift in attitudes is open to debate. Militarily, the roads had little or no effect, a point proved by the 1745 Jacobite Rebellion. In fact, as Salmond points out, "The strange thing is that the greatest military use that they were put to was by the armies of Prince Charles Edward Stuart. These troops used every inch of Wade's roads at one time or another during 1745-46."²⁴⁸ Economically, the roads were nearly worthless, amounting to "an expensive

²⁴² Hamilton, *Economic History*, 230; Salmond, *Wade*, 113. Salmond notes that of this total, approximately £16,000 was spent on the roads (the rest going to barracks). If correct, that would mean that Wade spent roughly £66 per mile for road construction.

²⁴³ Hamilton, *Economic History*, 230-1.

²⁴⁴ Hamilton, *Economic History*, 231; Salmond, *Wade*, 200. Haldane, *Glens*, 10-11, also notes the existence of these roads, arguing that the Contin - Poolewe road appears to have been built about 1760, with maintenance ceasing around 1780. The road to Bernera seems to have been built about 1770. Telford, in his 1803 report to Parliament (*HCSP* 1802-03, 45, IV, 4: "Survey and Report...") notes that this road appears to have nearly disappeared by 1803.

²⁴⁵ For the total length of the military road network, see Haldane, *Glens*, 9; Whyte, *Landscape*, 192.

²⁴⁶ Haldane, *Glens*, 10; Salmond, *Wade*, 205; Whyte, *Landscape*, 193.

²⁴⁷ Hamilton, *Economic History*, 232; Salmond, *Wade*, 205.

marginal event in the economic history of the eighteenth-century Grampians,” according to Lenman.²⁴⁹ Two factors contributed to the dismal economic record of the military roads. First, the quality was poor, with rough surfaces combining with steep grades to severely limit the modes of conveyance possible on the routes. Secondly, the routes were designed for the rapid movement of troops, which often resulted in a route that bypassed a town that lay only a short distance away from the direct route.

The Turnpikes

The failure of the military roads to provide tangible economic benefits in the Highlands did not eliminate the need for effective communications. As the perceived pace of emigration²⁵⁰ quickened in the latter half of the eighteenth century, those who cared to think about the situation of the Highlands began to consider various schemes of economic development. In many cases, these schemes included plans for increasing the accessibility of the countryside and towns, while simultaneously promoting new

²⁴⁸ Salmond, *Wade*, 197. Lenman, *Modern*, 74, makes a similar point: “Arguably the only person who ever derived massive advantage from the central parts of the military road system was Bonnie Prince Charlie, who found the Hanoverian roads very useful for the purposes of a Jacobite army.”

²⁴⁹ Lenman, *Modern*, 74. Hamilton, *Economic History*, 231, agrees; he argues that the roads were unsuitable for cattle droving because it injured the cows hooves (a point also raised by Lenman, *Modern*, 74), and because the routes often avoided towns, making them unsuitable for most types of trade. Gray, *Highland*, 170, also notes the unimpressive economic record of the military roads.

²⁵⁰ Lenman, *Modern*, 104-6 argues that while the Highlands were certainly “exporting” people, only a relatively small number went overseas. Rather, most (especially those living in the southern and eastern portions of the Highlands, those nearest the Lowlands) moved south into the industrializing areas of the Lowlands or England. Lenman calculated that this emigration accounted for sixty-nine percent of *all* Highland emigration if one counts those emigrants who went to the counties of Lanark, Renfrew, Dumbarton, Ayr and Edinburgh. Yet the Highlands had an increase in population over the entire period from 1750-1850, especially in the northern and western areas (those with which this study is most concerned). For further notes about the problem of emigration, see: Haldane, *Glens*, 22-3; Whyte, *Landscape*, 194. Telford also tackled emigration in his 1803 report (*HCSP* 1802-03, 45, IV, 15-17: “Survey and Report...”), arguing that 3,000 people had left in the past year, and 9,000 were preparing to leave in the present year. He blamed this outpouring of people on the intrusion of sheep farming into the Highlands, and recommended a program of public works to provide employment and promote industry.

industries. The problem remained, however, one of determining the form the roadways should take.

One possibility, already gaining popularity in the Lowlands (following its spread throughout most of England and Wales), was the turnpike system.²⁵¹ The turnpike system was really an outgrowth of the statute labor system in effect in England since 1555 and Scotland after 1669.²⁵² According to Pawson, “Under the 1555 Act, each parish was required to meet annually and elect, at a Vestry meeting organized by the constable and churchwardens, two unpaid Surveyors of Highways.”²⁵³ However, in Scotland the parish-based system of statute labor was organized on a county basis rather than at the parish level.²⁵⁴ Sheriffs and Justices of the Peace were responsible for raising funds to complete the list of repairs drawn up at their required annual meeting; these

²⁵¹ Although this section focuses on turnpikes, it should not obscure the important role played by individuals in small-scale, local transport improvement, as noted in T.M. Devine, *The Transformation of Rural Scotland: Social Change and the Agrarian Economy, 1660-1815* (Edinburgh: Edinburgh University Press, 1994), 41; hereafter *Transformation*; also L.E. Cochran, *Scottish Trade with Ireland in the Eighteenth Century* (Edinburgh: John Donald Publishers, Ltd., 1985), 33; hereafter *Trade*; and most extensively in Eric Pawson, *Transport and Economy: The Turnpike Roads of Eighteenth Century Britain* (London: Academic Press, 1977), 72-4; hereafter *Transport and Economy*. These are not discussed because evidence is often scanty and because the purpose of this work is to investigate large-scale, integrated plans for economic development – a position supported by Eric Pawson, *The Turnpike Trusts of the Eighteenth Century: A Study of Innovation and Diffusion* (Oxford: Department of Geography, Nuffield College, 1975), 26.

²⁵² For the dates of the creation of the system of statute labor, see: Whyte, *Landscape*, 178; Haldane, *Glens*, 2; Hamilton, *Economic History*, 222 (notes also Acts in 1617 and 1661); Pawson, *Transport and Economy*, 67 (notes that the 1555 Act was temporary, it was renewed in 1562 and made permanent in 1586); William Albert, *The Turnpike Road System in England, 1663-1840* (Cambridge: Cambridge University Press, 1972), 14-5 (although it is interesting to note that Albert gives the dates of renewal as 1563 and permanence as 1587); hereafter *Turnpike*; and William Albert, “The Turnpike Trusts,” in *Transport in the Industrial Revolution*, edited by Derek Aldcroft, Bill Albert, and Michael Freeman (Manchester: Manchester University Press, 1983), 32; hereafter “Trusts.” Samuel Smiles, *Lives of the Engineers: Metcalfe – Telford* (London: John Murray, 1904), 7, notes the lack of success in some other road acts: “In the reigns of Elizabeth and James, other road Acts were passed; but, from the statements of contemporary writers, it would appear that they were followed by very little substantial progress, and travelling continued to be attended with many difficulties.”

²⁵³ Pawson, *Transport and Economy*, 67.

²⁵⁴ Whyte, *Landscape*, 178.

funds usually took the form of assessments on local property owners.²⁵⁵ Those residing in the county owed six days of labor and the use of a horse (if they had one) on the roads per year, with the labor typically being done in June and July.²⁵⁶ According to Ian and Kathleen Whyte, “In England, where central authority had considerable control over local affairs, the system worked poorly at best. In Scotland, where government had little power to force local authorities to act, it has been assumed that the system did not work at all.”²⁵⁷

As time passed and the population grew, resulting in increased traffic on the roads, the statute labor system of road repair proved unable to cope with the increased maintenance requirements.²⁵⁸ Initial responses tended to focus on limiting the type and

²⁵⁵ Whyte, *Landscape*, 178. Hamilton, *Economic History*, 223 and R.H. Campbell, *Scotland since 1707: The Rise of an Industrial Society*, 2nd ed. (Edinburgh: John Donald Publishers, Ltd., 1985), 45 make similar points. Campbell and Dow, *Source*, 246-7 reprint part of 5 Geo. II, c. 30 (1719) – “An Act for amending and making more effectual the Laws for repairing the Highways, Bridges and Ferries in that Part of Great Britain called Scotland.” In it, Justices of the Peace and Commissioners of Supply for each county were to meet on the third Tuesday of May, with powers of appointment to the positions of Clerk, Surveyor and Overseer. Refusal of any of these posts could result in a fine of £5. Additionally, it stipulated that all laboring men in the county owed three days of labor in June and another three after the harvest, with the penalty being 18 pence per day missed, unless a replacement was found.

²⁵⁶ Albert, “Trusts,” 32; Albert, *Turnpike*, 14-5; Haldane, *Glens*, 2-3; Hamilton, *Economic History*, 223; and Whyte, *Landscape*, 178-9 all note this requirement. Pawson, *Transport and Economy*, 68 provides a complete description of the requirements as laid out in England: “This requirement was graded roughly according to wealth. Every person occupying a ploughland, or holding, worth £50 per annum, and all those keeping a draught of horses or plough in the parish, were to supply one team – i.e. a cart with horses or oxen, and two men. Everyone else was obliged to supply one man or come themselves. All these teams and labourers had to appear on the roads each year at the time fixed by the Surveyors, to work under their direction for eight hours on four, and afterwards (in 1562) on six, consecutive days.” T.C. Smout and Sydney Wood, eds., *Scottish Voices, 1745-1960* (London: Fontana Press, 1991 (1990)), 266-7 (hereafter *Voices*) extract the following from John Bowman’s journal recorded in 1845: “The respective parishes, however, are not wholly relieved from the charge, as every male in each house pays six shillings per annum, or gives three days’ labour.” This passage notes both the possibility of paying instead of actually performing labor, while also noting the decreased labor requirement – however, it also shows that the statute labor system had not disappeared in more remote areas (in this case, the Highlands) by the mid-nineteenth century.

²⁵⁷ Whyte, *Landscape*, 179. Lenman, *Modern*, 75 notes that the statute labor was “notoriously grudgingly and badly done.”

²⁵⁸ Michael Freeman, “Introduction,” in *Transport in the Industrial Revolution*, edited by Derek Aldcroft, Bill Albert, and Michael Freeman (Manchester: Manchester University Press, 1983), 21 notes “it

amount of traffic on the roads in a vain attempt to decrease the damage to a point where the statute labor system would prove to be a viable repair option.²⁵⁹ When this too failed, the turnpike road system, whereby users were charged for their use of the road, came into existence.²⁶⁰

The turnpike road system, designed as it was to charge users of the road for the construction of the road as well as subsequent maintenance of damage caused by use, sought to answer one of the classic problems of transport economics. As was discussed earlier, the construction and maintenance of roads and other forms of social overhead capital is characterized by “lumpiness,” requiring large capital investment at the

is curious how contemporary travelers’ descriptions of the appalling state of the roads have so often been taken to indicate limited traffic levels. What they may equally reflect is a *rising* volume of traffic, a trend the turnpike trusts were clearly directed to accommodate.” Pawson, *Transport and Economy*, 68-9, argues that even with limited traffic the statute labor system was destined to fail for several reasons. First, the statute labor system placed a heavy burden on poor tenants who may have never used the roads themselves. Secondly, the system placed no responsibilities on those actually using the roads. Third, the system took tenants off the land at a time they could not afford to be absent, while simultaneously “double-counting” those tenants who were charged with road maintenance as part of their lease. Finally, not every parish was blessed with the factors that allowed the system to work: a compact parish, low road mileage, high population density, low traffic levels (or high levels of light goods), and easy terrain. Albert, *Turnpike*, 16 notes that “In 1654, the Commonwealth Parliament enacted an ordinance which abolished statute labour and replaced it with a system financed by parish rates.” This suggests that by the mid-seventeenth century the statute labor system had come to be seen as wholly inadequate, although it was re-instated (with surveyors being given the power to levy a rate to supplement the labor force) in 1662.

²⁵⁹ Pawson, *Innovation*, 11-12; Pawson, *Transport and Economy*, 74-5; Albert, *Turnpike*, 170-2; and Albert, “Trusts,” 32, 50 both note this trend. A bill introduced in the 1802-3 session of Parliament, “Bill to empower JPs in England to allow additional Number of Horses for drawing Carriages on Turnpike Roads,” (*HCSP* 1802-03, 96, I, 344) noted the control Justices of the Peace had over such matters. Sir John Sinclair’s “Second Report of the Select Committee on Acts regarding Use of Broad Wheels, and Regulations for Preservation of Turnpike Roads and Highways of the United Kingdom,” (*HCSP* 1806, 212, II, 257) provides a useful summary of the weight restrictions currently in place. For wagons with four wheels or rollers, the maximum weight depended both on the wheel width and the season. Sixteen-inch wide wheels were allowed eight tons in the summer and seven in the winter. The amount of the load decreased as the width of the wheels decreased, with wheels less than six inches wide being allowed three tons, ten cwt. in the summer and three tons in winter. For carts, the maximum weight with a nine-inch wheel was three tons in summer and two tons, fifteen cwt. in winter. With a wheel that was less than six inches wide, the maximum weight in summer was only one ton, ten cwt., and one ton, seven cwt. in winter.

²⁶⁰ It should be noted that the turnpike roads were designed initially as means of supplementing the statute labor system, not replacing it. This point is made by Pawson, *Innovation*, 13-4; Pawson, *Transport and Economy*, 89, 100-1; Freeman, “Introduction,” 2; and Dan Bogart, “Did Turnpike Trusts Increase

beginning of the project and a long delay before the collection of revenue. In the case of roads, where use often begins well before the initial investment is recouped, this problem becomes even more acute. Because road use causes damage that must be repaired, either the investor (who is already operating with a decreased supply of capital) must pay for the repairs or the cost of maintenance must be passed on to those benefiting from the investment. However, determining who the beneficiaries are of a particular investment is a more difficult process than it first appears. On the one hand, in the case of a road, it is obvious that those using the road are receiving a *direct* benefit from the construction and maintenance of the road, and should thus probably share in the cost of its upkeep, either through taxes or tolls.²⁶¹ On the other hand, there are those that benefit *indirectly* from the improvement;²⁶² for example, merchants in two towns linked by a new (or improved) road might now be able to purchase goods more cheaply due to reduced carrying costs. If they do not directly use the road, they pay no tolls, yet they clearly benefit from the improvement. While a general tax could be levied on the area through which the improvement passes, such a tax would probably place an undue burden on those who use the road infrequently, while placing no obligation to share in the upkeep of the road on those who do not reside in the area. In Scotland, because trusts were able to utilize the statute labor system, they developed into county-wide bodies as well, and it appears that

Transportation Investment in Eighteenth-Century England?" *The Journal of Economic History*, Vol. 65, No. 2 (June, 2005): 463; hereafter "Increase."

²⁶¹ Pawson, *Innovation*, 11, 13; Pawson, *Transport and Economy*, 75; and Albert, "Trusts," 46-7, 55 both point to the difficulties encountered in applying charges to direct beneficiaries and offer several different strategies for determining and structuring charges. Albert, *Turnpike*, 82, while noting the charges paid by direct beneficiaries, also notes those direct beneficiaries that could be exempted from the tolls, including the royal family, the military, the Post, churchgoers, funerals, carts carrying goods not going to market, and a variety of local exceptions designed to promote goodwill.

²⁶² Albert, "Trusts," 57 names a few ways individuals might indirectly benefit.

they attempted something of a middle course on assessments and tolls. Tolls were used to target direct beneficiaries, while levies could be used to raise money for construction.²⁶³ While the levies applied only to landowners, they were allowed to extract seventy-five percent of that amount from their tenants.²⁶⁴

Nevertheless, is it possible to say with any more precision who, if anyone, benefited indirectly from the turnpikes? Certainly, if one compared the carrying costs typical at the beginning of the turnpike era to those at the end, it appears that improved roads, both in terms of coverage and quality, contributed to lower carrying costs.²⁶⁵ One must exercise caution in this assessment, for lower carrying costs were both a direct (to those engaged in the carrier trade) and indirect (to those utilizing or purchasing from carriers) benefit, making it likely that the cost of road use was shared by surcharges (of sorts) built into the price of goods.²⁶⁶ Measuring purely indirect benefits, such as land value, is more problematic, but it appears that the construction of turnpikes had a positive impact on land value and rents, at least in England.²⁶⁷ According to Albert, “For the

²⁶³ Whyte, *Landscape*, 188 and Hamilton, *Economic History*, 224 both make this point.

²⁶⁴ *Ibid.*

²⁶⁵ Dorian Gerhold, “Productivity Change in Road Transport before and after Turnpiking, 1690-1840,” *The Economic History Review*, New Series, Vol. 49, No. 3 (August, 1996): 491, 494, 509, 511 (hereafter “Productivity”) argues for impressive gains in productivity over the time period he is considering, although he is careful also to point out the role played by better horses and larger firms buying in bulk contributing to lower costs. Dorian Gerhold, “The Growth of the London Carrying Trade, 1681-1838,” *The Economic History Review*, New Series, Vol. 41, No. 3 (August, 1988): 400, 403 (hereafter “Growth”) also points out the impressive gains in both number and output of carriers involved in the London market. Dan Bogart, “Turnpike trusts and the transportation revolution in 18th century England,” *Explorations in Economic History*, Vol. 42 (2005): 505 (hereafter “England”) shows a declining *real* land carriage rate over the course of the eighteenth century. Pawson, *Transport and Economy*, 297 also argues that any decrease in carrying costs was in *real* terms, not actual rates, which tended to remain remarkably steady from 1750-1800. Albert, *Turnpike*, 186-7, concludes that land carriage rates dropped from 1700 to 1750, remained fairly stable until about 1765, rose until the Napoleonic Wars, but at a rate lower than the rise in the price of goods, and finally rose dramatically with increased traffic after 1815.

²⁶⁶ Bogart, “England,” 489 addresses this possibility.

larger landed proprietor the turnpike, like enclosure, was ‘a highly profitable investment in financial terms.’”²⁶⁸

Even in Scotland, where trusts were set up on the county level, trusts were run on a more local level through district committees, which was still a broader level than most English and Welsh trusts operated at.²⁶⁹ Turnpike trusts could only be established by an Act of Parliament valid for twenty-one years, which went into great detail about the area and rights given to the trust.²⁷⁰ Because the Act of Parliament itself was expensive, usually those in charge of the trust were landowners with property valued at over £100, although representatives from towns or major industrial works could be included.²⁷¹ According to Hamilton,

²⁶⁷ Lenman, *Modern*, 148 argues that this is how most landowners expected to benefit from turnpikes, not through toll receipts. For similar points, see: Whyte, *Landscape*, 188; Albert, “Trusts,” 53, 58 (argues rents would increase as improved transportation made it possible to send more goods to market, creating larger tenant profits); Bogart, “England,” 488, 491-2, 495.

²⁶⁸ Albert, *Turnpike*, 103.

²⁶⁹ Whyte, *Landscape*, 188 and Hamilton, *Economic History*, 224.

²⁷⁰ Pawson, *Innovation*, 13; Pawson, *Transport and Economy*, 84-5, 101-5; Hamilton, *Economic History*, 223; Albert, “Trusts,” 33, 45; Dan Bogart, “Turnpike Trusts, Infrastructure Investment, and the Road Transportation Revolution in Eighteenth-Century England,” *The Journal of Economic History*, Vol. 65, No. 2 (June, 2005): 540; hereafter “Revolution.” Campbell and Dow, *Source*, 247-8 quote 12 Ann. (1713), “County of Edinburgh Turnpike Act,” which said: “...it shall and may be lawful to and for Her Majesty’s Justices of the Peace, for the time being, in the said County of Edinburgh (who are hereby nominated and appointed Trustees for putting this Act into execution), or any ten or more of them, met at one of their Quarter Sessions, to erect, or cause to be erected, a gate or gates, turnpike or turnpikes, in or cross any part or parts of the said Highways or Roads, and to receive and take for every Horse with a Load, passing each and every time through the said County to the said City, the sum of one-sixth part of a penny sterling; and for every Cart, Waggon, or Sledge passing, laden or unladen, each and every time through the said County to the said City, the sum of one halfpenny sterling...”

²⁷¹ Lenman, *Modern*, 147-8 also mentions the dominance of prominent landowners as trustees due to their ownership of land needed for the road and their control of county government. Hamilton, *Economic History*, 223; Albert, “Trusts,” 44-5, 53; Bogart, “Revolution,” 540; Pawson, *Transport and Economy*, 175 all mention the role of large landowners. Albert, *Turnpike*, 24-5, points out the necessity of gaining support of any and all influential people on or near the route of the turnpike, although as these were usually the people most responsible for repair under the statute labor system, support was not that difficult to obtain. For an analysis that challenges the view of large landowner dominance, and points towards much greater involvement of women as subscribers - but not trustees - in turnpike trusts than is commonly thought, see B.J. Buchanan, “The Evolution of the English Turnpike Trusts: Lessons from a Case Study,”

They [the trustees] were authorized to erect toll houses and to charge the users of roads and bridges according to a scale laid down in the Act, the money so collected being used solely for the purpose for which the trust had been established. But before charging tolls, which might be let for a fixed sum and for a limited period, the trustees were authorized to raise capital by subscription, a maximum being generally stipulated in the Act. The money was secured on the tolls, and any subscriber was at liberty to recall his share on giving forty days' notice.²⁷²

Additionally, liability if legal action should arise was limited to the amount each person had subscribed.²⁷³

The spread of the turnpike system has been admirably mapped and described by Eric Pawson and William Albert.²⁷⁴ Their research (amongst others) shows, unsurprisingly, that the system began in the area surrounding London during the “leading” phase that lasted from 1690 to 1750.²⁷⁵ As these initial areas consolidated and expanded the network, they touched off a wave of further turnpiking in an ever-expanding area during the “majority” or “boom” period of 1750 to 1770.²⁷⁶ The continual spread of connecting routes, as well as the creation of turnpikes in more remote areas, dominated the “lagging” period which extended from 1770 to the end of new turnpikes in 1836.²⁷⁷

The Economic History Review, New Series, Vol. 39, No. 2 (May, 1986): 233; hereafter “Lessons.” For the cost of the Acts, see Pawson, *Transport and Economy*, 228, where he shows the cost of Acts ranging from £100 for a Renewal Act early in the eighteenth century to £900 for a New Act in mid-century.

²⁷² Hamilton, *Economic History*, 223-4.

²⁷³ *Ibid.*, 223.

²⁷⁴ For criticism of both Albert and Pawson for failing to deal with turnpike Renewal Acts in their calculations, see Buchanan, “Lessons,” 223-43. For Pawson’s literal mapping of the spread of the turnpikes in England and Wales, see pages 137, 139, 140, and 151 in *Transport and Economy*.

²⁷⁵ Pawson, *Innovation*, 16, 21; Pawson, *Transport and Economy*, 114-5, 117-22; Albert, “Trusts,” 38-9, 41-2; Albert, *Turnpike*, 31-48; Freeman, “Introduction,” 28-9; Bogart, “Revolution,” 540.

²⁷⁶ Pawson, *Innovation*, 16, 21; Pawson, *Transport and Economy*, 114-5, 122-26 (he notes that the majority phase accounts for forty percent of all trusts established in England and Wales and fifty-two percent of all turnpike mileage eventually constructed); Albert, “Trusts,” 38, 42 (although he extends the boom to 1772); Albert, *Turnpike*, 49-52 (again extending the boom to 1772); Bogart, “Revolution,” 540.

Although turnpikes were certainly constructed in Scotland in the majority period, it is hard to see the country as anything other than a lagging region. Scottish turnpikes measured roughly three thousand miles in 1800, a figure that was only one-fifth of what England had achieved thirty years earlier.²⁷⁸ Additionally, it was not until 1822 that a general bill regulating turnpikes in Scotland was taken up in the House of Commons, although there was a fairly steady stream of legislation after that.²⁷⁹ Furthermore, as was also the case in England and Wales, turnpiking did not significantly improve road quality until later in the eighteenth century when Telford and McAdam made important contributions to the principles of road design.²⁸⁰ Despite these limitations, the turnpike roads did greatly reduce the duration and cost of transportation, especially between major cities.

One must recognize that according too great of an impact to the turnpikes can be problematic. While they could improve journey times, they could also provoke riots and attempts to evade the tolls.²⁸¹ Also, they were frequently seen, like enclosures, as

²⁷⁷ Pawson, *Innovation*, 16, 30; Pawson, *Transport and Economy*, 114-5, 126-31. Albert takes a slightly different view ("Trusts," 38, 42), arguing for two distinct periods within the lagging period: 1772-1790, a period of downturn, and 1790-1836, a period of ups and downs. Albert modifies this view slightly in *Turnpike*, 53-55, arguing that the downturn lasted from 1772-1791 with the up-down cycle lasting from 1792 to 1836. Bogart, "Revolution," 540 adopts Albert's position.

²⁷⁸ For extent of English turnpikes, see Pawson, *Innovation*, 27; Pawson, *Transport and Economy*, 115. For Scottish turnpikes, see Whyte, *Landscape*, 188.

²⁷⁹ There were nine such bills from 1822 to 1836. However, five of these nine were amended or re-committed versions of bills already considered, reducing the number of new bills to four (one of which dealt with easing restrictions on heirs of entailed estates and not road maintenance directly). For a complete listing of these bills as found in *The House of Commons Sessional Papers*, see the bibliography.

²⁸⁰ Smiles, *Lives*, 88; Smout and Wood, *Voices*, 270; Albert, "Trusts," 50; Albert, *Turnpike*, 141; Gerhold, "Productivity," 499; Pawson, *Transport and Economy*, 239-41.

²⁸¹ Smout and Wood, *Voices*, 270-1; Pawson, *Innovation*, 19 (Parliamentary opposition), 34 (toll evasion); Pawson, *Transport and Economy*, 118-9; Whyte, *Landscape*, 188; Hamilton, *Economic History*, 228; Albert, "Trusts," 34-5, 47; Albert, *Turnpike*, 26-8 (riots), 82-3, 87(evasion); John Stevenson, *Popular Disturbances in England, 1700-1832*, 2nd ed. (London: Longman, 1992), 54-5. Smiles, *Lives*, 86-7

dividing the nation,²⁸² although some have come to regard such orderly division as ultimately unifying.²⁸³ Finally, the turnpike road system played no role in the economic history of the Highlands. As Hamilton expressed it, “The construction of roads in the Highlands presented the road engineer with almost insuperable difficulties, for in addition to the mountainous character of the country, there was the problem of negotiating innumerable rivers and burns. Moreover, as the land was thinly populated, neither statute labour nor turnpike trusts were likely to serve such an area.”²⁸⁴ A large population was essential to a successful turnpike,²⁸⁵ although the evidence suggests that overall relatively few turnpikes, regardless of location, were successful.²⁸⁶ Nevertheless, the turnpike

provides a vivid description of these acts: “The extension of the turnpike system, however, encountered violent opposition from the people, being regarded as a grievous tax upon their freedom of movement from place to place. Armed bodies of men assembled to destroy the turnpikes; and they burnt down the toll-houses and blew up the posts with gunpowder. The resistance was the greatest in Yorkshire, along the line of the Great North Road towards Scotland, though riots also took place in Somersetshire and Gloucestershire, and even in the immediate neighbourhood of London. One fine May morning, at Selby, in Yorkshire, the public bellman summoned the inhabitants to assemble with their hatchets and axes that night at midnight, and cut down the turnpikes erected by Act of Parliament; nor were they slow to act upon his summons. Soldiers were then sent into the district to protect the toll-bars and the toll-takers; but this was a difficult matter, for the toll-gates were numerous, and wherever a ‘pike’ was left unprotected at night, it was found destroyed in the morning. The Yeadon and Otley mobs, near Leeds, were especially violent. On the 18th of June, 1753, they made quite a raid upon the turnpikes, burning or destroying about a dozen in one week. A score or rioters were apprehended, and while on their way to York Castle a rescue was attempted, when the soldiers were under the necessity of firing, and many persons were killed and wounded.”

²⁸² Thomas Paine used the imagery of turnpike gates to describe barriers being thrown up between man and God in *The Rights of Man*: “It is not among the least of the evils of the present existing governments in all parts of Europe, that man, considered as man, is thrown back to a vast distance from his Maker, and the artificial chasm filled up by a succession of barriers, or sort of turnpike gates, through which he has to pass.” Thomas Paine, *The Rights of Man*, in *The Thomas Paine Reader*, edited by Michael Foot and Isaac Kramnick (London: Penguin Books (Penguin Classics), 1987 (1791-2)), 217.

²⁸³ Laugero, “Infrastructures,” 2-17.

²⁸⁴ Hamilton, *Economic History*, 228. Whyte, *Landscape*, 188 uses almost the same wording to describe the lack of impact the turnpikes had in the Highlands.

²⁸⁵ Lenman, *Modern*, 117 states: “The alternative of turnpiking, with conversion of statute labour obligations into money payments, was dependent on the prospect of a sufficient volume of traffic to reimburse, directly or indirectly, the trustees of the turnpike for the money they sank into improving the road.” See also Pawson, *Innovation*, 32-3.

system was a significant improvement over the old road network throughout most of Great Britain. For the Highlands, however, some other method of improving communications would have to be found.

The Highland Roads and Bridges

The turnpikes, despite their successful introduction into the Scottish Lowlands, were destined to never impact the Highlands. In the Highlands, the population remained too scattered to create the necessary volumes of traffic to render a turnpike, let alone multiple turnpikes, economically viable. As concerns over emigration once again grew apace with the threat from Napoleonic France at the end of the eighteenth century, the government dispatched Thomas Telford, a noted civil engineer, to the Highlands to investigate both the cause of, and the cure for, emigration. One of his proposals, a network of road and bridges, was to play a major role in Highland development for the next twenty years.

Telford carried out his investigation in 1802 and presented a report to Parliament the following year. While he investigated five areas,²⁸⁷ the two with the greatest relevance to this work were his studies of roads and emigration. Regarding emigration, it was Telford's contention that "from the best Information I have been able to procure,

²⁸⁶ For the poor financial state of most turnpikes, see: Lenman, *Modern*, 148; Hamilton, *Economic History*, 228; Albert, "Trusts," 47-9; and especially Albert, *Turnpike*, Appendix D, 230-6. Pawson, *Transport and Economy*, 225-229 challenges this conclusion somewhat, arguing that roughly eighty-three percent of his sample was spending at least forty-five percent of their toll revenue on road repair. In 1836, a "Return of Amount of Debt affecting Turnpike Road from Glasgow to Carlisle," (*HCSP* 1836, 480, XLVII, 267) showed that the trust owed, as of Whitsunday 1835 a total of £90,270 (£50,000 to the government, £32,363 5s 0d to others, and £8,006 15s 0d in interest on the debt to others). At present (Whitsunday) the trust had £4,247 15s 9d in the bank, and had a gross income over the past year of £6,107 7s 0d (which, after expenses, was a net income of £1,653 14s 10d).

about Three Thousand Persons went away in the Course of last Year, and, if I am rightly informed, Three Times that Number are preparing to leave the Country in the present Year.”²⁸⁸ While such a number seems low, it represents a fairly high proportion of the Highland population. For example, if nine thousand people had emigrated from the shire of Ross in 1801, nearly one fifth of the population of that shire would have vanished in the course of one year.²⁸⁹ This pattern becomes even more troublesome when one closely examines the composition of emigrant groups. T.M. Devine has shown that emigrant groups from the Highlands, particularly in the period from 1785 to 1815, tended to travel in families and communities, often resulting in a strong pull on those left behind.²⁹⁰ While Telford had nothing but scorn for emigrants who followed the word of others away from Scotland, he did concede it to be one of the five main causes of emigration.²⁹¹

Before accepting this grim assessment of Highland emigration, it is important to ask if the numbers arrived at by Telford and his contemporaries reflect the numbers modern researchers have offered. T.M. Devine, in his 1994 work *Clanship to Crofters' War*, determined that a *total* migration from the Highlands to North America of ten to

²⁸⁷ HCSP 1802-3, 45, IV, 3: “Survey and Report...” These areas were: 1. Roads and Bridges, 2. The Caledonian Canal, 3. Fisheries, 4. Emigration, and 5. Improving communication with Ireland (Ulster) via Port Patrick. For fuller extracts from this report, please see the appendices.

²⁸⁸ HCSP 1802-3, 45, IV, 15: “Survey and Report...”

²⁸⁹ 41 Geo. III c.15, 542.

²⁹⁰ Devine, *Empire*, 211, 219-20.

²⁹¹ HCSP 1802-3, 45, IV, 15-6: “Survey and Report...” Telford’s five principal causes of emigration were: 1. The land redistribution caused by the rise of sheep farming, 2. The high price of cattle which provided the capital necessary to emigrate, 3. An increase in population beyond what the land in that area could possibly support, 4. The influence of reports from those that had already emigrated, and 5. The desire of people to continue to farm, which leads them to America instead of into the factories of the Lowlands or England. As Haldane, *Glens*, 33 notes, however, Telford never blamed those that turned to sheep farming, thus depriving their tenants of land. In this sense, he reflects Smith’s economic principles.

eleven thousand between 1775 and 1815 was the most probable number.²⁹² If correct, this would represent an average rate of emigration of only about two hundred and fifty people per year. Of course, North America was not the only destination for those leaving Scotland, but it can be considered a representative case. However, while internal migration certainly could account for a large proportion of those leaving the Highlands, this form of migration was not as concerning to a war-time government as it kept the pool of soldiers and sailors at hand. Unfortunately, this type of emigration is also much more difficult to track. Nevertheless, if this form of migration was as significant (in conjunction with foreign migration) as Telford seemed to believe, one would expect to find a declining population in the Highlands, particularly the most economically depressed areas. This is simply not the case. Looking only at the shire of Ross and Cromarty,²⁹³ the population increased from roughly fifty-five thousand in the 1801 census to around sixty-one thousand in 1811, sixty-nine thousand in 1821, and seventy-five thousand in 1831.²⁹⁴ It is interesting to note that over this period the two largest parishes (by population) were Lochbroom and Stornoway, both on the west coast (or the Isles in the case of Stornoway) – supposedly the area hardest hit by emigration.²⁹⁵

Despite Telford's seemingly over-pessimistic assessment of emigration, he was nothing less than optimistic about his proposed solution:

²⁹² T.M. Devine, *Clanship to Crofters' War* (Manchester: Manchester University Press, 1994), 179; hereafter *Crofters*'.

²⁹³ These two shires appear separately in the 1801 census, but are listed together in all the subsequent censuses. Cromarty was a collection of scattered land areas largely surrounded by the county of Ross. Haldane, *Glens*, 63 notes that Cromarty contained twelve or fourteen different tracts of land.

²⁹⁴ 41 Geo. III c.15, 518, 542; 51 Geo. III c.6, 502; 1 Geo. IV c.94, 532; 11 Geo. IV c.30, 1024.

In whatever Light the foregoing Statements may be viewed, there is another on which there can, I think, be no Difference of Opinion. This is, that if there are any public Works to be executed, which, when completed, will prove generally beneficial to the Country, it is advisable these Works should be undertaken at the present Time. This would furnish Employment for the introduction and valuable Part of the People in their own Country, they would by this Means be accustomed to Labour, they would acquire some Capital, and the Foundations would be laid for future Employments. If, as I have been credibly informed, the Inhabitants are strongly attached to their native Country, they would greedily embrace this Opportunity of being enabled to remain in it, with the Prospect of bettering their Condition, because, before the Works were completed, it must be evident to every one that the whole Face of the Country would be changed.

The Caledonian Canal, and the Bridges and Roads before mentioned, are of the Description here alluded to, they will not only furnish present Employment, but promise to accomplish all the leading Objects which can reasonably be looked forward to for the Improvement and future Welfare of the Country, whether we regard its Agriculture, Fisheries, or Manufactures.²⁹⁶

Evidently, Telford had decided to pursue a strategy of development via excess, assuming that the introduction of improved transportation would lead to further development as Highlanders looked to spend the wages made in constructing the transport improvements. Recognizing the immense costs associated with his proposal, Telford appealed to “The Empire at large being deeply interested in those Improvements, as it regards promoting the Fisheries, and encreasing the Revenue and Population of the Kingdom, justifies Government in granting Aid towards making Roads and Bridges in a Country which must otherwise remain, perhaps for Ages to come, thus imperfectly connected.”²⁹⁷ Due to the novelty of this approach, and a lack of precedent in this respect,²⁹⁸ Telford also proposed

²⁹⁵ Ibid. Lochbroom was the largest parish in 1801 (3,533 people), 1811 (3,754), and 1821 (4,540), and the second largest in 1831 (4,615). Stornoway was the second largest parish in 1801 (2,974), 1811 (3,500), and 1821 (4,119), and the largest in 1831 (5,422).

²⁹⁶ HCSP 1802-3, 45, IV, 17: “Survey and Report...”

²⁹⁷ Ibid., 8.

²⁹⁸ The turnpike revolution, it will be remembered, was almost entirely funded by private individuals and groups. Why was this? Youngson, *Overhead*, 14 says: “This rise in the government’s share of total expenditure in the developed countries requires explanation. Briefly, it is the quantitative expression of the evolution of economic policy which, in western Europe and the English-speaking world, has followed for the past one hundred or one hundred and fifty years a path of semi-acceptance and then of gradually mounting dissatisfaction with and departure from the canons of *laissez faire*. Of course, the experience of no two countries has been the same. In Great Britain, acceptance of *laissez faire* and its

that those who would benefit from the road (primarily landowners) should pay one half of the expense.²⁹⁹ The estimated expense for the complete road and bridge construction plan was £18,666 13s. 4d. per year for six years after the landowners' share had been deducted.³⁰⁰

In practice, construction took much longer than six years, with building not ceasing until 1821. The slow pace of construction, however, should not overshadow the speed with which the project was undertaken. Meeting soon after Telford's report was made, the Committee formed by Parliament to review it issued their second report which affirmed their support for "Roads and Bridges, which they are of Opinion are of the highest Importance, for the same salutary Purposes which the Inland Navigation is designed to promote; especially such of them as will open Communications with the Fishing Lochs and Stations on the different Coasts, through a District of Country at present nearly inaccessible, and which forms a Barrier against all probable Improvement."³⁰¹ Authorizing construction provided one half of the expense was supplied by landowners, control of the money required from the government was transferred to a board of commissioners who were required to make regular reports to

application in the conditions of an industrial society went furthest." While the move towards government intervention was slow, one of the reasons behind it is already familiar: emigration. Youngson, *Overhead*, 24 argues that "It is clear that a good deal of the increase in government expenditure, both on current and on capital account, has been due, directly or indirectly, to war and the drive to preparedness for war." In other words, if there was a perceived need to ready the nation for war (or to respond to a war in progress) by stemming the emigration of a body of people considered to be amongst the finest soldiers of the empire, then the economic principle of *laissez faire* could be laid aside in the interest of the state. The turnpike revolution had the misfortune of occurring (at least its main "boom" period) during a time of relative peace following the end of the Seven Years' War, but before the start of the conflict in America.

²⁹⁹ HCSP 1802-3, 45, IV, 8: "Survey and Report..."

³⁰⁰ Ibid., 9. Haldane, *Glens*, 134 points out that, in fact, the government spent between £10,000 and £20,000 per year for sixteen years.

³⁰¹ HCSP 1802-3, 94, IV, 49: "Select Committee on Survey..."

Parliament.³⁰² These commissioners did not delay, inserting notices into papers seeking proposals for roads and funds to cover construction.³⁰³ It was deemed necessary to have the landowners' share in possession before beginning, although exactly what form that share should take was the source of a lengthy discussion:

Respecting the nature of the Security which ought to be deemed satisfactory by us for the purposes of the Act, We had repeated deliberations; and having considered the inconvenience to be apprehended from any form of Security which might eventually compel us to enforce payment of the Moiety to be contributed, by having recourse to legal process, We resolved, with the advice and concurrence of the Lord Advocate of Scotland, to require in the first place a Heritable Bond (in the nature of a Mortgage) over the Contributor's Estate; and in case the Estate should be entailed, it appeared to be further necessary that the Bond should contain an Assignment to us of the Right of the Grantor to charge the Estate in virtue of the Act.³⁰⁴

The potential liability of the Commissioners was further reduced when the Bank of Scotland decided to immediately issue funds to the commissioners on receipt of the bond, thus making the Bank responsible for collecting the money on the bond.³⁰⁵

Granted, the financial arrangements alluded to in the preceding paragraph only mattered after other arrangements had been made. Instead of planning a road system in its entirety, the Commissioners waited for petitions from those interested in funding a

³⁰² HCSP 1802-3, 94, IV, 50: "Select Committee on Survey..." According to Haldane, *Glens*, 35-6, the commission included: "The Chairman of each [the Caledonian Canal and Highland Roads and Bridges Commissions] was Charles Abbot (later Lord Colchester), the speaker of the House of Commons, who for more than twenty-five years was to take a leading part in the work, acting as Chairman from 1803 to 1817. The Treasury ensured close control by the presence on each Commission of Nicholas Vansittart, who had issued the first instructions to Telford and who had since become Chancellor of the Exchequer. The British Fisheries Society, which had been closely connected with the plans from the start, was strongly represented by the presence on each Commission of a number of its directors, including Vansittart, Charles Grant the Member of Parliament for Inverness-shire, and Sir William Pulteney, whose work was later commemorated in Pulteneytown, the original name given to the fishing port of Wick."

³⁰³ HCSP 1803-4, 108, V, 718: "First Report of Commissioners..." Haldane, *Glens*, 46 mentions that the papers were: In Edinburgh, *The Edinburgh Courant* and *The Caledonian Mercury*, while in Glasgow they were *The Courier* and *The Herald*. Letters were also sent to county Conveners, according to Haldane.

³⁰⁴ *Ibid.*, 719.

³⁰⁵ *Ibid.*, 720. Haldane, *Glens*, 45 states that the Commissioners held an account with the Bank of Scotland that earned four percent interest. The Bank also assisted with exchange rate issues as the Commission moved funds between London and Edinburgh.

road to begin the process. Once a petition was received, Telford, or another surveyor acting on Telford's behalf, was sent to perform an initial survey of the intended route.³⁰⁶ This survey included the estimated cost of the project which formed the initial basis for determining the landowners' share.³⁰⁷ If the sum was agreeable, one half had to be paid to the Bank of Scotland before a final survey and plan would be completed and a notice put out for bids from contractors, with the winning bid determining the final contributions of all parties.³⁰⁸ Any cost overruns beyond the estimated price were solely the responsibility of the private party.³⁰⁹ In the first few years this caused several problems as the instinctive tendency was to accept the lowest bid, which unfortunately proved to be unreasonably low in many situations.³¹⁰

Despite the Commissioners relying on petitions from local property owners to determine when and where roads and bridges would be built, they (especially Telford) had some definitive ideas of their own as to which areas should be linked. These plans were detailed in Telford's report to Parliament and in the Highland Society's report to Telford, both of which are excerpted in the appendices. Telford's greatest focus was the erection of bridges over the Tay, Spey, Beanley, and Conon.³¹¹ Indeed, Telford

³⁰⁶ Haldane, *Glens*, 46-7.

³⁰⁷ Haldane, *Glens*, 60 notes that the estimated cost did not include monetary payment to landowners over whose land the roads passed. Rather, it was the opinion of the Commissioners that the benefit of the road was payment enough.

³⁰⁸ *Ibid.*, 46. It should be noted, as Haldane does (p. 50), that the Bank of Scotland was asked, and agreed to, advance the landlord's portion to the landlord on security of promissory notes or bills, usually to be repaid in two years.

³⁰⁹ *Ibid.*, 54.

³¹⁰ *Ibid.*, 54-5.

³¹¹ *HCSP* 1802-3, 45, IV, 4-6: "Survey and Report..." Haldane, *Glens*, 119 notes that the Spey bridge was complete by 1807, while the Tay bridge was complete by 1809.

considered the bridges to be “the Roots from which a great Number of Branches of Roads are to proceed, which are necessary for the Improvement of the Country, and the Extension of the Fisheries.”³¹² While the bridges were meant to serve as roots, the tree Telford was proposing would have two main trunks. The first would be an improved route through the Great Glen to compliment the Caledonian Canal.³¹³ The second would run north from Inverness along the east coast to a point opposite the Orkney Islands.³¹⁴ From both of these routes branches would lead to key points. More often than not, these key points were harbors or fishing stations previously unconnected by roads.³¹⁵ For example, “One of these ought to be from the great Military Road between Fort William and Inverness in a Western Direction, such as may best afford an easy Intercourse between both these Places and the Islands of Skye, Harries, and North Uist, as well as Loch Hourn, Loch Duich, and the other valuable Fishing Lochs in that Vicinity.”³¹⁶ Although the promotion of the fisheries was a chief aim of the road building program, the overriding concern was to build a road system that would benefit all. As Haldane notes, this sense of universality led to a county assessment system whereby all landowners paid towards a pool of funds to be spent on roads.³¹⁷

³¹² *HCSP* 1802-3, 45, IV, 6: “Survey and Report...”

³¹³ *Ibid.*, 8.

³¹⁴ *Ibid.*, 23.

³¹⁵ *Ibid.*, 23-4.

³¹⁶ *Ibid.*, 24.

³¹⁷ Haldane, *Glens*, 51. This rate was initially 1s. per £1 Scots value rent.

Once the route had been selected, surveyed, and financed, all that remained was the actual construction. Unfortunately, amongst other difficulties was a lack of proper tools.³¹⁸ Still more worrisome was the difficult terrain and weather:

The difference of character between a Highland and a Lowland Road, is very considerable, and we have reason to think that this is not generally understood. In making a Highland Road, the heaviest part of the Expense is incurred in guarding against the effects of a stormy Climate, and of an uneven surface, which imbibing little water, pours down upon the Highland Road torrents by which it is inevitably and immediately destroyed, unless apertures are provided of sufficient dimensions to carry under the Road all the water collected in the Upper side Drain, and in the preventive Drains above the Line of Road, which convey the water directly to the covered Cross Drains and Bridges; which last are of such frequent recurrence, as to amount to Eleven Hundred in number on the Roads made under our care.³¹⁹

Telford was thus faced with the prospect of devoting a considerable amount of time and money to construction of works *beneath* the actual road surface.³²⁰ However, this should not suggest any neglect in regards to forming a proper road surface. The roads were to be at least fifteen feet wide, except where cut into a rock face, when twelve feet was the general rule, in order to ease the damage a concentrated herd of cattle could cause.³²¹

Telford laid out his road-making principles while working on the Holyhead Road, and they were copied in *A Treatise on Roads*:

By laying the stones in making the bottoming with their broadest face downwards, and filling up the interstices closely with stone chips well driven in, the earthy bed of the road cannot be pressed up so as to be mixed with the coating of broken stones. This coating, therefore, when consolidated, will form a solid uniform mass of stone, and be infinitely harder than of broken stones, when mixed with the earth of the

³¹⁸ Haldane, *Glens*, 46.

³¹⁹ HCSP 1821, 432, X, 48: "Ninth Report of Commissioners..."

³²⁰ Haldane, *Glens*, 120 argues that Telford had to spend as much time above the road surface as well: "Two bridges to a mile of road came to be looked on as a general average, but on some roads particularly in the west this was far exceeded."

³²¹ Haldane, *Glens*, 70. Additionally, Whyte, *Landscape*, 194 notes that the grade of the Parliamentary roads was limited to one in thirty. By contrast, the military roads were sixteen feet wide, but could contain grades as great as one in six. See pages eighty-nine and ninety of this study for a fuller discussion of the character of the construction of the military roads.

substratum of the road. It is by proceeding in the way here recommended that the friction of wheels on a road will be reduced as much as possible.³²²

However, such exacting craftsmanship proved to be inadvisable in most situations in the Highlands. One problem was the intended use of the roads. As most Highland roads would carry a heavy traffic of cattle, gravel laid over a base constructed much like the road above proved to be the appropriate strategy. In some cases, the gravel could be ten to fourteen inches high mid-road, and six to eight inches high at the edges.³²³ Another problem, once again, was the climate:

The same climate renders accuracy of formation, and smoothness of surface, essential to the well-being of a Highland Road; every slight obstruction of the water which falls on the Road or is produced by melted Snow, being apt to cause a current and gully, so that a Highland Road, formed of angular Stones never becomes useful, because all the *blending* (or soft material) is soon washed away, and the Road continues to be in a state harsh and unpleasant to Travellers in Wheel Carriages, and injurious to the feet of the Cattle, whose accommodation and good condition when brought to Market is a primary object of all Highland Road making. It is to be understood, therefore, that in proportion as a Road is frequented by Wheel Carriages, it may be, and also must be, covered with harder materials; in other words, that the Metalling of a Road with angular Stones is necessary in a frequented situation; and conversely, that friction and crushing by Wheel Carriages are necessary to render a metalled Road useful and agreeable. Hence it follows, that in the vicinity of Inverness and of Dingwall, and on the Road traversed by the Northern Mail Coach, and addition of hard materials is become very desirable; but this was not desirable when the Roads were first formed, even had the expense of metalling been within our competence; but as the cost amounts to Five or Six Hundred Pounds per Mile, it was impracticable as well as unadvisable, and is properly left to the future care of those who are always able to provide for such an expense by means of Tolls or otherwise, when Roads become much frequented from the improvement of the surrounding country.³²⁴

Thus, although Telford's method of road construction was preferable in high traffic areas, the same lack of traffic that drew Telford north into the Highlands prevented the construction of more advanced roads.

³²² Sir Henry Parnell, Bart., *A Treatise on Roads; Wherein the Principles on which Roads should be Made are Explained and Illustrated, by the Plans, Specifications, and Contracts made use of by Thomas Telford, Esq., on the Holyhead Road* (London: Spottiswoode, 1833), 70; hereafter *Treatise*.

³²³ Haldane, *Glens*, 69-70.

³²⁴ HCSP 1821, 432, X, 48: "Ninth Report of Commissioners..."

With so many obstacles to overcome, it should be little wonder that construction proceeded slowly, despite initial enthusiasm. The regular reports filed by the Commissioners with Parliament enable modern observers to recreate in a rough fashion the timeline of each road project.³²⁵ Unfortunately, the reports do not cover every year between 1803 and 1821, although all reports are preserved from this time period. The pattern that emerges from the reports is

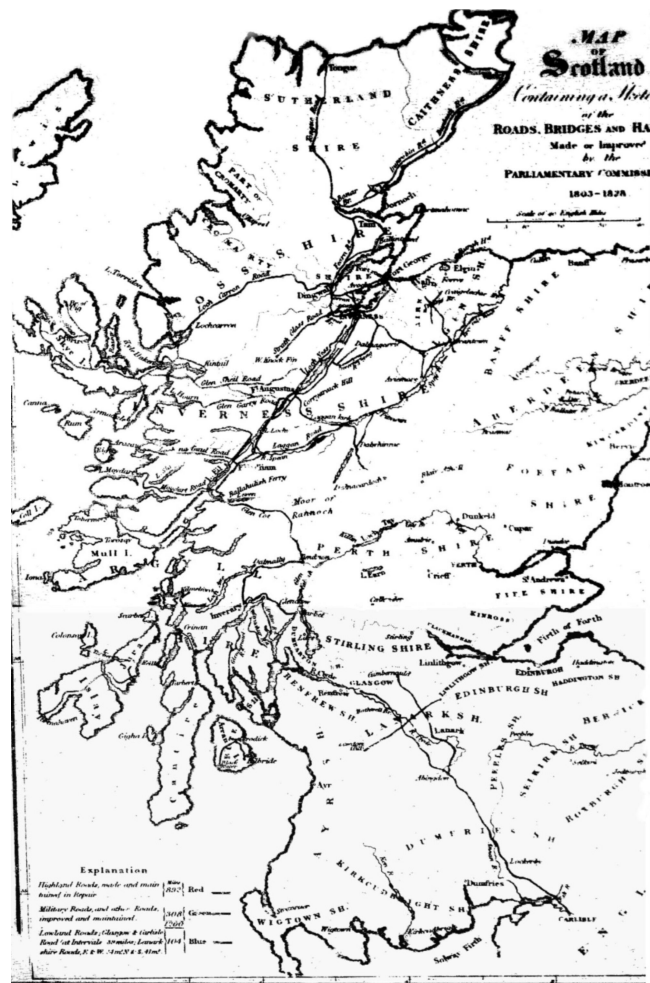


Figure 3 – Parliamentary Roads

one in which the initial attention of the commissioners was focused on the Lochaber (mostly Inverness-shire) district and the Argyleshire district. In Argyleshire, every road that the commission would construct was either being planned or was already under construction by the commission’s third report in 1807.³²⁶ In the Lochaber district, all but two of the roads which would eventually be constructed had either been begun or were being planned by 1807.³²⁷ In contrast, less than one half of the roads that would be constructed in Ross, Sutherland and Caithness had even begun to be planned, and none

³²⁵ A chart showing this information appears in the appendices.

³²⁶ HCSP 1807, 100, III, 231-327: “Third Report of Commissioners...”

had seen any construction.³²⁸ Although all construction was completed by the time of the 1821 report, over forty percent of the roads that would be built under the commission (nineteen of forty-seven) were still under construction as of the 1817 report.³²⁹ During this time the commissioners supervised the construction of 888 miles of road, and took over the maintenance of an additional 283 miles.³³⁰ The longest road constructed under this program was the forty-nine and one half mile long Tongue Road running along the eastern coast of Sutherland and Caithness, while the shortest road was the Crinan and Kieils Roads (along the Crinan Canal) at only four miles.³³¹ In terms of length of construction, that distinction would fall to the Ardnoe Road, which was being planned and financed in the 1805 report, under construction by the 1807 report, but not listed as complete until the 1821 report, despite the road being only six and one half miles long!³³²

Constructing the roads proved to be only half of the challenge. The Highland climate, if not properly accounted for (and occasionally even when it was), soon wrecked any road not properly constructed or maintained. It is surprising to note, however, that

³²⁷ *HCSP* 1807, 100, III, 231-327: “Third Report of Commissioners...”

³²⁸ *Ibid.*

³²⁹ *HCSP* 1817, 110, IX, 1-81: “Eighth Report of Commissioners...”

³³⁰ *HCSP* 1828, 175, IX, 277-343: “Fourteenth Report of Commissioners...” Gifford, *Islands*, 58-9, argues that the Commission built 1435 kilometers of road (approximately 897 miles). Haldane, *Glens*, 195; Whyte, *Landscape*, 194; and Campbell, *Scotland since 1707*, 71 all argue that the Commission constructed 920 miles of road and 1,117 bridges. Haldane, *Glens*, 195 also notes that the cost of constructing the roads appears to have been between £400 and £450 per mile.

³³¹ *Ibid.*

³³² *HCSP* 1805, 176, III, 271-317: “Second Report of Commissioners...”; *HCSP* 1807, 100, III, 231-327: “Third Report of Commissioners...”; *HCSP* 1809, 167, IV, 1-67: “Fourth Report of Commissioners...”; *HCSP* 1810-11, 112, IV, 393-461: “Fifth Report of Commissioners...”; *HCSP* 1812-3, 110, V, 1-61: “Sixth Report of Commissioners...”; *HCSP* 1814-5, 205, III, 427-85: “Seventh Report of Commissioners...”; *HCSP* 1817, 110, IX, 1-81: “Eighth Report of Commissioners...”; *HCSP* 1821, 432, X, 37-168: “Ninth Report of Commissioners...”; *HCSP* 1828, 175, IX, 277-343: “Fourteenth Report of Commissioners...”

“The Act which gave existence to the Highland Roads and Bridges afforded no aid in this difficulty, and the Highland Proprietors were not found to be so attentive to the Repair of Roads as might have been expected from their surprising exertion in contributing towards the formation of these very Roads.”³³³ Reviewing the situation, perhaps it should not seem surprising that landowners who had recently paid a large sum for the construction of a road would be unable or unwilling to make a regular commitment to maintenance. Yet they proved unwilling to do so even when their use of the roads caused the damage.³³⁴ Various attempts at funding road maintenance did little to solve the problem, especially after the maintenance of the remaining military roads was taken over by the commissioners.³³⁵ Finally, in 1819 a winning formula was found. The Highland Roads and Bridges Commission was to have £10,000 per year for maintenance, with one half coming from the treasury and the other half from county assessments.³³⁶ Additionally, contractors engaged in road repair were able to obtain materials at the expense of the county.³³⁷ Despite this, the Commissioners calculated that a best-case scenario would

³³³ *HCSP* 1821, 432, X, 49: “Ninth Report of Commissioners...”

³³⁴ *Ibid.*, 51. “But in this expectation we have been disappointed, an instance of positive refusal having occurred in the case of the Contin Road; the Repair of which, chiefly in consequence of materials for building a Mansion House at Coul having been imported at Dingwall, amounted to above £300 in place of £56 in Year 1820, notwithstanding which, the Road is scarcely in a passable state.”

³³⁵ Haldane, *Glens*, 158 notes that the first attempt was in 1810 with a bill that allowed local officials to assess those in the area of the road needing repair. The military roads were transferred to the care of the Commissioners at the close of 1813.

³³⁶ *HCSP* 1821, 432, X, 49-50: “Ninth Report of Commissioners...” Gifford, *Islands*, 60 says that maintenance was paid by tolls, but this appears to be an error, as tolls are never mentioned as a source of funds in any of the other literature.

³³⁷ *Ibid.*, 50.

leave about £6 per mile for road repair out of the £10,000, once other costs had been met, over the 1,183 mile network.³³⁸

The repair provisions just alluded to point to an interesting duality of the Highland road project. Often hailed as an example of public – private partnership,³³⁹ in many respects the program was neither. Only when constructing the roads did the two sides work together. The planning of the roads, although mediated somewhat by the preferences of the commissioners and the route planning of Telford, was largely a *private* enterprise, relying on local initiative and the petition system. This reliance on local interests probably resulted in some beneficial routes never being constructed. For example, a quick glance at a map of the roads constructed by the commissioners reveals a surprising lack of roads running east to west north of Dingwall.³⁴⁰ And if route planning suggests a strong private sector influence, maintenance clearly reflects a commitment to improved communications by the government. This is hardly shocking, given that the government had footed half of the construction bill. What is surprising is the apparent lack of ownership exhibited by those that had footed the other half – the landowners.³⁴¹ Additionally, the commitment to maintenance by the government reveals a recognition

³³⁸ HCSP 1821, 432, X, 51: “Ninth Report of Commissioners...” The complete chart showing the length of each road, amount spent per mile for repair, and total expenditure per road for maintenance (originally in the 1828 report) is reproduced in the appendices.

³³⁹ Haldane, *Glens*, 44.

³⁴⁰ HCSP 1828, 175, IX, 343: “Fourteenth Report of Commissioners...”

³⁴¹ Haldane, *Glens*, 169 quotes John Rickman (Secretary to the Commission) as writing: “‘I foresee,’ he wrote to Southey in April 1823 with his usual vigour of language and mixture of metaphor, ‘I shall conquer the absurd reliance which the semi-barbarous have imbibed that they are not to pay for the maintenance of their roads. They have been indulged so much as to believe that they do me a favour in suffering me to repair their roads; but it has come to such a pass as this that I have turned upon them sharply enough to convince them of their error, and all will be well. They are spoilt children learning to kiss the rod...’” The criticism of the landowners was somewhat silenced once periodic meetings began to be held in the counties to help determine how the maintenance funds were to be spent (p. 170).

that traditional sources of road maintenance funds – tolls – were unlikely to work in the Highlands.³⁴² In other words, there was a recognition that the private sector, landowner or casual road user, was unlikely to ever furnish enough money to pay for the roads. What impact, if any, did this apparent lack of cohesiveness have on the outcome of the project?

According to Joseph Mitchell, admittedly somewhat of a biased observer in his position as Chief Inspector (a position he inherited from his father),³⁴³ any divide between public and private had no impact on the successful outcome of the work: “the progress of these Works has gradually laid open the most inaccessible parts of the country; and the Commissioners, by combining the efforts of all the Counties in the prosecution of one great general measure of improvement, have succeeded in effecting a change in the state of the Highlands, perhaps unparalleled in the same space of time in the history of any country.”³⁴⁴ The nature of the change Mitchell alludes to was varied, and he gave several examples of the positive impact roads had. A first improvement was the establishment of passenger coach services.³⁴⁵ Likewise, the construction of the roads facilitated the carrying trade³⁴⁶ and the movement of a wider variety of goods.³⁴⁷ Perhaps

³⁴² Although, as Haldane, *Glens*, 170 notes, tolls could be used to lower the amount the county had to raise through the assessment system.

³⁴³ Haldane, *Glens*, 168.

³⁴⁴ *HCSP* 1828, 175, IX, 335: “Fourteenth Report of Commissioners...” Lenman, *Modern*, 153 is of a different mind: “Whether the results justified the original programme may be doubted, for the main aims of government in setting up the Commission had been to check emigration, and to encourage the development of trade and industry in the Highlands. Neither objective can be said to have been attained.”

³⁴⁵ *Ibid.*

³⁴⁶ *Ibid.*, 336.

³⁴⁷ *Ibid.*, 341.

most importantly, the new roads actually aided the spread of information.³⁴⁸ This answered one of the original aims of Telford, who regarded roads as being “of great Importance to the Fisheries, on Account of facilitating Intelligence, which is one of the most necessary Steps to promote the Success of this Business.”³⁴⁹ According to Mitchell, in addition to fishing, agriculture also improved as a result of the roads.³⁵⁰ Finally, Mitchell attributed an increase in rents and property values to the introduction of improved communications.³⁵¹

If one assumes that the outcomes Mitchell ascribed to the roads were indeed the results of road improvements, it seems natural to inquire whether or not a large demand existed for social overhead capital prior to the roads being built. In other words, to return to a topic raised in the first chapter, were the Highland roads an example of development via shortage or development via excess? If the inquiry is confined to Inverness and its hinterland, the rapid increase in the number of coaches making daily journeys suggests that improved communications were long overdue. According to Mitchell, “Since the completion of the Parliamentary Works, several others have successively commenced; and during the Summer of last year no less than seven different Stage Coaches passed daily to and from *Inverness*, making forty-four coaches arriving at, and the same number departing from that town in the course of every week.”³⁵² In this case a lack of improved roads appears to have created a bottleneck that induced investment in roads – a classic example of Hirschman’s ideas. However, roads away from Inverness appear to have

³⁴⁸ HCSP 1828, 175, IX, 336: “Fourteenth Report of Commissioners...”

³⁴⁹ HCSP 1802-3, 45, IV, 7: “Survey and Report...”

³⁵⁰ HCSP 1828, 175, IX, 337-40: “Fourteenth Report of Commissioners...”

³⁵¹ *Ibid.*, 341.

been constructed on the opposite principle: by building an excess capacity of transport infrastructure it was hoped that the improved fishing and agricultural sectors would generate traffic levels that would justify the roads. Mitchell seems to suggest that this strategy also worked,³⁵³ while Lenman notes that “One of the snags about state finance was that it tended, as in the case of the Scottish canals, to enable projects which failed to produce adequate results within a reasonable time to consume funds which might more usefully have been employed elsewhere.”³⁵⁴ Yet, because the roads were tied to other programs of economic development, perhaps it is only fair to consider the success or failure of transportation improvement in conjunction with these other measures.³⁵⁵ However, given the interconnectedness of these plans, the question must be asked: Why was no road ever constructed to Ullapool, one of the largest fishing communities on the west coast? Before answering that question (in the final chapter), it is first necessary to describe in some more detail the fishing industry in Scotland and the villages that relied on it.

³⁵² HCSP 1828, 175, IX, 335: “Fourteenth Report of Commissioners...”

³⁵³ Whyte, *Landscape*, 194-5 agree with respect to tourism: “The rapid influx of tourists into the more distant parts of the Highlands in the early nineteenth century, using Telford’s new network of roads, is an indication of how effectively he opened up this once remote area.”

³⁵⁴ Lenman, *Modern*, 152. Campbell, *Scotland since 1707*, 72 largely agrees: “The importance of the work of the two Commissions appointed in 1803 to improve Highland communications cannot be gainsaid, if judged by the sheer magnitude of the work involved, or by the state’s contribution to it. The successes were mainly technical and are less striking if judged by other criteria. Telford had set himself the problem of devising ways and means of diminishing Highland emigration, but the construction of roads, bridges and canals failed to provide a solution.”

³⁵⁵ Youngson, *Overhead*, 125 argues, in fact, that: “But as there will be *no* benefits, as a rule, stemming directly and immediately from the initial public investment, much depends on the promptitude and efficiency with which complementary investment is undertaken.” Accordingly, it is only appropriate to examine fishing as an integrated component of transport development as a function of economic development.

Chapter Three

FISHING

In multiplying another very important sort of rude produce, the quantity of fish that is brought to market, it is likewise both limited and uncertain. It is limited by the local situation of the country, by the proximity or distance of its different provinces from the sea, by the number of its lakes and rivers, and by what may be called the fertility or barrenness of those seas, lakes and rivers, as to this sort of rude produce. As population increases, the annual produce of the land and labour of the country grows greater and greater, there come to be more buyers of fish, and those buyers too have a greater quantity and variety of other goods, or, what is the same thing, the price of a greater quantity and variety of other goods, to buy with. But it will generally be impossible to supply the great and extended market without employing a quantity of labour greater than in proportion to what had been requisite for supplying the narrow and confined one. A market which, from requiring only one thousand, comes to require annually ten thousand ton of fish, can seldom be supplied without employing more than ten times the quantity of labour which had before been sufficient to supply it. The fish must generally be sought for at a greater distance, larger vessels must be employed, and more expensive machinery of every kind made use of. The real price of this commodity, therefore, naturally rises in the progress of improvement. It has accordingly done so, I believe, more or less in every country.

- Adam Smith³⁵⁶

Roads and other forms of transportation served a vital function in the facilitation of commerce and industry, but furnished little in the way of direct economic advantage, save for the wages of those constructing and maintaining the transport links. For the economic situation in the Highlands to truly be altered, sustainable employment had to be found for a large number of people. However, the same geographic characteristics of Scotland that limited road development by placing so much of the country near the sea seemed to offer a convenient solution to this very problem: fishing.

That fish could form an important part of the Scottish economy was a long recognized fact. Jean Dunlop argues that as far back in history as the fifteenth century the exportation of fish, which was a highly regulated trade, brought great wealth to

³⁵⁶ Smith, *The Wealth of Nations*, 270.

Scotland.³⁵⁷ Following the Union of the Crowns in 1603, several joint Scottish-English ventures at promoting the fishing industry were made, although none resulted in any tangible gain.³⁵⁸ However, following the Union of 1707, observers began to look once again to the fishing industry as an area of specialty the suffering Scottish economy could profitably exploit. Although the periodic Jacobite uprisings focused attention more closely on the economic grievances of the Scottish, particularly the Highlanders, these observations seem to have gone unheeded until about 1750, when “a system of encouragement of private ventures by bounties” came into use, seeking to redress “The long history of legislative encouragement to an industry that remained distressingly ineffective,” to use Malcolm Gray’s words.³⁵⁹

While the bounties just mentioned applied only to herring, Scottish commercial fishing took in several types of fish. The chief rival to the primacy of the herring in the export trade was salmon, which formed as much as one third of all Scottish fish exports prior to 1689.³⁶⁰ In 1775, David Loch regarded the salmon trade as a vital part of the Scottish economy because, he argued, it brought more ready cash into Scotland than the trade in black cattle.³⁶¹ However, by the time Sir John Sinclair wrote his *Analysis of the Statistical Account of Scotland* in 1825, the salmon fishery had declined in importance, contributing roughly fifteen percent of the total value of fish caught in Scotland.³⁶²

³⁵⁷ Dunlop, *The British Fisheries Society*, 7.

³⁵⁸ Ibid.

³⁵⁹ Gray, *Highland*, 109.

³⁶⁰ Lenman, *Modern*, 41.

³⁶¹ David Loch, *Essay on the Trade, Commerce, and Manufactures of Scotland* (Edinburgh, 1775), 56; hereafter *Essay on the Trade*.

Nevertheless, salmon could and did form an important food source, for as Sinclair noted: “The river Tweed every year yields, on an average, about 200,000 salmon, weighing about 10 lbs. each. This would feed, at the rate of 1½ lbs. *per* day, 3,650 persons, and is equivalent to the produce of 6,600 acres of good land, employed in the production of butcher meat.”³⁶³ If the importance of salmon was declining, that of white fish (such as cod and ling) was clearly rising. By 1825 the catch of fish in the white fish category accounted for nearly forty percent of the value of all fish caught in Scotland.³⁶⁴ Additionally, a small percentage (roughly five percent) of the total value of Scottish fishing came from the catch of shellfish.³⁶⁵

Despite the importance of these other branches, the most profitable, and hence the branch that was most often singled out for promotion, was the herring fishery. Geographically, Scotland appeared to be perfectly situated for this trade. The herring, as they moved out of their “winter” retreat near Greenland would begin to appear in the waters off the Shetland Islands in April or May, although the main body would not generally arrive until June.³⁶⁶ The islands would act as a wedge, dividing the school, with one group moving down the east coast to arrive off Yarmouth, England (a noted herring fishing port) in October, while the other group of fish would pass down the western coast of Scotland with frequent stops in the numerous sea lochs, finally dividing

³⁶² Sir John Sinclair, Bart., *Analysis of the Statistical Account of Scotland*, 2 vols. (Edinburgh: Arch. Constable & Co., 1825 (New York: Johnson Reprint Company, 1970), 202 (footnote); hereafter *Analysis*.

³⁶³ *Ibid.*, 201.

³⁶⁴ *Ibid.*, 202 (footnote).

³⁶⁵ *Ibid.*

again to pass around Ireland before disappearing into the depths of the Atlantic.³⁶⁷ The chief problem with the herring fishery lay in this migratory pattern, which was never certain and often led to loss. Thus, the greatest motivation in constructing roads in the Highlands, as Telford often pointed out, was to speed intelligence, by which he meant the communication of vital news to the fishing stations regarding the size and location of the herring, as well as which loch (or lochs) the herring appeared to be frequenting that year.³⁶⁸

The bounty system, begun in 1750, proved to be very complex, and in many cases, counterproductive. The bounty was restricted to busses, a class of ship first developed by the Dutch and able to operate on the open sea.³⁶⁹ Because of the size of these decked vessels (up to ninety tons), they were generally only to be found in wealthier southern ports such as Greenock.³⁷⁰ The bounty was initially established at thirty shillings per ton and raised to fifty shillings in 1757.³⁷¹ While such a high bounty was a boon to those merchants who could afford to outfit a buss, it did little to help the Highlanders, most of whom had to pool resources in order to purchase and operate even a small boat (which was excluded from the bounty) to supplement their meager earnings and diets.³⁷² Nevertheless, the records of the Custom-House books collected at

³⁶⁶ John Knox, *View of the British Empire, More Especially Scotland*, 3rd ed., 2 vols. (London, 1785), 172; hereafter *View*.

³⁶⁷ *Ibid.*, 173.

³⁶⁸ HCSP 1802-3, 45, IV, 7: "Survey and Report..."

³⁶⁹ Dietrich Sahrhage and Johannes Lundbeck, *A History of Fishing* (Berlin: Springer Verlag, 1992), 75.

³⁷⁰ Gray, *Highland*, 109.

³⁷¹ Knox, *View*, 197.

Edinburgh and analyzed by John Knox clearly show the positive influence payment of the bounties had. Whereas in 1751 there were only two busses that collected the bounty (148 total tons, 33 sailors, and 213 barrels of herring caught (total)), by 1767 that number had reached two hundred and sixty-three (12,556 total tons, 2,898 sailors, and 28,162 barrels of herring caught).³⁷³ This success, however, masked great problems with the bounty system.

In 1766 the bounty ceased to be paid, although those doing the fishing were given no warning of this development.³⁷⁴ The problem was financing: Whereas the bounty paid to English fisherman was paid out of the general revenue, the bounty paid to those fishing in Scotland came from only one branch of the revenue.³⁷⁵ Simply put, the bounty system was a victim of its own success. However, because it was so successful, every effort was made to reinstate the program. Reinstatement finally came in 1771, with an altered system that paid a bounty of thirty shillings per ton out of the general revenue.³⁷⁶ Once again, the number of busses climbed quickly. After reaching a high of two hundred and sixty-three busses in 1767, the number had fallen to nineteen in 1770.³⁷⁷ Under the new bounty, the number of busses rose to two hundred and twenty-six for the winter fishing of

³⁷² Gray, *Highland*, 108.

³⁷³ Knox, *View*, 233.

³⁷⁴ *Ibid.*, 198.

³⁷⁵ *Ibid.*

³⁷⁶ *Ibid.*, 202.

³⁷⁷ *Ibid.*, 233.

the 1776 season,³⁷⁸ before financial pressures brought about by war with America caused the number to decline again (reaching one hundred and thirty-six busses in 1781).³⁷⁹

Although the problems relating to the payment of the bounty had been solved, other issues hindered the herring fishery. First, a clause in the 1771 law reinstating the bounty was misinterpreted to mean that west coast buss fishers could not *sail* before October first, thus missing most of the season.³⁸⁰ This interpretation stood until 1779 when it was reinterpreted as stating that no *fishing* could be done for the winter season before October first.³⁸¹ Secondly, an act passed in 1778 stipulated that all busses fishing on the west coast had to assemble either at Campbeltown or Stranrawer to be inspected to ensure compliance with bounty regulations.³⁸² To further complicate matters, Campbeltown's harbor was impossible to exit in a headwind due to its narrow mouth, although it did have the benefit of lying on the direct route³⁸³ from the Clyde to the Hebrides.³⁸⁴ While Stranrawer's harbor posed no such challenge, the town itself lay forty miles off the direct route to the Hebridean fishing grounds.³⁸⁵ However, the most

³⁷⁸ Knox, *View*, 233. After 1770, and lasting through 1778, records were kept of the bounties paid for both the summer and winter fishing seasons.

³⁷⁹ *Ibid.*, 233.

³⁸⁰ *Ibid.*, 205.

³⁸¹ *Ibid.*, 206. It should be noted that Knox favored eliminating the separate fishing seasons, preferring a single season beginning June 1 with unlimited in and out (previously busses had only been allowed to leave port once during the season. Once they came in, their season was over).

³⁸² *Ibid.*, 209.

³⁸³ *Ibid.*, 212. Even the "direct" route was not very direct. Boats based at Greenock or elsewhere on the Clyde had to sail roughly 120 miles (including an allowance for tacking) to go around the Mull of Kintyre (spelled *Cantire* in Knox's work), only to arrive at a point opposite Greenock on the opposite side of the peninsula.

³⁸⁴ *Ibid.*, 209.

³⁸⁵ *Ibid.*

important issue that continued to impact the herring fishery was the continued impact of the unintended consequences of the bounty system upon the small-scale fishing people of the west coast:

By the bounty laws, the busses were prohibited from purchasing herrings from the Highland boats, on penalty of forfeiting the bounty; and instead thereof, they were to fish for the herrings themselves, till the expiration of three months from the time of their clearing out, unless they had sooner completed their loading. This restraint was a grievous hardship to the poor natives, whose fisheries were thus limited to their own consumption; and the supply of the thinly inhabited wilds of their neighbourhood. It ruined their fishery, discouraged industry, and left these unhappy people solely at the mercy of every superior who might choose to oppress them in all their operations by land and water.³⁸⁶

The failure of the bounty system to aid the development of the west coast forced the adoption of other solutions. First and foremost, according to Knox, the restrictions on fishers operating boats selling their catch to the busses had to be removed.³⁸⁷ Another proposal was to pay a bounty on the barrels of herring caught, rather than on the tonnage of the vessel,³⁸⁸ although Knox thought that this would do little to encourage west coast fishing operations.³⁸⁹ Yet another proposal was to construct three canals to speed transit times to the fishing grounds and to market with the catch. The three canals, one linking the Forth to the Clyde, another across the Mull of Kintyre, and one in the Great Glen linking Fort William to Inverness, were also expected to aid the spread of consumer goods and ideas in the Highlands.³⁹⁰ Another viewpoint was that the Scotch herring as a product was simply too inferior to that of the Dutch; thus a priority should be to improve the quality of the Scottish fish being exported by copying the Dutch model of curing, and,

³⁸⁶ Knox, *View*, 216-7.

³⁸⁷ *Ibid.*, 251-4. This was finally done in 1787 (Gray, *Highland*, 122).

³⁸⁸ Loch, *Essay on the Trade*, 63-4.

³⁸⁹ Knox, *View*, 248-51. This proposal was also approved in 1787, although the tonnage bounty remained in place as well (Gray, *Highland*, 122).

if possible, by importing Dutch curers.³⁹¹ Nevertheless, these proposals paled in comparison to the unanimous voice raised in support of village creation on the west coast.

The creation of towns formed the foundation for many proposals designed to improve the economy of the western Highlands. Knox said that, “Were there any towns, or any encouragement for labour, on their shores [the west coast], an occasional failure in the fisheries, might be repaired by industry, and the family kept together; but in the present state of that country, the man who is unsuccessful, for one season only, is undone.”³⁹² However, the new villages could not simply be thrown up and be expected to promote industry, each should be carefully sited at locations possessed of five characteristics. First, according to White, a new village should be built at a site with a long history of abundant herring nearby.³⁹³ Second, there should be arable (or at least level) ground nearby.³⁹⁴ Next, there should be a road linking the town to the Lowlands, or the spot should be one it would be cheap to build a road to.³⁹⁵ Also, White argued that the village should be located in an area frequented by haddock and other small fish that could provide a dietary substitute if the herring failed.³⁹⁶ Fifth and finally, there should

³⁹⁰ Knox, *View*, 400-33.

³⁹¹ P. White, Esq., *Observations upon the present state of the Scotch fisheries, and the improvement of the interior parts of the Highlands, &c.* (Edinburgh: Grant and Moir, 1791), 76-7; hereafter *Observations*.

³⁹² Knox, *View*, 247-8.

³⁹³ White, *Observations*, 87.

³⁹⁴ *Ibid.*, 88.

³⁹⁵ *Ibid.*, 89.

³⁹⁶ *Ibid.*, 91.

be peat nearby.³⁹⁷ Knox anticipated and expanded upon this idea, proposing the twelve essential buildings that would allow construction of a west coast fishing village for less than £10,000: A pier (capable of handling vessels with fifteen foot draughts or more), warehouses, sheds for curing fish, a small market place, a corn mill, a church (with a house, garden and glebe for the minister), a schoolhouse, a shop and house for an apothecary, a house for the fishery superintendent, an inn, a commons, and houses for necessary craftsmen to live in rent free (including enclosures for a garden, offices, potatoes, and pasture).³⁹⁸ To attract settlers, Knox proposed that anyone who agreed to build a house worth £25 should be given one fourth of an acre rent-free.³⁹⁹ Before looking at the success or failure of these proposals, it is necessary to ask: Why villages?

The promotion of villages to encourage the development of the fishing industry in particular, and west coast economy in general, tied into the planned village movement sweeping across Scotland in the late eighteenth century. T.C. Smout argued that those promoting villages saw three principle advantages to their formation:

When the eighteenth-century writers considered the advantages of building or developing a village on the estate, there were certain principal gains they saw arising from it: a village would provide a point of consumption for the produce of the surrounding lands, it would provide employment for tenants and sub-tenants who might otherwise find themselves cast out of the district by enclosure, and the presence of industrious villagers in a purely rural society would provide an example and an inspiration to the tenantry without diminishing the landowner's hold over the countryside.⁴⁰⁰

³⁹⁷ White, *Observations*, 91. Although this requirement is the least important because the climate makes production of usable peat bricks for burning extremely difficult (Ibid., 95).

³⁹⁸ Knox, *View*, 435-7.

³⁹⁹ Ibid., 440.

⁴⁰⁰ T.C. Smout, "The Landowner and the Planned Village in Scotland, 1730-1830," in *Scotland in the Age of Improvement*, ed. N.T. Phillipson and Rosalind Mitchison (Edinburgh: Edinburgh University Press, 1970), 75; hereafter "Planned."

Of these benefits, the second explains the drive towards fishing villages. As Smout notes, “It might also be added that any suggestion that the population would be materially better off on the coast was psychologically attractive to the lairds, wishing as they did to remove the peasants from the interior, so that they could lay the land down to sheep and pay off their mounting arrears of debt, but not wishing to lay themselves open to the charge of inhumanity or of forcing emigration upon unwilling dependents.”⁴⁰¹ Thus, by providing just enough land to grow a small crop of potatoes to settlers, landowners could overcome the stigma of forcibly removing tenants. The fact that fish had always appeared off the coasts of Scotland and that the bounties, in theory, only increased the likelihood of profits served to further strengthen the belief that concentrating tenants on the coast would rapidly lead to a profitable fishing industry. However, villages were also constructed with other purposes in mind, although the profit motive should not be discounted in most cases. In addition to fishing villages, Smout identified three other types of planned village: agricultural, rural-industrial, and factory.⁴⁰² D.G. Lockhart identified an incredible nineteen types of planned villages, although many of these would seem to fall into one of Smout’s broader categories.⁴⁰³

Focusing too narrowly on types of villages can blind one to their real impact. To truly understand their impact, it is necessary to examine their geographic spread. In taking this approach, Smout identified eight concentrations of planned villages in Scotland: eastern Caithness, Sutherland and Cromarty; Moray, Banff, and north-west

⁴⁰¹ Smout, “Planned,” 91.

⁴⁰² *Ibid.*, 89.

⁴⁰³ D.G. Lockhart, “Planned Village Development in Scotland and Ireland, 1700-1850,” in *Ireland and Scotland, 1600-1850*, ed. T.M. Devine and David Dickson (Edinburgh: John Donald Publishers, Ltd., 1983), 132; hereafter “Planned Village.”

Aberdeenshire; inland Central Highlands, west coast of the Highlands; stretching south from Callander to Stonehaven; the vicinity of Glasgow; Lothians; and the north shore of the Solway Firth.⁴⁰⁴ Yet even this examination under represents the true spread of planned villages. D.G. Lockhart has shown that the planned village movement in Ireland was roughly parallel to that in Scotland until about 1800.⁴⁰⁵ In fact, Ireland constructed more villages in the first seventy years of the eighteenth century than did Scotland;

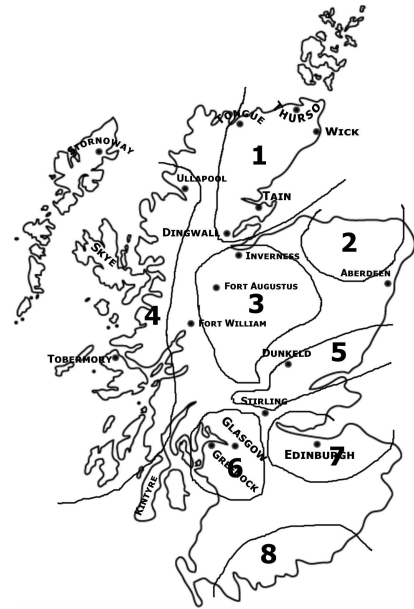


Figure 4 – Areas of Planned Village Development

although by the mid nineteenth century there were more than twice as many villages in Scotland than there were in Ireland.⁴⁰⁶ Unfortunately, it is impossible to say with any precision the number of planned villages constructed in either country. Smout was able to identify over one hundred and thirty villages constructed in the one hundred years between 1730 and 1830.⁴⁰⁷ Lockhart, on the other hand, proposed a number of three hundred and ninety-three villages built in Scotland from 1725 to 1850, and an additional one hundred and eighty-eight villages in Ireland between 1700 and 1850.⁴⁰⁸ Whatever

⁴⁰⁴ Smout, “Planned,” 83-5. The map reproduced above numbers the regions in the order they are listed in the text.

⁴⁰⁵ Lockhart, “Planned Village,” 142.

⁴⁰⁶ *Ibid.*, 133.

⁴⁰⁷ Smout, “Planned,” 82.

⁴⁰⁸ Lockhart, “Planned Village,” 133.

the number constructed, the numbers involved in building a village were daunting: In building Helmsdale, the Duke of Sutherland spent more than £14,000 in five years.⁴⁰⁹

If the cost of constructing a fishing village was daunting, the costs associated with outfitting a buss in compliance with the bounty regulations was at least equally so. David Loch estimated the minimum cost at £800.⁴¹⁰ Yet even this huge expense, out of reach for most Scots, seems low. For a vessel of sixty tons, far more suitable to the business, Knox estimated the cost of the boat alone at £623 in 1785.⁴¹¹ Knox went on to estimate that the supplies, provisions and salaries for the crew for a voyage of the average duration would cost an additional £322 7s. 0d., bringing the total cost of outfitting a buss to £945 7s. 0d.⁴¹² While this number is very large, it should be supposed that no one would engage in such a business without expectation of profit. Yet Knox argued that a buss that caught only one half of its maximum catch of herring, selling all those caught on the export market (thus qualifying for an additional bounty of 2s. 8d. per barrel) at twenty shillings per barrel would only make a profit that season of £2 6s. 7d.⁴¹³ If that same buss should choose to fish in Irish waters and still catch the same amount of fish, then the extra fees and duties would result in a loss of £19 15s. 4d. for the season.⁴¹⁴ While these numbers paint a very bleak picture of the prosperity of the herring trade, they do call into question Adam Smith's contention that "it has, I am afraid, been too common for vessels

⁴⁰⁹ Smout, "Planned," 93.

⁴¹⁰ Loch, *Essay on the Trade*, 61.

⁴¹¹ Knox, *View*, 230. His calculations are reproduced in the appendices.

⁴¹² *Ibid.*

⁴¹³ *Ibid.*, 231. It should be remembered that Knox was writing in 1785, two years before a barrel bounty came into effect that would alter these numbers.

to fit out for the sole purpose of catching, not the fish, but the bounty.”⁴¹⁵ Clearly, without the bounty, nothing less than a full catch would render the industry profitable.

This focus on the buss fishery is not meant to exclude the contributions of the boat fishers so common in the northwest. Yet by now it should be clear that the foundation of villages alone was not going to solve the economic and emigration problems without financial aid from the village founder to those willing to fish. Although the east coast herring fishery was also done with boats, financing proved much easier. As Malcolm Gray notes, “It was also probably less easy for a crew from the North West, living in an isolated community where there were neither merchants nor curers, to borrow money for gear.”⁴¹⁶ Yet even here there was a difference: east coast boats were around eighteen feet in length with fourteen nets costing a total of £100 by 1815, while west coast boats were fourteen to sixteen feet in length and carried a maximum of twelve nets, and could be outfitted for less than £10.⁴¹⁷ While the boats of the east were certainly better suited for fishing, the low cost (and correspondingly lower quality) of the west coast boats made them more affordable to groups of fishermen.⁴¹⁸ While this certainly limited the potential income from fishing – roughly only £2 per fisherman per year in the Loch Carron and Skye district between 1850 and 1855⁴¹⁹ – it

⁴¹⁴ Knox, *View*, 231.

⁴¹⁵ Smith, *The Wealth of Nations*, 556.

⁴¹⁶ Malcolm Gray, *The Fishing Industries of Scotland, 1790-1914: A Study in Regional Adaptation* (Oxford: Oxford University Press (for the University of Aberdeen), 1978), 107; hereafter *Fishing Industries*.

⁴¹⁷ *Ibid.*, 104-7.

⁴¹⁸ *Ibid.*, 104.

⁴¹⁹ *Ibid.*, 106.

did allow for more devotion to farming, an attachment that rendered fishing of secondary importance throughout the history of the west coast.⁴²⁰

The secondary importance placed on fishing on the west coast should not obscure the general trend towards more widespread commercial exploitation of the fish surrounding Scotland over the course of the nineteenth century. Yet, despite the primacy given to the herring in this discussion and elsewhere, those fishing for herring rarely pursued it as a full-time occupation. Whereas on the west coast fishermen would generally return to their farms or crofts in the period between herring seasons, there developed on the east coast a class of professional fishermen. But, as Malcolm Gray argues,

while by 1830 the great majority of fishermen along the east coast were playing some part in this fishing [herring], for very few did it occupy more than two months in the year. Even in Fife, where there was a winter fishing in addition to the summer fishing in northern parts, much less than half the year would be spent in herring fishing. The traditional 'white' fishings, carried on in much the traditional way, occupied most fishermen for most of the year and probably continued to provide the bulk of their income in much more certain fashion than did herring.⁴²¹

The expansion of the east coast fishing fleet offered temporary employment to both men and women from the west coast, providing an important source of income during the summer fishing season.⁴²² Yet progress on the west coast remained close to nonexistent as the cost of outfitting even a boat rose throughout most of the early nineteenth century.⁴²³ It was not until curers set up curing stations at several points on the west coast after about 1840 that some west coast fishermen were able to secure financial

⁴²⁰ Gray, *Fishing Industries*, 104.

⁴²¹ *Ibid.*, 42.

⁴²² *Ibid.*, 108-9.

⁴²³ *Ibid.*, 110.

assistance in the purchase of fishing materials.⁴²⁴ Thus, aside from a small, but steady, industry in white fishing,⁴²⁵ those hoping to base the economic rise of Scotland's west coast on fishing were disappointed.

The movement to introduce villages into the Highlands might have helped to alleviate this problem by providing both markets and places of industry. Unfortunately, this was not the case. Nevertheless, at the end of the eighteenth century there appeared to be an industry capable of introducing a large supply of capital into the Highlands. That industry was kelp, and "Superficially kelp seemed to be an ideal industry for this area. Seaweed was a self-renewing resource whose yield was more consistent than that of crops or livestock. Kelp required no capital, no equipment and no skill to produce. Only large amounts of labour were required and this the region had in abundance," according to the Whytes.⁴²⁶ The process of utilizing kelp as a profitable material involved gathering the seaweed from the rocks near shore, drying and burning it, often times on or near the beach.⁴²⁷ The residual mass from the burning process was sent south for industrial uses, primarily in the production of glass, soap and for use as linen bleach.⁴²⁸ The profits from this industry were exceptionally high, especially during the Napoleonic Wars as shipments of Spanish barilla, a competing product of a higher quality, were interrupted.⁴²⁹ However, once the war ended and shipments of barilla resumed, the price

⁴²⁴ Gray, *Fishing Industries*, 110.

⁴²⁵ *Ibid.*, 114-5.

⁴²⁶ Whyte, *Landscape*, 164.

⁴²⁷ *Ibid.*, 164-5.

⁴²⁸ *Ibid.*

⁴²⁹ *Ibid.*

collapsed, with the industry only staggering forward to 1820 on the strength of the few remaining protective tariffs.⁴³⁰

While the kelp industry certainly provided a viable capital making alternative to fishing for the residents of the coastal areas of the Highlands, in reality the promotion of the kelp trade during the war years probably hindered the development of the west coast fisheries. The main attraction of the kelp industry, particularly to landlords, was that it required very little investment outside of a massive labor force. In the Highlands, with a growing population, this was not a difficult commodity to find. However, the main season for kelp farming was the summer,⁴³¹ which impacted the Highlander in two distinct ways. First, the timing of the kelp season coincided with the peak time of farm activity, drawing labor off the land.⁴³² Yet, because the landlord usually monopolized the profits of the kelp trade,⁴³³ the tenant was forced to rely upon the produce of his small plot for food. This situation was made even more dire by prohibitions enacted in many kelping districts against the use of seaweed as fertilizer in the fields, a traditional practice that made many arable areas out of little more than rock.⁴³⁴ Secondly, the reader will recall that the primary season for migrant fishers from the west coast to seek work in the east was during the summer. Thus, the Highlander that chose to forgo farming (or to leave it in the hands of his spouse and children), was forced to choose between two competing modes of potential profit. The obvious preference, from the point of view of

⁴³⁰ Whyte, *Landscape*, 165.

⁴³¹ *Ibid.*

⁴³² *Ibid.*

⁴³³ *Ibid.*

⁴³⁴ *Ibid.*

many seeking to improve the economic condition of the Highlands, was to choose to fish. This choice was preferable despite the lower profit margin (assuming those engaging in the kelp trade were not forced to surrender all of their profit to the landlord) because of the experience gained in the east coast fisheries. Of course, this preference rested on the belief that the herring were a permanent fixture in the waters off the west coast of Scotland.

The exact moment of cessation of the west coast fishery is difficult to locate, and because it never ceased entirely, the exercise may be fruitless at any rate. Yet it is clear that by 1800, and certainly for about ten years after that, there was a severe lack of herring in the waters off the west coast.⁴³⁵ This shift in the location of the herring paralleled a shift in the markets demanding the output of Scottish fish.⁴³⁶ Previously, most Scottish herring exports had gone westward, either to Ireland (herring comprised as much as twenty-five percent of all Scottish exports to Ireland during the two periods of 1755-59 and 1795-99) or to North America (primarily Jamaica as food for the slave population).⁴³⁷ As the number of British possessions in North America declined, and consequently the number of slaves under British control also declined, more and more of the Scottish fishing industry's output went to markets in Europe liberated from the control of Napoleon.⁴³⁸ This shift nicely matched the migration of the herring shoals, further damaging the economic prospects of the west coast fisheries.

⁴³⁵ Dunlop, *The British Fisheries Society*, 142.

⁴³⁶ *Ibid.*

⁴³⁷ Cochran, *Trade*, 45-6.

⁴³⁸ Dunlop, *The British Fisheries Society*, 142-3.

What caused the disappearance of the west coast herring, once considered to be a permanent fixture of the coasts? It is impossible to say with any degree of certainty. The migratory nature of the herring as a species may have simply led them to pass their time elsewhere, or if it was not the herring that relocated, it might have been the food they normally ate in Scottish waters.⁴³⁹ Equally likely, they may have simply been overfished.⁴⁴⁰ Alternately, the fishing technology employed, the drift net, may have disturbed the spawning beds of the herring, causing them to relocate to “safer” waters.⁴⁴¹ Finally, some went so far as to suggest that the kelp industry had played a role in the downfall of the herring, by similarly disturbing the breeding grounds of the fish.⁴⁴² Whatever the cause, by the end of the first decade of the nineteenth century, the west coast fishery was almost completely destroyed.

The utter failure of a branch of industry that had formed the backbone of many plans of economic improvement for the Highlands warrants a very detailed examination. That is the subject of the next chapter, which will examine the failure of various attempts at economic development in the Highlands through a case study of Ullapool. However, before progressing on to that discussion, it seems necessary to examine a bit more broadly the mistakes made regarding fishing policy and village development. As regards the fishing industry, it seems clear that one of the biggest errors made was the refusal to extend any form of financial aid to west coast fishermen unable to afford more than a share in a small boat. In fact, this situation comes very close to illustrating Nurske’s

⁴³⁹ John Cleghorn, “On the Causes of the Fluctuations in the Herring Fishery,” *Journal of the Statistical Society of London*, Vol. 18, No. 3 (September, 1855), 240; hereafter “Fluctuations.”

⁴⁴⁰ *Ibid.*, 241.

⁴⁴¹ *Ibid.*

vicious circle of poverty in which a small pool of available investment capital is the result of a small ability to save which reflects low wages which are a sign of low productivity. Simply stated, by failing to offer financial aid to those willing to engage in the fishing industry, policy doomed those that took up fishing (and the communities that grew around them) to a meager existence that denied the possibility of capital accumulation on the scale necessary to truly engage in the fishing industry.

The blame for this does not rest solely on the shoulders of the landowners who moved their tenants to the coastal areas of their estates. At the time, the trade in kelp certainly seemed to offer financial security to those willing to engage in it. An excuse is more difficult to find for the government. The bounty system, until late in the eighteenth century, almost appears to have been designed by the Greenock merchants to promote their bottom line. The prohibition on boats selling to the busses, while it hurt both sides in practice, was far more damaging to the small fishermen of northern Scotland. The shift from tonnage to barrel bounties following the legislation of 1786, while helpful, still required those seeking the barrel bounty to cure and pack the fish according to strict legislation.⁴⁴³ This restriction could prove to be problematic, given the limited number of curing stations in the western Highlands – sixteen in 1876, with none on the mainland.⁴⁴⁴ Additionally, while the repeal of the excise tax on salt in 1786 clearly answered a long-

⁴⁴² Cleghorn, “Fluctuations,” 240.

⁴⁴³ Anna Gambles, “Free Trade and State Formation: The Political Economy of Fisheries Policy in Britain and the United Kingdom circa 1780-1850,” *The Journal of British Studies*, Vol. 39, No. 3 (July, 2000), 303; hereafter “Formation.”

⁴⁴⁴ Gray, *Fishing Industries*, 102.

standing demand of those engaged in the fishing industry,⁴⁴⁵ the benefit to those in the Highlands without a nearby market was limited at best.

That the villages promoted in the Highlands were intended to serve, in part, as local market centers has already been seen. Had they succeeded, the west coast might have been able to break the bonds of Nurske's vicious circle. However, the design of the villages in practice often worked against this goal. By allotting small parcels of land to those who moved into the villages, the planners created what came to be known as the crofting society. Malcolm Gray describes the result:

There [the north-west], husbandry, the continuing basic activity, interacted with the seaboard industries, mixed in locally varying proportions, in supporting a system of communities each of which was tending to expand, in numbers of people, with the temporary expansion of earning power; while all the time land policy and the underlying pressures of population tended to grind all peasants down to the level of the bare conventional minimum of land. Industry and agriculture intermingled in proportion varying from place to place, but the social pattern remained everywhere the same – that of a smallholding mass in which each man engaged in the combination of activities which happened to be characteristic of the particular locality; the peasantry did not here split its ranks either to provide an upper layer of larger farmers or to throw off a specialised industrial working class. Thus, around the coasts of Skye and northwards along the mainland to Cape Wrath, husbandry remained generally the preponderant interest, with fishing of some general, but fluctuating importance, with here and there a community which had come into considerable dependence thereon, and with kelping only very locally of any strength. The great increase of population which was taking place within this area depended, then, mainly upon the increase of the potentialities of land – the rise of cattle prices, the increased cultivation of the potato and the pressing outwards of the margin of cultivation.⁴⁴⁶

The reliance on husbandry that Gray discusses depleted the available resources for the fishing industry in two ways. First, husbandry as practiced in the north-west Highlands rarely provided more than the amount of food needed to feed a family, leaving nothing left over to sell for capital to invest in fishing, assuming, of course, there was even a market to sell produce at. Secondly, because the fishing industry was not certain, depending as it did on a species of fish known to migrate, it could not be a reliable source

⁴⁴⁵ Gambles, "Formation," 304.

of income to replace the shortfall of food that would result from at least one farm worker being at sea for much of the growing season. Without the capital to invest in large busses that could claim the tonnage bounty, or catch enough barrels to turn a profit, the fishermen of the north-west could not afford to forsake agricultural pursuits.

None of these arguments should be construed as saying that the fishing industry was not the right industry to promote in the Highlands. Early in this study it was argued that improved primary sector production (agriculture and other extractive industries, of which fishing would be one) was one of the preconditions to further economic development. However, there is no reason that the fishing industry could not have been a leading sector in the economic development of the region. The problem was that the portion of the industry that relied on extracting unpredictable fish from the sea was promoted to the exclusion of other areas. What might have been the result had the government taken some of the money spent on bounties and instead invested in boat builders, net makers, curers and other complementary industries in the Highlands? Unfortunately, it is impossible to know, for it was never tried by the government. In those cases where it was tried by more local concerns, as the next chapter will show, it often failed. Even after the abolition of the bounty system in the 1820s, which did not eliminate government investment in the Highlands, money spent to promote the fisheries was limited to piers and quays, with some money going directly fishermen.⁴⁴⁷

Fishing in and of itself was not able to provide the inducements to invest that characterize unbalanced growth. The continued use of only small boats in the western fisheries prevented the accumulation of capital that would have created demand for a

⁴⁴⁶ Gray, *Highland*, 144.

wide variety of consumer goods outside of the fishing industry. It is telling that this level of fishing was unable to generate enough demand to induce investment in industries that would support the fishing. Thus, without a comprehensive, government funded plan of balanced growth, the Highlands were unable to generate sufficient capital to spawn unbalanced growth.

What, then, was the goal of those that promoted the fisheries? Cynically, one could argue that the efforts to promote the fisheries conform to Michael Hechter's idea that Celtic Fringe was an internal colony. In other words, the rapidly expanding population of the industrial south needed food, and the promotion of the Scottish fisheries was a cheap method of obtaining it. An argument along these lines would explain the failure to invest in industries that supported the fishing industry, but did not directly affect the number of fish caught. However, given the persistence of the bounty on exportation, this seems unlikely. What appears to be more likely is that the promotion of the fisheries helped to answer the problem that has underlain nearly all the efforts at economic development discussed in this work: emigration. While this investment may not have stemmed the tide of emigration any more so than the construction of roads did, it did ensure a competent body of seamen remained on the coasts of the Kingdom with their families. This suggestion seems to be confirmed by Anna Gambles, who argued that "The case for a regional economics of development was, therefore, explicitly directed at the problem of reinforcing that political loyalty and sense of reciprocal benefit from which the multinational unitary state derived cohesion."⁴⁴⁸ Of course, this too could

⁴⁴⁷ Gambles, "Formation," 309.

⁴⁴⁸ Ibid., 298.

be read cynically: The Highlands *were* an internal colony, but the commodity was not fish – it was men.

That the promotion of the fisheries did little for the west coast has been seen. However, by roughly 1800, Scotland produced more salted herring than any other nation in Europe.⁴⁴⁹ The next chapter examines in more detail one of the west coast villages for which fishing was supposed to be the economy of choice. That fishing was not the economic savior of Ullapool could be guessed from that which was discussed in this chapter. However, the role of transportation in Ullapool's downfall is also an important story, and seems to go a long way towards answering why the town never developed regardless of the problems with the fishing industry.

⁴⁴⁹ Sahrhage and Lundbeck, *A History of Fishing*, 79.

Chapter Four

ULLAPOOL

The increase and riches of commercial and manufacturing towns, contributed to the improvement and cultivation of the countries to which they belonged, in three different ways.

First, by affording a great and ready market for the rude produce of the country, they gave encouragement to its cultivation and further improvement. This benefit was not even confined to the countries in which they were situated, but extended more or less to all those with which they had any dealings. To all of them they afforded a market for some part either of their rude or manufactured produce, and consequently gave some encouragement to the industry and improvement of all. Their own country, however, on account of its neighbourhood, necessarily derived the greatest benefit from this market. Its rude produce being charged with less carriage, the traders could pay the growers a better price for it, and yet afford it as cheap to the consumers as that of more distant countries.

- Adam Smith⁴⁵⁰

The foundation of The British Fisheries Society, or, more properly, “The British Society for extending the Fisheries and improving the Sea Coasts of this Kingdom,” in July 1786 marked the start of fisheries promotion on a scale not seen before.⁴⁵¹ Whereas fishery legislation that sought to promote the development of a viable fishing industry through the payment of bounties relied on government funds, the new Society was a joint-stock company designed to raise the necessary funds through subscription.⁴⁵² These funds were rapidly put to use, as the Society purchased several hundred acres at Tobermory on the island of Mull in 1787 and 1,300 acres at Ullapool (and 300 acres on the nearby island of Ristol) on the mainland at Lochbroom in February, 1788.⁴⁵³

⁴⁵⁰ Smith, *The Wealth of Nations*, 439.

⁴⁵¹ Dunlop, *The British Fisheries Society*, 24. As she notes on page 25, the name did not officially become “The British Fisheries Society” until 1857.

⁴⁵² *Ibid.*

⁴⁵³ *Ibid.*, 30-1.

What prompted the Society to choose Lochbroom as the site of one of their villages? The simplest answer is that the Loch had a reputation. Writing on one of his two trips to Scotland (1769 and 1772), Thomas Pennant noted that:

Loch-Broom has been celebrated for three or four centuries as the resort of herrings. They generally appear here in *July*: those that turn into this bay are part of the brigade that detaches itself from the Western column of that great army that annually deserts the vast depths of the *arctic* circle, and come, heaven-directed, to the seats of population, offered as cheap food to millions, whom wasteful luxury or iron-hearted avarice hath deprived, by enhancing the price, of the wonted supports of the poor.⁴⁵⁴

Not only did Lochbroom's reputation as a reliable location of herring extend centuries into the past, but commentators following in Pennant's footsteps were eager to promote the Loch as a place of great importance to the future of the Scottish fishing industry.

In no writing is this preference more apparent than the writing of John Knox. In his *View of the British Empire, More Especially Scotland*, the third edition of which was published in 1785, Knox argued for the creation of eight fishing villages on the west coast of the Highlands: One on the canal across the Mull of Kintyre, one at Oban, one at Loch Sunart, one at Loch Urn, one at Gareloch, one at Loch Ewe, one at Loch Broom, and one at Cape Wrath.⁴⁵⁵ Obviously, the proposed settlement at Loch Broom is of the greatest interest to this study, and Knox's reasons for establishing a fishing station at this point, though long, deserve to be quoted in full:

7. LOCH BROOM. This is a large and safe arm of the sea, capable of containing hundreds of the largest ships; and no rocks or shoals within it, but on ledge on the east side of Ulapool, which extends above a cable's length from the shore, and is avoided by keeping one third from the Ulapool side. The best places in this loch to anchor in are, in Ulapool bay, on 14 or 15 fathoms water, above a cable's length from the shore, and any where above Logie point, on from 13 to 24 fathoms.

Loch Kenard is a harbour on the east side of Island Martin, about a mile northward of the mouth of Loch Broom, in which vessels may ride very safe on 4 or 5 fathoms water, good ground, and well sheltered.

⁴⁵⁴ Thomas Pennant, quoted in Youngson, *Beyond*, 194.

⁴⁵⁵ Knox, *View*, 445, 450, 454, 456, 459, 464, 468.

The entrance to this celebrated lake forms a capacious bay, 5 miles in length, and from 7 to 10 in width.

Loch Broom extends 7 miles further into the country, is from 1/3 to 3 in width, and of great depth. This lake on the west, and the firth of Cromarty on the east, approach so near each other, that the distance in a direct line, between the flat water on each side, does not exceed 25 miles. The produce of the country around Loch Broom is cattle, which are generally purchased by graziers from Yorkshire; also timber, mountains of marble, and limestone. The rivers and fresh water lakes communicating with Loch Broom, abound in salmon, trout and char. The shores are populous, but the people are discontented, and strongly disposed to emigrate. On these accounts, Loch Broom appears to be a proper station for a town or village, and still more so when we consider it in a commercial light.

This lake is not only the greatest resort of herrings in Britain (the Shetland isles excepted), but the fish have the reputation of being the richest, and most delicious of any that have been taken in the western seas. Loch Broom hath therefore been the chief scene of the western fishery for many ages, and is at present the most usual rendezvous of the busses from the Clyde, though much discouraged by the dangers of a long navigation, which, as hath already been observed, might be shortened with great facility. Loch Broom hath also sustained a temporary misfortune during these last 7 years, owing, it is conjectured, to the unusual prevalence of easterly and north-easterly winds, which force the herrings by another channel, in their migrations southward.

Near this lake is little Loch Broom, 3½ miles in length, half a mile in breadth, and very deep; where also the herrings crowd to the farthest extremity.⁴⁵⁶

Clearly Knox painted a glowing picture of the quality and steadiness of the herring fishing in Lochbroom, although the brief mention of “a temporary misfortune during these last 7 years” ought to have tarnished the herring’s reputation for steadiness somewhat. This does not seem to have been the case, as one of the reasons Dunlop cites for the Society’s preference for Loch Broom was its “unique” reputation.⁴⁵⁷

The Loch’s reputation, however, was not the only factor which encouraged the Society in its determination to establish a village on Lochbroom. Although Loch Ewe was also considered, the lack of available land made establishment of a village at either Poolewe or Aultbea nearly impossible.⁴⁵⁸ On the other hand, there was already a road to Loch Ewe from the east coast, which, when joined with the packet boat that departed

⁴⁵⁶ Knox, *View*, 464-7.

⁴⁵⁷ Dunlop, *The British Fisheries Society*, 35.

⁴⁵⁸ *Ibid.*

Loch Ewe for Stornoway, produced a small volume of traffic not found at Lochbroom.⁴⁵⁹ On the other hand, as Knox noted, the distance between the head of Lochbroom and the east coast was extremely short, raising the prospect that a road could be easily constructed. When this factor was combined with the belief amongst the Society that the route of the packet could be shifted to Lochbroom, the decision became even easier.⁴⁶⁰ Finally, Lochbroom had the advantage of being serviced by a customs house at Isle Martin at the head of Lochbroom, as well as curing stations at Isle Martin and Tanera.⁴⁶¹

While the location chosen for Ullapool may have been attractive to the Society, how did it appear to P. White, who developed the five conditions a location for a planned fishing village must possess, as described in the last chapter?⁴⁶² According to his study,

Ullapool is in the very centre of the best fishing grounds for herrings in Scotland: there is a fine flat of land there, most of it arable, and the rest very improveable. The making a road from it to the Low-country, will be cheaper and easier, than from any other part of the North-West coast we know. In the bay of Ullapool (a smooth land-locked corner of Lochbroom) some of the finest haddocks and other kind of fish are to be found at almost all seasons of the year, within two or three hundred yards of the doors of the residents there; and there is, in the hills at the back of the level land at Ullapool, moss inexhaustible."⁴⁶³

Of course, it is hard to know to what degree White's five conditions were shaped by the development of Ullapool itself since he was writing three years after the creation of the town. Yet, given what Malcolm Gray and others have said about the importance placed upon farming by residents of the west coast, the presence of *too* much arable land in the vicinity of Ullapool could prove disastrous. Whether it was the availability of arable land

⁴⁵⁹ Dunlop, *The British Fisheries Society*, 35.

⁴⁶⁰ Ibid.

⁴⁶¹ Ibid., 42.

⁴⁶² The five conditions were: A long history of abundant herrings nearby, available arable (or level) ground, a road to the Lowlands (or the possibility of building one cheaply), an abundance of haddock or other fish that could supplement a diet, and peat moss.

in the new settlement, or the unparalleled reputation Lochbroom enjoyed for fishing, the village developed rapidly.

Several sources allow the modern historian to trace the early development of Ullapool. Writing in 1791, P. White noted that the village, three years after it was begun, already contained a pier⁴⁶⁴, an inn⁴⁶⁵, a place of worship⁴⁶⁶, a schoolhouse, and an unspecified number of houses.⁴⁶⁷ Sometime before 1799, as part of the first *Statistical Account of Scotland*, the Reverend Roderick Macrae wrote that “The Society began to build some houses in this place, in summer 1788; and private persons have been ever since adding to the number annually; so that in this village there are now about 72 houses, of which 35 are slated; the rest are thatched with turf, fern roots, and heather.”⁴⁶⁸ Turning to more modern sources, Jean Dunlop notes that within months of the purchase

⁴⁶³ White, *Observations*, 93.

⁴⁶⁴ The Earl of Kinnoul, “The Earl of Kinnoul’s Report to the Annual General Meeting of the British Fisheries Society, 26th March, 1798,” quoted in Dunlop, *The British Fisheries Society*, 219; hereafter “General Meeting.” In this report, the Earl mentions that “the pier and breakwater cost about five thousand pounds.”

⁴⁶⁵ *Ibid.* The cost of the inn is given as £1,095 9s., with £750 being paid to Roderick Morrison for its construction, and the remainder going to “Repairs, additions, &c.”

⁴⁶⁶ *Ibid.* The church and schoolhouse, based upon the Earl’s description in the Report, seem to have been one in the same, or at least joined. The only entry in terms of cost is one for “The church, or schoolhouse repairs, &c.” which amounted to £47 4s. 10d.

⁴⁶⁷ White, *Observations*, 98.

⁴⁶⁸ Roderick Macrae, “Parish of Lochbroom,” in *The Statistical Account of Scotland*, vol. 10 (Edinburgh, 1791-99), 464. The Earl of Kinnoul, “General Meeting,” 219 describes the housing situation as: “In 1791, seven houses had been erected by private individuals; six more houses were built in 1792, in all 13 houses; in 1793, the number of houses built was 15; in 1794, 25 houses were up, or nearly so; in 1795, their number was 29; in 1796, 30. For 1797, the Report is not yet received. Besides the above 30 houses belonging to private persons there are nine inhabited houses belonging to the Society. So that on the whole there were in 1796, 39 houses built and inhabited in the village of Ullapool, of which 28 are either tiled or slated.” The difference between the Earl’s figures and those presented by Macrae appears to rest in the “...40 other inhabitants of houses, for the most part thatched huts, or little better, who have not property to build houses and become regular settlers, but who are nevertheless useful labourers, fishermen, and various tradesmen....”

of the land at Ullapool, the Society was contracting with Robert Melville to construct a number of the initial buildings in the settlement:

The final terms of the contract were only slightly altered from Melville's original proposal. He undertook to erect for the Society, first, a house for himself to cost £100, second, a shed for curing white herring, for £80; third, a smoking house for red herring, at £290; fourth, ten houses for his Artists, for a total sum of £200; fifth and sixth, a shed for mending nets with tradesmen's shops behind, for £80, and a storehouse for salt and casks at about £100, making a total expenditure of £850. The Society was to lease these buildings to Melville at an annual rent of 7½% of their value on condition that he became a settler at Ullapool, that he kept the buildings in repair and that he found surety for the fulfilment of his part in the agreement.⁴⁶⁹

Nearly at the same time, Mackenzie and Morrison, who owned the curing station at Tanera at the entrance to Lochbroom, submitted a proposal to construct "a pier, warehouse and inn at Ullapool for a total cost of £1,063."⁴⁷⁰ However, as was shown above, the cost of the inn alone exceeded this figure, with a total cost of these three projects approaching, according to the Earl of Kinnoul, £6,650.⁴⁷¹

How does such a construction program compare with Knox's plan for building a west coast town for under £10,000? Knox called for the construction of a pier, warehouse(s), fish curing sheds, a small market place, a corn mill, a church (including a house, garden and glebe for the minister), a schoolhouse, an apothecary's shop (and house), a house for the fishery superintendent, an inn, a commons, and houses for necessary craftsmen (rent free with enclosures for a garden, offices, potatoes, and pasture).⁴⁷² By 1798, having spent £7,778 4s. 8d., the Society had constructed at Ullapool the pier, warehouse, fish curing sheds, a corn mill, a church and schoolhouse, an

⁴⁶⁹ Dunlop, *The British Fisheries Society*, 47.

⁴⁷⁰ *Ibid.*

⁴⁷¹ The Earl of Kinnoul, "General Meeting," 219. The pier, as noted above, cost "about five thousand pounds," the inn £1,095 9s., and the warehouse £534 1s. 8d..

⁴⁷² Knox, *View*, 435-7.

inn, and some craftsmen's shops and homes (including a boat-builder and cooper).⁴⁷³ All that was missing from Knox's plan was a small marketplace, a house for the fisheries superintendent, and the apothecary's shop (the commons not requiring much in the way of expense). Yet the high cost of some of the projects already completed (or underway) was prompting concern amongst some observers:

Candour, however, and our professed desire of giving our undisguised opinion, obliges us to observe, that it were to be wished the Company had proceeded more slowly, in the laying out its money, and done some of its works upon a smaller scale, particularly the inn at Ullapool, which is most unnecessarily large. Probably it would have been better, had the Company œconomised as much as it could, in order that it might be the better enabled to advance the considerable sums which will be wanted for that absolutely necessary measure, of making and keeping up roads of communication betwixt their villages and the Low-countries.⁴⁷⁴

Of particular concern, as noted by White, was the inn. When Ullapool was chosen as one of the locations of the British Fisheries Society's villages, it will be remembered, one of the arguments in favor of Lochbroom over Loch Ewe was the possibility of re-routing the packet for Stornoway to Lochbroom. Although the establishment of Ullapool did bring some travelers by that route, the Earl of Seaforth resisted strongly the attempt to re-route the packet, partially because the route from Ullapool to Stornoway was more dangerous than that from Poolewe.⁴⁷⁵ Additionally, as White alluded to, there was the issue of the road.

The provision of a road to Ullapool, which had been one of the other factors that had led the Society to settle on Lochbroom over Loch Ewe, was finally undertaken in May of 1792.⁴⁷⁶ The contract was awarded to Kenneth Mackenzie of Torridon, who

⁴⁷³ The Earl of Kinnoul, "General Meeting," 219.

⁴⁷⁴ White, *Observations*, 99-100.

⁴⁷⁵ Dunlop, *The British Fisheries Society*, 77.

⁴⁷⁶ *Ibid.*, 127.

agreed to undertake the project for £4,582, payable in installments as the project progressed.⁴⁷⁷ The road, which was sixteen feet wide and topped with gravel (although there seems to be some debate about what lay underneath the gravel), was completed by September of 1794.⁴⁷⁸ Roderick Macrae, the writer of the description of Lochbroom parish in the first *Statistical Account of Scotland*, described the road as “excellent,” adding “so that, where lately nothing could be carried but in creels on horseback, carts and carriages can now travel with the greatest ease and expedition. The road consists of 38 miles, and has cost government about 4500*l.* including bridges, of which there must be a good many in its course.”⁴⁷⁹ Thanks to James Duncan’s *The Scotch Itinerary, containing the roads through Scotland, on a New Plan*, it is possible to trace a portion of the route from Inverness to Ullapool over this new road:

No. 99.

From Inverness to Beaully, see Obs. No. 98. – leaving Beaully on r. *Fanadal House*, and on r. road to Fortrose – ½ m. fur. enter *Ross-shire* – on r. *Gilchrist Kirk* – 1 m. fur. on l. *Highfield*, McKenzie, Esq. – 1 m. fur. on l. *Brahan Castle*, E. of Seaforth – ½ m. fur. on l. *Connanside House*, Sir Hector McKenzie, Bart. – 1 m. fur. on r. road to Kissock and Fortrose – cr. *Conan*. Here a new bridge of 265 feet in length with 5 arches is building, and to be finished 1st October, 1809 – ½ m. fur. *Mill of Usie* – 1 m. fur. *Pitgassie Village* – ½ m. fur. *Dingwall*, having a good Inn, and about 800 inhabitants – near the town and close to the shore is the *ruins of the ancient residence* of the Earls of Ross. Near the Church is an *Obelisk* rising in a pyramidal form 57 feet high, although only 6 feet square at the base. It was erected by George, First E. of Cromarty, Secretary of State in the reign of Queen Anne, and was intended to distinguish the burying-place of the Cromarty family – from Dingwall to Ullapool, I can say nothing, not knowing seats or ruins, &c. on that route.⁴⁸⁰

⁴⁷⁷ Dunlop, *The British Fisheries Society*, 127-8.

⁴⁷⁸ *Ibid.*, 128-9.

⁴⁷⁹ Roderick Macrae, “Parish of Lochbroom,” in *The Statistical Account of Scotland*, vol. 10 (Edinburgh, 1791-99), 466.

⁴⁸⁰ James Duncan, *The Scotch Itinerary, containing the roads through Scotland, on a New Plan*, 2nd ed. (Glasgow: James and Andrew Duncan, 1808), 51; hereafter *Scotch Itinerary*.

Duncan's description of the route placed the distance from Ullapool to Dingwall at forty-two miles, about four miles longer than that described by Macrae.⁴⁸¹ However, it is his lack of knowledge about the precise route and condition of the road between Dingwall and Ullapool that is most unfortunate. Had Duncan taken the time to travel this section of the road, what he would have found would have displaced all of Macrae's earlier optimism.

The 1809 report of the Highland Roads and Bridges Commission includes a description of the Ullapool road, as well as proposals for its improvement and maintenance. Although a long passage, the report is worth quoting to a great extent:

ULLAPOOL ROAD. – We have lately received an unexpected application relative to the state of the Road from Contin to Ullapool, which is represented to have been for many years scarcely passable. A late flood has destroyed two of the Bridges, and it is suggested to us that a new line of Road should be settled by a Re-survey, before these Bridges are rebuilt.

This Road having been made at the expence of the Public, we thought that it might be useful to enquire into the circumstances which have led to its present state of decay.

The Ullapool Road was one of those surveyed by Mr. G. Brown in the year 1790; the length is about Thirty-Five Miles, and the expence was estimated at £. 7,733. This Road being deemed of peculiar importance, it was the intention of Government to have made it at the expence of the Public, had not the Estimate amounted to so large a Sum; and this objection having been removed by Mr. Kenneth Mackenzie of Torridon, who was induced to undertake the Road at the reduced Price of £. 4,165, and in 1792 entered into Contract with the British Fishery Society accordingly, - the Sum of £. 4,400.⁴⁸² was from time to time issued from the Exchequer at Edinburgh by order of the Treasury for that purpose, including additional work and incidental expences.

The Contractor, as might be expected, soon became sensible of his error, but proceeded with the Road, though he did not always adhere to Mr. Brown's Line; at length he finished the Road, and obtained from Colonel Rudyerd, Chief Engineer in Scotland, a favourable Report of it, dated November 1796. The decay of the Road from that time must have been very rapid, and if considered as an example of what is to be expected to happen to other new Highland Roads, furnishes just cause of alarm for those now making under our care. We have therefore endeavoured to investigate the causes from which the destruction of the Ullapool Road has been derived, and We think it fairly attributable to the reduced Contract Price, the want of professional Inspectors during the execution of the Work, and of Funds for the occasional repair of it afterwards.

⁴⁸¹ Duncan, *Scotch Itinerary*, 51.

⁴⁸² This appears to be incorrect, as the amount was £4,582.

In the course of our proceedings, We have had convincing proof that Mr. Brown's Estimates are far from being too high, and in many instances of Re-survey they have appeared quite inadequate to the formation of a durable Road; and as the Contractor in a Memorial for an Allowance beyond the Contract Price, professes to have expended no more than £. 4,349. upon a Road then estimated by Mr. Brown at £. 7,733. We think it probable, that the Ullapool Road was not constructed with more than half the solidity required by the Specifications of our Contracts. In fact We ourselves experience no difficulty greater than that which arises from low offers of Contract, which we cannot reject without apparent injury to the Public and the Contributors; and in accepting which We have to apprehend disputes with the Contractor, who naturally endeavours to protect himself from loss by an imperfect performance of his undertaking; which again on our parts cannot be permitted, however we may regret the loss sustained by the Contractor through his own imprudence.

To guard against these inconveniencies, in so far as they may affect the Public, We have found it necessary to appoint professional Inspectors, Eight of whom are maintained in different Districts, under the superintendence of Mr. Duncombe, a person of the greatest diligence and respectability; and these Inspectors are instructed to assist the Road Contractors with advice, as well as to watch their proceedings, and to authorize them to draw for Money, when due under their respective Contracts. The experience of this Establishment is considerable, but experience has convinced us that it is unavoidable, unless We determine to rest satisfied with the usual manner of making Roads in the Highlands, of the inefficiency of which this Ullapool Road is a striking example.

But although We have reason to hope that effectual precautions are thus established to insure the due execution of our Road Contracts, We are far from being without anxiety respecting the future repair of the Roads, when taken off the hands of the Contractors. The frequency of rainy seasons and of mountain torrents in the Highlands renders the Roads there more than commonly liable to ruin and decay; and unless effectual means of vigilance and of timely repair are provided, We cannot venture to calculate on the permanency of the Improvements now making with the aid of the liberality of the Legislature. We have not yet been able to devise any mode which appears unobjectionable; and We take this opportunity of mentioning the subject for the sake of calling it to the attention of the Highland Proprietors and others, and of assuring them of our willing cooperation and assistance in any Plan which may afford a reasonable hope of attaining so desirable an object. The County Assessment Acts of Sutherland and Caithness provide Tolls for this purpose, but we are not certain that such a resource would be practicable in all cases.

The proposed Re-survey of the Ullapool Road cannot come under consideration, until We have received an assurance that a Moiety of the Sum requisite for rebuilding the Bridges at least, is in readiness to be advanced for that purpose.⁴⁸³

Thus, although there appears to be recognition of the need to repair the road to Ullapool, until the money was found to pay the landlord's half of the Parliamentary road program, the Commissioners were unwilling to take on the repair of the road. It is likely that had Duncan traversed the road farther than Dingwall, he would have recognized the

dilapidated state the road had fallen into. But it is important to note one unique feature of the Ullapool road: It was built with government funds many years before the Highland Roads and Bridges Commission was even begun. Also, unlike the military roads, which were also built with public funds well before the advent of the Parliamentary roads, the Ullapool road was never transferred to the control of the Commission.

Apparently, the Ullapool road was never improved nor repaired. Writing to Lord Colchester in 1828, Joseph Mitchell described the fate of the road:

The Loch-Broom, or Ullapool Road, was also one of those which excited the early attention of the Commissioners, and it was surveyed by their directions; but from some misunderstanding, which it appears took place among the proprietors, the further prosecution of it was abandoned. This Road would however be of essential advantage to the Fishing stations in that quarter, which promise renewed vigour from the late re-appearance of herrings in the adjacent lochs; and it would also be serviceable as a local communication, and in opening up a great tract of country north of Loch-Carron, at present extremely deficient in the means of intercourse with the South. It is therefore a matter of regret, that the information communicated to your Lordship by Sir George Mackenzie, holds out no prospect of its speedy construction without additional assistance. Probably, however, sufficient exertions may be made for its eventual accomplishment, as I agree with him, in supposing that the total expence would not exceed £.9,000.⁴⁸⁴

Mitchell's confidence that the road could be constructed for a fairly low price while simultaneously meeting an "essential advantage" of the people of Ullapool apparently did little to sway opinion towards the financing of such a project. When, seven years later the Reverend Thomas Ross came to write the entry on the Parish of Lochbroom for the *New Statistical Account of Scotland*, the subject of the failed road between Ullapool and Dingwall was obviously on his mind:

Improvements. – The first and greatest improvement of any country, in a worldly point of view, is, to have it well opened up by good roads and bridges. Of this improvement, not one parish in Scotland stands nearly so much in need, as the parish of Lochbroom. Above forty years ago, a road was constructed at a great expense from Dingwall to Ullapool, which, being a new thing in the Highlands, astonished the natives not a little. But the line chosen was so absurd, and the execution so wretched, that the road has been,

⁴⁸³ HCSP 1809, 167, IV, 17-8: "Fourth Report of Commissioners..."

⁴⁸⁴ HCSP 1828, 175, IX, 314: "Fourteenth Report of Commissioners..."

for many years back, not only useless, but dangerous, to foot-passengers and riders on horseback; and to wheel carriages almost impassable, while several of the principal bridges are carried away, or threatened with being so; or deserted, from the original line of the road being changed. A new road, therefore, with the requisite bridges, of which there has been much talk of late, would be an immense improvement, both for the heritors and population of Lochbroom. To talk of manufacturing or agricultural improvements to any considerable extent without these, is vain and visionary.⁴⁸⁵

Thus, at the end of the time period under consideration here, Ullapool, though a mainland town, was essentially on an island for want of a road.⁴⁸⁶ At some point a road was built, and today it is possible to drive to Ullapool – in fact, one must, for the railroad never did make it – but no work has been found that dates this development.

Of course, a road was no guarantee for success. As long as the fishing continued to be good in the area of Ullapool, most of the business essential to the town could be carried on by water-borne transport. Yet the knowledge that the herring did not always choose to frequent the same area year after year led many to consider the need for alternate employment in Ullapool. Relatively early on, some of the settlers began to engage in spinning, although, as Roderick Macrae notes, it was “merely for the purpose of furnishing employment to a few idle hands.”⁴⁸⁷ According to Jean Dunlop, the Society was anxious to encourage some sort of industry in Ullapool to aid the settlers during the periods when the herring were not present, and the spinning and weaving of wool, flax,

⁴⁸⁵ Thomas Ross, “Parish of Lochbroom,” in *Ross and Cromarty*, vol. 14, *The New Statistical Account of Scotland* (Edinburgh, 1834-45), 88-9.

⁴⁸⁶ D.D.C. Pochin Mould, *The Roads from the Isles: A Study of the North-West Highland Tracks* (Edinburgh: Oliver and Boyd, 1950), 133-40 describes another route from Ullapool to the East: The road follows the Ullapool River up Glen Achall and descends along the Rappach Water down Strath Oykell to Bonar Bridge. However, I can find no description of this road in any other source, and Mould offers no history of who constructed it or when it was built. Thus, I do not consider this to be a route on par with the road to Dingwall, and will not be considered as proof of effective communication with the east as this study progresses.

⁴⁸⁷ Roderick Macrae, “Parish of Lochbroom,” in *The Statistical Account of Scotland*, vol. 10 (Edinburgh, 1791-99), 466.

hemp and yarn was considered to be the best choice.⁴⁸⁸ The problem, however, was that the Society was prevented from engaging in directly commercial activities, such as purchasing the necessary equipment for such manufacturing or purchasing supplies necessary for fishing, by the terms of its incorporation as a joint-stock company.⁴⁸⁹ This problem, according to Dunlop, was overcome when the Society determined it could lend money for these purposes to agents who would then assume all the risk, while also realizing the profit or loss (the Society collecting only the original loan amount in case of profit).⁴⁹⁰ By 1796, it seems that as many as forty people were employed by this manufacture.⁴⁹¹

The early success of this project did not last. By the time Thomas Ross submitted his report on Lochbroom Parish to the *New Statistical Account of Scotland*, his report on the manufactures of parish contained only two sentences: “There is no manufacture of any consequence carried on in this parish. Even the manufacture of kelp, which was once a source of considerable profit, is now discontinued, since the duty on barilla was taken off, and the raw material is used only as manure for the land.”⁴⁹² Yet even the failure to establish an effective manufacturing sector in the town need not have ruined its chances for success. Tobermory, for example, succeeded not as a fishing station, but as a commercial center reliant on its harbor and customs house to generate merchant traffic.⁴⁹³

⁴⁸⁸ Dunlop, *The British Fisheries Society*, 72.

⁴⁸⁹ *Ibid.*, 73.

⁴⁹⁰ *Ibid.*

⁴⁹¹ *Ibid.*, 74.

⁴⁹² Thomas Ross, “Parish of Lochbroom,” in *Ross and Cromarty*, vol. 14, *The New Statistical Account of Scotland* (Edinburgh, 1834-45), 85-6.

While Ullapool was unlikely to follow this route, its location being too deep in Loch Broom to attract passing merchant ships and a customs house already in place on Isle Martin further reducing merchant traffic into the Loch, it could still succeed as a commercial center if it could develop into a regional marketplace. In fact, Knox had advocated this sort of alternate purpose to the towns he proposed building on the west coast.⁴⁹⁴ While a formal marketplace was never constructed, although Telford did design one for the town, it does appear that markets and fairs were held from an early date.⁴⁹⁵ However, later evidence suggests the markets may have gone the way of the manufactures, for by 1835 Ross was reporting that “There is no market-town in the parish, nor any nearer than Dingwall, at the distance of about forty-five miles from Ullapool.”⁴⁹⁶

The fact remains, however, that Ullapool was not created to serve as a commercial or manufacturing center. Its primary purpose was fishing and the promotion of the fishing industry. According to Macrae, within ten years of its foundation, Ullapool was possessed of “6 vessels belonging to Ullapool; which, together with 4 or 5 more belonging to the fishing stations at Tanera and Isle Martin, employ about 40 seamen.”⁴⁹⁷ Unfortunately, Macrae provides no description of the type of vessel he is describing, but

⁴⁹³ Dunlop, *The British Fisheries Society*, 33.

⁴⁹⁴ Knox, *View*, 437.

⁴⁹⁵ Dunlop, *The British Fisheries Society*, 78.

⁴⁹⁶ Thomas Ross, “Parish of Lochbroom,” in *Ross and Cromarty*, vol. 14, *The New Statistical Account of Scotland* (Edinburgh, 1834-45), 86.

⁴⁹⁷ Roderick Macrae, “Parish of Lochbroom,” in *The Statistical Account of Scotland*, vol. 10 (Edinburgh, 1791-99), 468.

it seems likely that he is referring to boats instead of busses.⁴⁹⁸ If so, those engaged in the fishing at Ullapool would have had to rely on the fish entering Lochbroom as their boats were unlikely to venture too far into the deeper water outside the Loch. Nevertheless, they must have had some success, for Macrah was able to report that “they cured last year 500 barrels fine red-herring.”⁴⁹⁹ By 1798 it appears that there may have been some busses in Ullapool, for the Earl of Kinnoul was able to report that “In 1796, which was a year of scarcity of Fish, six vessels from 20 to 70 tons burthen each imported various articles to Ullapool: three of these belonged to Ullapool itself, and one of them was built there.”⁵⁰⁰ Additionally, he reported anywhere from twenty-five to thirty boats that belonged to the settlers.⁵⁰¹ Unfortunately, it is impossible to trace the catch produced by the fishermen at Ullapool. The closest one may come are the customs records from Isle Martin, but as this could be used by any buss in the area, these records are useful only as an indication of the size of the herring shoals in the vicinity of Loch Broom. According to Dunlop, the number of barrels of herring claimed as part of the barrel bounty was 2,988 in 1788, 7,408 in 1791, 4,697 in 1792, 4,212 in 1793, 2,130 in 1794, 3,558 in 1795, and 1,382 in 1796.⁵⁰²

While the number of barrels was declining, there is no evidence that the herring fishing on the northwest coast was coming to an end. In fact, 1797 proved to be a very

⁴⁹⁸ Knox, *View*, 230 figured that a buss of sixty tons would require a crew of fourteen, while Macrah’s figures imply a crew of four per boat.

⁴⁹⁹ Roderick Macrah, “Parish of Lochbroom,” in *The Statistical Account of Scotland*, vol. 10 (Edinburgh, 1791-99), 465.

⁵⁰⁰ The Earl of Kinnoul, “General Meeting,” 220.

⁵⁰¹ *Ibid.*

⁵⁰² Dunlop, *The British Fisheries Society*, 68.

good yield.⁵⁰³ Unfortunately, this proved to be the last such year. As Jean Dunlop expressed it, “This does not mean that after 1800 no fish were ever caught in the Minch, although there were nearly ten years of failure, but the centre of the industry was no longer there.”⁵⁰⁴ The last chapter described the shift of the fishing industry to the east coast of the Highlands, as well as some of the reasons for it, and it is unnecessary to repeat them here. However, it should be noted that this situation did eventually revert to some degree, although it took the mining of the east coast ports during World War Two to bring the herring fleet back to Ullapool.⁵⁰⁵

To this point, this chapter has shown how Ullapool failed by failing to develop effective communication routes and alternate forms of employment for the period when the herring deserted Lochbroom. In one sense, Ullapool serves as the perfect example of what can go wrong when a strategy of unbalanced growth is pursued. By focusing on the development of one industry, in this case fishing, one runs the risk of failing to generate sufficient inducements to invest in other industries to sustain the village/region/nation upon the failure of the first. Yet it is important to keep in mind that this work was not intended to advocate the unbalanced growth approach. Rather, it was argued that the optimal approach would be “balance within imbalance,” or a leading sector or two (the imbalance) in which supply and demand were held at an equal level (the balance). In order to facilitate growth in such a fashion, social overhead capital would have to be developed ahead of demand in the initial stages of growth despite development via

⁵⁰³ Dunlop, *The British Fisheries Society*, 142.

⁵⁰⁴ *Ibid.*

⁵⁰⁵ *Ibid.*, 202.

shortage being the preferred method for determining the level of necessary social overhead capital investment.

Applying these theories to the Ullapool example allows the modern observer to note several key flaws, as well as outline possible alternative strategies that may have been pursued. Clearly, those behind the creation of Ullapool placed the village at a great disadvantage by failing to provide sufficient social overhead capital investment at an early stage. The lack of a road for many years after the foundation of the village suggests a development via shortage approach wholly inconsistent with the strategies outlined in the first chapter of this work. Furthermore, adopting a development via shortage approach to social overhead capital in the case of Ullapool seems wholly at odds with the expenditure on the inn. What was almost certainly over-expenditure in the first place became even more so without the necessary transport connections to justify its existence.

To their credit, the Society did attempt to alleviate some of the unbalanced growth experienced by the residents of Ullapool. Several additional forms of industry were promoted, including spinning (as discussed above), farming, and white fishing.⁵⁰⁶ None of these were ultimately successful, throwing the population back onto the one leading sector – fishing. Some effort appears to have been made to produce a vertically

⁵⁰⁶ Dunlop, *The British Fisheries Society*, 67-74. Of course, as noted above, the Society was forbidden by its Act of Incorporation to engage in many directly commercial activities. Nevertheless, as Dunlop notes, the Society was allowed to purchase land and build structures for many different uses, and one of its first acts was to purchase the island of Ristol and to set up the buildings necessary for engaging in the white fishery. The Society leased the island to various contractors, but none ever produced a viable white fishing industry. Similarly, the ability of the Society to purchase land allowed them to offer each settler at Ullapool a lot in the village for a home and garden, a half acre of arable flat land near the village, and five acres of uncultivated hill land. The Society did not need to offer much encouragement to the settlers to take up agriculture, but it is hard to ignore the detrimental effect the promotion of agriculture had on the fishing industry (see the preceding chapter for more details on this phenomenon). By promoting agricultural pursuits which took away labor for the harvest, settlers who choose to pursue agriculture on even the subsistence level were inevitably torn between working the land and the sea, as the seasonal migration of the herring could coincide with important phases of the harvest cycle.

integrated fishing industry at Ullapool by promoting a boat building business,⁵⁰⁷ by turning the infant spinning industry to the production of fishing nets,⁵⁰⁸ and the settling of a cooper in town.⁵⁰⁹ Nevertheless, the Earl of Kinnoul made it clear in his 1798 report that such production was not able to fully supply even the ten vessels that engaged in the bounty fishing for white herring in 1796.⁵¹⁰ Thus, the development of Ullapool was conducted in an unbalanced fashion with one leading sector that lacked internal balance. In other words, the development of the fishing industry in Ullapool failed to create sufficient inducement mechanisms to spur growth even in directly complementary industries. To a large degree, it seems that this failure can be attributed to the policies that prevented the Society from directly engaging in commercial endeavors. Without the larger sources of capital the Society could provide, the settlers at Ullapool were unlikely to be able to amass sufficient capital to purchase vessels of a size that allowed for deep water fishing and larger catches. Furthermore, without an overland transport connection that promised fast transportation times to the more populous east coast, there was little incentive for vessels engaged in the herring fishery to put in at Ullapool. Those taking part in this industry were better served by landing their catch further south in order to more readily meet the ships departing for the American and Caribbean markets.

Yet the failure of Ullapool is not simply one of unbalanced growth in the industrial sense. In many ways, the failure of Ullapool can be attributed to unbalanced growth in the geographic sense. Knox, when planning the development of the Highlands,

⁵⁰⁷ The Earl of Kinnoul, "General Meeting," 220.

⁵⁰⁸ Dunlop, *The British Fisheries Society*, 74, although she concludes that "there is no proof of this," and "that the manufacture seems to have made no impression elsewhere."

⁵⁰⁹ The Earl of Kinnoul, "General Meeting," 220.

envisioned eight towns, many of which were located near one of the other sites.⁵¹¹ Looking at his proposal from a balanced/unbalanced growth perspective, it is possible to argue that he was promoting balanced regional growth by spreading his proposed villages along the entire west coast of the Highlands. Had Knox's proposal been acted upon more fully, what might the development of the Highlands looked like? Edward Taaffe, Richard Morrill and Peter Gould provide one solution. Describing the ideal-typical sequence of transport development in a lagging country or region, they envisioned a six-phase model of development that encompassed both transportation and population/production centers.⁵¹² Their first phase, which consisted of scattered small ports with only weak lateral linkages between them,⁵¹³ would roughly correspond to what the Highlands would have looked like after implementation of Knox's plan. The second phase involves the development of lines of communication penetrating the interior of the country from a select few of the scattered ports, causing their markets to expand and nearby smaller ports to be swallowed up.⁵¹⁴ In the third phase, feeder routes develop as branches off the main lines of penetration while port concentration continues and new production nodes develop along the lines of penetration.⁵¹⁵ The fourth phase involves the development of some nodes into focus points for new feeder routes.⁵¹⁶ As the feeder

⁵¹⁰ The Earl of Kinnoull, "General Meeting," 220.

⁵¹¹ Knox, *View*, 445-68.

⁵¹² Edward J. Taaffe, Richard L. Morrill and Peter R. Gould, "Transport Expansion in Underdeveloped Countries: A Comparative Analysis," in *Transport and Development*, edited by B.S. Hoyle (New York: Barnes & Noble Books, 1973), 32-4; hereafter "Transport Expansion."

⁵¹³ *Ibid.*, 32, 35.

⁵¹⁴ *Ibid.*, 34-6.

⁵¹⁵ *Ibid.*, 34, 40-1.

routes continue to develop, the fifth phase, there is an inducement to invest in further routes interconnecting the whole.⁵¹⁷ Finally, the sixth phase involves the creation of “national trunk-line routes” that create direct connections between the largest points on the network.⁵¹⁸

Applying these ideas to Ullapool, it becomes clear that the key development would have been the construction of a road to the interior, although the geography of Scotland near Ullapool dictated that a road to Dingwall and the east coast would serve essentially the same function. However, the third phase, which involved the development of production nodes with feeder routes along the line of penetration, is where theory diverged most clearly from practice. The Society, focused as it was on the fishing industry and forbidden by its Act of Incorporation from engaging in many commercial activities, was unwilling and unable to expend funds on the development of inland production sites capable of utilizing transport connections to Ullapool to develop that town into a viable port and market center. Lest one think that only modern theorists would advocate the development of population centers in the interior of the Highlands, White argued for the development of the interior as a complementary project to fishing promotion in his 1791 work.⁵¹⁹ Yet these were not to be agricultural towns, rather they were to be based on manufacturing in order to provide a source of capital capable of rendering the town independent of its hinterland.⁵²⁰ The capital raised through

⁵¹⁶ Edward J. Taaffe, Richard L. Morrill and Peter R. Gould, “Transport Expansion,” 34, 43-5.

⁵¹⁷ Ibid., 34, 46.

⁵¹⁸ Ibid., 34.

⁵¹⁹ White, *Observations*, 147-70.

⁵²⁰ Ibid., 160.

manufacturing was to be used in part to provide for subsistence, freeing more land around the village for the grazing of sheep and thereby lowering the factor cost for what was to be the primary industry of the village – a woolen stocking and Stirling serge production.⁵²¹ However, the ability of the village to import food to cover any shortfalls arising from the devotion of large areas of land to sheep walks required improved transportation connections, particularly to a port. Likewise, without sufficient transport infrastructure in place, the added cost to the transportation of the finished goods would negate any advantage derived from locating the source of production so near the source of the raw materials.

White called for the town to be funded on a level less than that expended on fishing villages, estimating that £4150 would cover construction of the village and the necessary buildings.⁵²² Interestingly, he also makes no up-front provision for expenditure on social overhead capital despite its absolute necessity for a village constructed in the interior. Had such a village been constructed in the glens further inland from Ullapool, it might have provided the traffic necessary to transform Ullapool into a commercial center. On the other hand, without a market and customs house Ullapool would have remained unattractive as a port or commercial center. As discussed earlier, a market appears to have been held at Ullapool, but no permanent space for one was ever constructed. Without the provision of such a space, it would have been hard to view the markets at

⁵²¹ White, *Observations*, 160, 163, 168-9.

⁵²² *Ibid.*, 167-8. White called for the following buildings to be constructed: 1. Up to 50 houses (less than £25 each), 2. Six larger houses with shops facing the street (£50 each), 3. A building to carry on the woolen manufacturing in (£350), plus a house and office for the manager (£200), 4. A dye-house and a house for the dyer (£80), 5. A church with a clock (£200), 6. A pub (£150), 7. A wauk-mill and house for the waulker (£60), 8. A well (£50), 9. A school and house for the teacher (£70), 10. A house for a preacher (£60), 11. A store house (£150), and 12. Stone enclosures for settlers' gardens (£70). Additionally, he

Ullapool as anything more than temporary events. As for the customs house, there was one at Isle Martin at the entrance to Loch Broom, but without relocating it to Ullapool itself it represented a hindrance to the development of Ullapool as a commercial port because of the extra journey time imposed on those trading with Ullapool.

Unfortunately much of the preceding discussion must remain an exercise in speculation. There is no objective way of testing whether or not the failure to develop inland centers contributed to the downfall of Ullapool. However, the failure of those planning the development of Ullapool to reign in development that relied on a single leading sector lacking in internal balance represents a clear failure of economic development policy. Furthermore, the lack of adequate social overhead capital investment at the critical stages of the village's development probably hindered the village's growth by imposing higher costs on goods and information needed in the village. How many herring were not caught because information on the movement of the shoals was not able to reach the village in a timely manner? Finally, the greatest hindrance to the development of Ullapool appears to be the restrictive guidelines the British Fisheries Society was operating under. The failure to make adequate capital available to settlers to encourage more than a boat fishery doomed the fishing industry in the event the herring did not penetrate the safer waters of Loch Broom. Over-reliance on this type of fishing also conflicted with the demands of agricultural production placed upon the settlers by the land grants they were given. As Gray noted, the preference of many in the north west was often leaned towards agriculture first and fishing second.⁵²³

called for £200 for the supervision of construction, £500 to purchase the land for the village, and £460 for miscellaneous expenses.

⁵²³ Gray, *Fishing Industries*, 104.

In the long run, Ullapool did succeed, but only after external events induced greater investment in the town. As was mentioned previously, the mining of many of the east coast ports utilized by the herring fleet during World War Two forced the re-utilization of Ullapool as a port of landing for the herring catch. Additionally, the creation of a car ferry terminal servicing Stornoway finally aided the development of a viable tourist industry that has become the leading industry in the area.⁵²⁴ Had the Society succeeded in getting the packet for Stornoway shifted from Poolewe to Ullapool, might tourism have saved Ullapool earlier? There is, unfortunately, no way to be certain.

In the end, economic development in the Highlands had mixed results. Certainly, if the theories discussed in the first chapter are correct, failure to develop social overhead capital, particularly roads, at an early stage in the Highlands hindered development. The rapid use of some of the Parliamentary roads testifies to the demand for social overhead capital that went unfulfilled for so long. The roads may be considered a success if judged on their influence on cultural attitudes through the spread of information. While they may not have integrated the Highlands and the remainder of Great Britain economically, they did serve to integrate them politically and culturally. The promotion of the fisheries cannot be considered a success in the western Highlands, although the east coast presents a different picture. By promoting a leading sector based on extraction of a primary good without correspondingly investing in complementary industries, and transport networks to transport these complementary goods in the event local demand slackened, those engaged in the economic development of the Highlands left the population vulnerable to the whims of the fish. As Knox showed, the herring fishery was barely economically viable when conducted by a buss capable of remaining at sea for long periods of time

⁵²⁴ Dunlop, *The British Fisheries Society*, 206.

(assuming only a half catch), how much more difficult must it have been for families along the west coast who were forced to share the costs of outfitting even a small boat. Ullapool typifies many of these failures – a lack of social overhead capital investment, an over-reliance on fishing, failure of those coordinating the economic development to invest in complementary industries – and represents the uncertainty associated with economic development. Uncertain though it may be, it appears clear that both modern theorists and those of the eighteenth and nineteenth centuries recognized that the foundational investment for any development project must be social overhead capital. Thus, it is difficult to disagree with Thomas Ross’s assessment that “The first and greatest improvement of any country, in a worldly point of view, is, to have it well opened up by good roads and bridges. [...] To talk of manufacturing or agricultural improvements to any considerable extent without these, is vain and visionary.”⁵²⁵

⁵²⁵ Thomas Ross, “Parish of Lochbroom,” in *Ross and Cromarty*, vol. 14, *The New Statistical Account of Scotland* (Edinburgh, 1834-45), 88-9.

Appendix One

**A Survey and Report of the Coasts and Central Highlands of Scotland; Made by the Command of
the Right Honourable Lords the Commissioners of His Majesty's Treasury, in the Autumn of
1802:⁵²⁶**

By Thomas Telford, Civil Engineer, Edin. F.R.S.

MY LORDS,

In reporting upon the Survey I made in Scotland, in obedience to the Instructions I had the Honour of receiving from Your Lordships, dated the first of July 1802, I find the Business may be most conveniently arranged under the following Heads:

- I. What regards rendering the Intercourse of the Country more perfect, by means of Bridges and Roads.
- II. Ascertaining various Circumstances relative to the Caledonian Canal, especially with regard to the Supplies of Water on the Summit Level, and the best Communications from this Canal to the Fishing Locks at the Back of the Isle of Skye.
- III. The Means of promoting the Fisheries on the East and West Coasts.
- IV. The Causes of Emigration and the Means of preventing it.
- V. Improving the Means of Intercourse between Great Britain and the Northern Parts of Ireland, particularly as to the Bridges and Roads between Carlisle and Port Patrick, and also the Harbour of Port Patrick.

Under each of those Heads are comprehended Subjects highly deserving the Attention of Government; the more they are investigated, the more important they will appear, and the Public will become more fully convinced, that the general Interests of the British Empire are extensively connected with the several Improvements which are mentioned in Your Lordships Instructions.

Of BRIDGES and ROADS

The Obstacles which at present obstruct the Communications in the North of Scotland, are numerous and well known, not only to the Inhabitants, but to every Person who has travelled through, or even enquired into the State of the Country.

Previous to the Year 1742, the Roads were merely the Tracks of Black Cattle and Horses, intersected by numerous rapid Streams, which being frequently swoln into Torrents by heavy Rains, rendered them dangerous or impassable. The Military Roads, which were formed about this Time, having been laid out with other Views than promoting Commerce and Industry, are generally in such Directions, and so inconveniently steep, as to be nearly unfit for the Purposes of Civil Life; and in those Parts where they are tolerably accessible, or where Roads have since been formed by the Inhabitants, the Use of them is very much circumscribed from the want of Bridges over some of the principal Rivers.

⁵²⁶ HCSP 1802-3, 45, IV, 3-10, 14-7. The gap in the material taken from the source follows the section on bridges and roads. The text resumes with the section on the fisheries.

The general Connections of the Country may be stated as leading from Edinburgh to the North and North West Counties, by means of one Road through the Highlands, and by another along the East Coast and South Shore of the Murray Firth to the Town of Inverness, and from thence through Beanley and Dingwall, to Tain in Ross-shire. From Glasgow and Greenock, the Communications by Land are through Argyleshire, to the Western Parts of Inverness and Ross-shire, and to the Shores opposite the Whole of the Hebrides. There is an important Communication from Inverness Westward, across the Country to Fort Augustus and Fort William, and from Fort Augustus there are just the Vestiges remaining of what was once a Military Road to Bernera, opposite the Back of the Isle of Skye.

In considering these Lines of Roads, it appears most regular to begin on the Borders of the improved Country, and near to the Seats of Commerce and Industry. In proceeding from Edinburgh Northwards, by the East Coast and Murray Firth to Inverness, or through the central Highlands to the same Place, and from thence to Tain on the Dornoch Firth in Ross-shire, we find the Communications intercepted, and learn that Accidents frequently happen from the want of a Bridge over the River Tay at Dunkeld in Perthshire, another over the River Spey at Fochabers in Bamffshire, a third over the River Beanley in Inverness-shire, and a fourth over the River Conon near Dingwall in Ross-shire. These Rivers are large, and at present are all crossed by means of Ferry Boats.

At Dunkeld the River Tay is deep and broad, and there is Reason to expect the Foundations will be expensive, the Bed of the River at and for a great Distance above and below the Town being composed of alluvial Earth and Gravel. The best Situation for a Bridge, is a little way above the lower Ferry; at this Place there is a strait Reach of the River, and in Winter the Ice is broke by passing over a Ford nearly opposite the Mouth of the River Bran. This Situation will also connect with the improved Lines of Road which are proposed to be made on each Side of the River. It is probable that a flat Rubble Stone will be got near the Slate Quarries, which are within a short Distance of the Place. Freestone of a durable Quality is to be had near Dundee; it may be brought by Water Carriage to Perth, and from thence by Land to Dunkeld.

Under all these Circumstances the Expence would be considerable, and taking into Account the Uncertainty of the Foundations, the Amount cannot be stated at less than £15,000.

The Two Ferries, which are now at Dunkeld, belong to his Grace the Duke of Athol; he has authorized me to state, that if Government will defray One Half the Expence of a Bridge, that he will advance the other Half; that he will give up his Interest in the Ferries, if in lieu thereof a reasonable Toll be put upon the Bridge, in order to liquidate the Capital advanced by the Duke, after this has been accomplished, with a small Surplus to answer the Repairs; the Bridge ever after to remain free of Toll.

This seems a very reasonable and just Mode of defraying the Expence; the Safety and Accomodation would be so great, that no Person travelling that Road could object paying the same Toll for a safe and convenient Bridge, which at present is paid for a dangerous and inconvenient Ferry Boat, especially when there will be a certain Prospect of having a Bridge free of Toll in a few Years.

This Bridge is of the first Importance to the Central Highlands; it would accommodate a great District of that Country, and at the same Time facilitate the Communication with the North Highlands.

The River Spey is also rapid and deep, being the Drain of a great Extent of mountainous Country, where there is much Rain. It is of course a very dangerous Ferry. This Ferry is on the great Coast Road Eastward from Inverness and Fort George, through the Towns and cultivated Country in Murray and Bamffshires, from whence it passes through Frazerburgh and Peterhead to Aberdeen.

Another Branch of Road also strikes off Fochabers on the Spey, and passes by Huntley and Inverary to Aberdeen.

The Necessity of having a Bridge over the Spey at this Place became so urgent, that his Grace the Duke of Gordon began a Subscription in the adjacent Country, in order to raise a Part of the Money necessary to defray the Expence of a Bridge; his Grace set a liberal Example, and it has been followed by most of the Gentlemen in that Part of the Country. In consequence of this Exertion, a Contract has been

entered into, and some Steps have been take towards carrying this useful Work into Execution; but unless Government will grant an Aid equal to One Half the Expence, the Works must still be left unfinished, and unfit for the Purposes intended.

The Situation fixed upon for this Bridge is adjacent to the Ferry and Town of Fochabers. At this Place a Rock passes quite through the River, at about from Eight to Ten Feet below the Surface of ordinary low Water; and, as far as I could learn, it is the only Place, unless at a great Distance up the Country, where the Rock passes quite through the River. On these Accounts it was judicious to prefer it for the Situation of the Bridge, and it was fortunate this happened precisely in the Line of the present Road.

As One Half of the Expence will be raised by Subscription in the Neighbourhood, if Government will defray the other Half, I understand it is proposed, that the Bridge shall be free of Toll. The Expence cannot be stated at less than £12,000.

I have made Plans and Sections for both those Bridges. On Account of their being so nearly connected with the Seats of the two before mentioned Noblemen, I have introduced more Decorations than what are absolutely necessary for common Road Bridges. This extra Expence will not amount to much; but, whatever it is, I propose it shall be defrayed by those Noblemen.

I, last Year, produced Plans and Estimates for the Bridges over the Rivers Beanley and Conon; I have again examined the proposed Situations, and perceive that, on Account of the Uncertainty of the Foundations, and the Alteration which must be made in some Parts of the Beds of the Rivers, it will be necessary to take the Expences of each Bridge at Five instead of Four Thousand Pounds.

These Two Bridges are greatly wanted in order to facilitate the Communications with Ross-shire, Sutherland, and Caithness; they are equally so for the North West Coast of the Main Land and the Northern Parts of the Hebrides; they are the Roots from which a great Number of Branches of Roads are to proceed, which are necessary for the Improvement of the Country, and the Extension of the Fisheries.

Before entering upon the Consideration of the Roads to the North of the Line of the Caledonian Canal, it is necessary to speak of the Communications from Glasgow and Greenock, through Argyleshire to Fort William. From Glasgow there is already a Road, which passes Dumbarton up the West Side of Loch Lomond, by the upper Ends of Loch Long and Loch Fyne to Inverary. From Greenock, by crossing the Firth of the Clyde, there is a Road which passes up the East Side of Gare Loch and Loch Long, and joins the Road to Inverary at the Top of Loch Long. From Inverary there is one Road which passes the upper End of Loch Awe, and another which crosses that Loch by a Ferry at Port Sonachan, and these Roads unite at Bunawe on the Banks of Loch Etive. From Bunawe the Road is already made to Oban, and a Branch crosses Loch Etive, and passes along the South Side of the Linnhe Loch and Loch Eil to Fort William. Between Bunawe and Fort William there are Three Ferries, over Arms of the Sea, which running many Miles into the Land, cannot well be avoided; in other respects the Communication from Glasgow and Greenock, thus far, is tolerably good. The Highland Society, in the excellent Report to which I shall frequently have Occasion to refer, and which may be found in the Appendix, have pointed out a new Line of Road from the North Side of the Frith of Clyde, nearly opposite to Greenock, to be carried to the Bay of Strachan upon Loch Fyne; this would be a very direct Line from Greenock to Inverary, but it would be subject to Two Ferries, and it seems doubtful whether this Inconvenience would not overbalance the additional Distance round the upper End of the Lochs; at least, as there is already a very good Communication by this Road, it seems most prudent to attend to the other more necessary Portions of Road before this is undertaken.

From Fort William it will be very advisable to improve and extend the Road which passes along the North Side of the Portion of Loch Eil, which turns from Fort William to the West, and to carry it from thence across the upper End of Loch Shiel, through Arrasaig to Morer, as described in the Report of the Highland Society. This would open a very direct Communication from the Clyde to the Fishing Lochs at the Back of Skye, to Skye itself, and to the Islands of Egg, Rum, Muck, Barra, and South Uist. This would prove of great Importance to the Fisheries, on Account of facilitating Intelligence, which is one of the most necessary Steps to promote the Success of this Business.

In the Year 1796, Mr. Brown of Elgin made a Survey and Estimate of this Road from Fort William to Morer, and stated the Expence at £6,456, since that Time, I understand that about £1,500 has been laid out upon it, so that £4,000, and perhaps somewhat more, is still required to render it perfect.

With regard to the Improvements of the Roads which lead from Fort William, East, to Inverness, there is one Principle, which in future ought never to be lost Sight of, which is, to make the new Roads as near to the Banks of the Rivers and Lochs as is practicable at a reasonable Expence. If the Caledonian Canal is executed, it is more than probable that many Improvements will be pointed out in the Course of carrying on that great Work, and it would be imprudent to decide rashly in a Matter which is so much connected with this National Object.

We now come to consider the Communications of the Countries which lie to the North and West of the Track of the Caledonian Canal. From this Valley, which runs from Fort William to Inverness, it is of great Importance that there should be Lines of Communication with the Isle of Skye, and the Fishing Lochs which lye at the Back of it, these Lines of Road are not only necessary for promoting the Fisheries, but are urgently called for by the Situation of the interior Parts of the Country, where there are many fertile Vallies which hitherto have remained nearly inaccessible; it is incalculable the Loss which the Public has sustained, and are about to suffer, from the want of Roads in this Country.

From the Bridges of Beanley and Conon Lines of Road, from the same important Causes, are wanted in several Directions to the West Coast, and through the Whole of the Counties of Ross-shire, Sutherland, and Caithness. The Outlines of those Roads are well described in the Report of the Highland Society; and although there is a Diversity of Opinion as to the comparative Importance of some of them, as well as of those to Skye, yet it is evident that they are all necessary for the Welfare of the Country.

The Empire at large being deeply interested in those Improvements, as it regards promoting the Fisheries, and encreasing the Revenue and Population of the Kingdom, justifies Government in granting Aid towards making Roads and Bridges in a Country which must otherwise remain, perhaps for Ages to come, thus imperfectly connected. Yet as the Landowners in those extensive Districts through which the Roads would pass, and indeed the Whole of the adjoining Districts of Country, would enjoy improved Cultivation and Pasturage, encreased Incomes, and all the Blessings which are to be derived from a Facility of Intercourse, it is certainly just that they should contribute a Share with Government in the Expence of acquiring those Advantages. They might be enabled to do this, without Inconvenience to the present Possessors, by being empowered by an Act of Parliament to sell Land, or borrow Money upon the Land, to the Amount of their Proportion of the Expence to be incurred by the Roads and Bridges. This is reasonable, because the Money so raised would be applied to improve the Remainder of the entailed Estate, which would be enhanced in Value, though somewhat diminished in Extent.

The Expence of the Lines of Road which were surveyed and estimated by Mr. Brown, comprehending the Whole of the before-mentioned Counties, and nearly 1000 Miles in Length, did not amount to £150,000. If therefore we admit an equal Quantity of Lines of Road to be undertaken and completed in the Course of Three Years, would require an Annual Supply of £50,000, and supposing this to be raised in equal Moieties by Government and the Landowners, it would be £25,000 each; but as it is not likely the Whole could be brought so immediately into Operation, it may with more Probability be expected that Six Years would be taken up in executing all the Lines, which would reduce the Annual Supply to £25,000, or £12,500 from each Party. But this is exclusive of the Four great Bridges, the total Expence of which is reckoned at £37,000; if they were undertaken by proper Persons they might be executed in Three Years, which would require an Annual Supply of £12,333 6s. 8d.; and if Government was to grant One Half, would be ----- 6,166 13 4 Annually.

To which add the former - - - - 12,500 0 0
£18,666 13 4

Speaking therefore generally, if Government was disposed to encourage these Plans of Improvement, and would agree to advance £20,000 in each of the first Three Years, and £12,000 in each of the last Three Years, it would then remain with the Landowners of the Districts of Country through which

the Lines were to be carried, to come forward with their Surveys and Estimates, and Subscriptions to One Half the Amount of the Expence, proving at the same Time, to the Satisfaction of Government, that the proposed Lines would be of public as well as of private Utility. It would be necessary also to provide that the Works should be substantially executed, and that the Landowners or others interested, should always lay out a certain Sum before Government advanced an equal Moiety.

Means should be provided for the Maintenance of the Roads and Bridges after they have been completed, and for this Purpose there should either be a Fund reserved, or a small Toll laid on, to go in Aid of the Statute Labour of the Country. A very important Consideration also, is the erecting and maintaining proper Inns upon the Roads.

Several of the Houses which were built by Government upon the Military Roads, are striking Instances of the Necessity there is of giving the People who are to keep the Inns, something else to depend upon besides what arises from supplying Travellers; there should be some Land attached to the House, at a Rent to be settled by Reference. I am not prepared to say what the Quantity should be, or of what particular Description; it is at present sufficient to point out the Principle.

Upon the Whole, as far as regards the Bridges and Roads, I can have no Hesitation in stating, that they are of the greatest Moment for promoting the Improvement of the Country, and for perfecting the Connections with the Fishing Lochs and the Hebrides; and I shall hereafter endeavor to explain my Reasons for thinking, that some Share of the Emigrations is to be attributed to the Want of proper Communications.

THE FISHERIES

IN what regards the Fisheries, I beg leave to quote a Passage from my last Year's Report. "I believe it is generally admitted, that in the Improvement of a Country, the Interference of Government should extend only to the removing Obstacles, and affording Conveniences, which are of a Nature not easily to be surmounted by Individuals, or any Body of Men who can be brought to act together; and where it is evident that by removing those Obstacles, and affording these Conveniences, the Exertions of Individuals will be greatly facilitated, so as to promote the general Good of the Empire."

The Objects connected with the Fisheries, which seem to come under the foregoing Description, are 1st, The Want of a ready Communication by Water between the East and West Coasts, and. The Want of Communications by Land from the Low Countries and the East Coast, with the Shores and Fishing Lochs of the West Coast; 3dly. The Inconveniences arising from the Operation of the Salt Laws; and 4thly. The want of a Harbour in Caithness.

The First and Second of those Objects have already been fully discussed under the Heads of the Caledonian Canal, and the proposed Bridges and Roads. The Third has been so often and thoroughly investigated, that I shall only in this place take the Liberty of mentioning, that all the Information I have received, tends to confirm the Justice of the Complaints against the Laws now in force which regard Salt.

As to the Fourth Object, The Harbour of Wick in Caithness, which I examined, estimated, and reported upon last Year, will remove the just Complaints of want of Protection on the N.E. Coast.

THE EMIGRATIONS

THAT Emigrations have already taken place from various Parts of the Highlands, is a Fact upon which there does not remain room to doubt; from the best Information I have been able to procure, about Three Thousand Persons went away in the Course of last Year, and, if I am rightly informed, Three Times that Number are preparing to leave the Country in the present Year.

I shall not encroach upon Your Lordships' Time by investigating all the remote or unimportant collateral Causes of Emigration, but shall proceed to that which I consider to be the most powerful in its present Operation; and that is, converting large Districts of the Country into extensive Sheepwalks. This

not only requires much fewer People to manage the same Track of Country, but in general an entirely new People, who have been accustomed to this Mode of Life, are brought from the Southern Parts of Scotland.

The Difference of Rents to the Landlords between Sheep and Black Cattle is, I understand, at least Three to One, and yet on Account of the extraordinary Rise in the Prices of Sheep and Wool, the Sheep Farmers have of late Years been acquiring Wealth. As the introducing Sheep Farms over Countries heretofore stocked with Black Cattle, creates an extensive Demand for the young Sheep from the established Farms, it is possible that the high Prices may continue until a considerable Portion of the Country is fully stocked; after this takes place, the Quantities of Sheep produced will bear a very great Proportion to the Demand, and then it is possible the Prices may fall below the average Value; in this Case it is probable the Farms will be subdivided, and a Proportion of Black Cattle and Cultivation be introduced in the lower Grounds in the Vallies, while the upper Parts of the Hills continue to be pastured with Sheep. This I consider as the most improved State of Highland Farming, and is consistent with a very considerable Population; a beautiful Instance of this is to be seen along the North Side of Loch Tay. But improved Communications, by means of Roads and Bridges, are necessary for this State of Society, and for this Reason I have said, that if these Conveniences had been sooner introduced into the Highlands, it is possible this Emigration might not have taken place, at least to the present Extent.

The very high Price of Black Cattle has also facilitated the Means of Emigration, as it has furnished the old Farmers with a Portion of Capital which enables them to transport their Families beyond the Atlantic.

In some few Cases a greater Population than the Land can support in any Shape, has been the Cause of Emigrations; such was the Island of Tiree.

Some have, no doubt, been deluded by Accounts sent back from others gone before them; and many deceived by artful Persons, who hesitate not to sacrifice these poor ignorant People to selfish Ends.

A very principal Reason must also be, that the People, when turned out of their Black Cattle Farms to make way for the Sheep Farmers, see no Mode of Employment whereby they can earn a Subsistence in their own Country, and sooner than seek it in the Low Lands of Scotland, or in England, they will believe what is told them may be done in the Farming Line in America.

What I have here mentioned appear to me to be the immediate Causes of the present Emigrations from the North Western Parts of Scotland. To point out the Means of preventing Emigrations in future, is a Part of my Duty, upon which I enter with no small Degree of Hesitation. As the Evil at present seems to arise chiefly from the Conduct of Landowners, in changing the Economy of their Estates, it may be questioned whether Government can with Justice interfere, or whether any essential Benefits are likely to arise from this Interference.

In one point of View it may be stated, that, taking the mountainous Parts of Scotland as a District of the British Empire, it is the Interest of the Empire that this District be made to produce as much human Food as it is capable of doing at the least possible Expence; that this may be done by stocking it chiefly with Sheep; that it is the Interest of the Empire the Food so produced, should not be consumed by Persons residing amongst the Mountains totally unemployed, but rather in some other Parts of the Country, where their Labour can be made productive either in the Business of Agriculture, Fisheries, or Manufactures; and that by suffering every Person to pursue what appears to them to be their own Interest, that although some temporary Inconveniences may arise, yet, upon the Whole, that Matters will in the End adjust themselves into the Forms most suitable for the Place.

In another point of View it may be stated, that it is a great Hardship, if not a great Injustice, that the Inhabitants of an extensive District should all at once be driven from their native Country, to make way for Sheep Farming, which is likely to be carried to an imprudent Extent; that, in a few Years, this Excess will be evident; that before it is discovered, the Country will be depopulated, and that Race of People which has of late Years maintained so honourable a Share in the Operations of our Armies and Navies will then be no more; that in a Case where such a numerous Body of the People are deeply interested, it is the Duty of

Government to consider it as an extraordinary Case, and one of those Occasions which justifies them in departing a little from the Maxims of general Policy; that for this Purpose Regulations should be made to prevent Landowners from lessening the Population upon their Estates below a given Proportion, and that some Regulation of this Sort would in the End be in favour of the Landowners, as it would preserve the Population best suited to the most improved Mode of Highland Farming, such as is practised at Breadalbane, and to the Establishment of Fishing Villages, on the Principle laid down and practised so successfully by Mr. Hugh Stevenson of Oban, at Arnisdale on Loch Hourn.

In whatever Light the foregoing Statements may be viewed, there is another on which there can, I think, be no Difference of Opinion. This is, that if there are any public Works to be executed, which, when completed, will prove generally beneficial to the Country, it is advisable these Works should be undertaken at the present Time. This would furnish Employment for the industrious and valuable Part of the People in their own Country, they would by this Means be accustomed to Labour, they would acquire some Capital, and the Foundations would be laid for future Employments. If, as I have been credibly informed, the Inhabitants are strongly attached to their native Country, they would greedily embrace this Opportunity of being enabled to remain in it, with the Prospect of bettering their Condition, because, before the Works were completed, it must be evident to every one that the whole Face of the Country would be changed.

The Caledonian Canal, and the Bridges and Roads before mentioned, are of the Description here alluded to, they will not only furnish present Employment, but promise to accomplish all the leading Objects which can reasonably be looked forward to for the Improvement and future Welfare of the Country, whether we regard its Agriculture, Fisheries, or Manufactures.

Appendix Two

REPORT of a Sub-Committee of the Directors of the Highland Society of Scotland, on Consideration of a Letter from Mr. Telford, Engineer, to Henry Mackenzie, Esquire, one of the Directors of the Society; made to, and approved of, by the General Committee of Directors of the said Society, 10th December, 1802: - The Right Honourable Lord Macdonald, one of the Vice Presidents in Office, in the Chair.⁵²⁷

THE Committee have fully considered Mr. Telford's Questions, addressed to Mr. Mackenzie, one of the Society's Directors.

In answer to the First, they are persuaded that even the Lines of Communication by means of Military Roads in some Parts of the Highlands, have been productive of Benefit to the Country, though the Motives which gave Rise to their Formation, having no Relation to Objects of Commerce and Industry, the Advantages derived from them are very Imperfect. The Committee accordingly have no Hesitation in declaring it to be their fixed Opinion, that the Want of farther Roads and Communications in the Highlands, has hitherto proved the greatest Obstacle to the Introduction of useful Industry there, and that every Attempt for that Purpose must fail until regular and easy Communication is afforded from one Part of the Country to another, and more especially from the remote Points where there is the best Field for useful Exertion to the present Seats of Capital and Industry. With regard to what Lines would tend most effectually to open the Country, and promote the Public Good, the Committee humbly report their Opinion as follows:

The Highlands, as to this Question, may be divided into Three Districts: - The First, comprehending the West Coasts of Argyle and Invernessshire, as connected with each other; - the Second, including the County of Ross and a Part of the County of Inverness; - and the Third or Northern District, comprising the Shires of Sutherland and Caithness.

In the First of these Districts, the utmost Benefit would arise from drawing a direct Line of Communication from the West Side of the Firth of Clyde nearly opposite to Greenock, to the Bay of Strachur upon Loch Fyne, from whence there is already an excellent and well conducted Road to Fort William. From this Point the Road may be easily continued by Loch Eil Side to Loch na Gaul, through Arisaig into Morer. Such a Communication would tend very greatly to the Success of the Fisheries in the Islands of Egg, Rum, Cana, Muck, Barra, and South Uist, all of which possess numerous Lochs and Fishing Banks in and around them. The greatest Advantages would arise from approximating these various Fisheries and extensive Coasts to the Firth of Clyde, where the Fishing Capital is at present almost exclusively resident. It is Capital in those Parts, than that Difficulty of Approach, amounting almost to Inaccessibility, which renders the Communication of Intelligence always slow and even often precarious.

In the Northern District the Lines of Communication would, from the Nature of the Thing, be drawn to a different Point. A Central Point at the South of that District, is found at or near Invershin, to which Place the Firth of Dornoch is navigable, and where a Bridge can easily be thrown over, and from whence a direct and short Communication could be made to Dingwall and Inverness. From this Point several advantageous Lines of Road might be made, one stretching by the Banks of Loch Shin through Part of Assint to Kylescow, another by the Kirk of Lairg to the Head of Loch Loxford, and a Third from the Kirk of Lairg by the West of Lochnaver to Tongue. Another Road again would connect together the Western and Eastern Extremities of this the Northern Coast of Scotland, proceeding from Loch Eriboll (at which Place there is one of the finest Harbours in the Kingdom) by Tongue, Farr, and Thurso, to Honna on

⁵²⁷ HCSP 1802-3, 45, IV, 22-5. This excerpt is taken from a report that was attached to Telford's report (quoted in the previous appendix) as an appendix.

the East. From this Point, where there is a Ferry to Orkney, the Road would return to Wick, and from thence along the East Coasts of Sutherland and Caithness, crossing the River Fleet by a Bridge, to avoid the little Ferry, 'till it terminated at Invershin. Such Lines as the above would open the Whole of these Countries to all the trading Capital of Inverness and the East Coast of Scotland, as well as by the way of Fort William to that of the Clyde; and it is well known, that all the way from the Vicinity of Kylescow round to Wick, the Fishing Grounds are abundant and excellent.

As to the Middle Division, the Committee would humbly suggest the Utility of certain Lines of Intersection from East to West. One of these ought to be from the great Military Road between Fort William and Inverness in a Western Direction, such as may best afford an easy Intercourse between both these Places and the Islands of Skye, Harries, and North Uist, as well as Loch Hourn, Loch Duich, and the other valuable Fishing Lochs in that Vicinity. A Second will lead from Contin (which has already a good Road to Dingwall) by the South Side of Loch Garve, and the Head of Loch Lickart to Achnashine, and from thence in one Branch to Loch Carron, and in another to Pollew. From one or other of these Branches, a Road of important Benefit might be drawn to Loch Torridon, a Third Road will extend from the Port of Ullapool in Loch Broom to Invershin, at the Head of the Firth of Dornock.

When the Lines of Road now mentioned are completed, the Course of Post will become rapid and regular. From the Neighbourhood of Skye to Greenock, the Mail would be conveyed in Three Days, while from Invershin to Edinburgh by Aberdeen, or to Greenock by Inverness and Fort William, it would be conveyed at farthest in Four, and thus the most remote Points of the Highlands would be brought within Five Days Course of Post, at the utmost, of Edinburgh and the Firth of Clyde. It may suffice for contrasting such a Situation of the Highlands with that in which they are now placed, in respect to Communication of Intelligence, to relate what happened this very Year. When, after the Return of the Clyde Vessels from a vain Search for Herrings in the Northern Lochs, some considerable Shoals have appeared, Intelligence was dispatched to Greenock, but owing to the indirect Course of the Post, and the Difficulties of some Parts of the circuitous Journey, several Weeks elapsed before any Advantage could be taken of the Information.

The Lines that have been suggested, or nearly such Lines, are, in the Opinion of the Committee, the Radical Lines of Road, as they may be termed, from which in Process of Time various Ramifications will be formed, when the Benefits of these begin to be perceptibly diffused.

From Consideration of the Connection of the Fifth Question with what precedes, the Committee in so far depart from Mr. Telford's Arrangement, as to put next in order the Answer to it. They are fully persuaded of the Reality of those Views, both of public and individual Benefit, which the Statement of the Question includes; and they think it highly reasonable, that the Landowners should, according to their respective Abilities, unite with Government in executing these Plans, by contributing a certain proportional Part of the Expence, varying with the different Circumstances of their several Situations. But the Committee humbly report their Opinion, that it would be advisable for the Lords of the Treasury, after weighing such Suggestions as have been made, and consulting their Surveyor, to select the Lines of Road which more immediately, and in a national View, invited the Public Aid; and then, after the Selection is made known, it will be the Duty as well as the Interest of Landowners, to come forward with their Proposals, stating, with regard to each separately, those local Considerations which seem to fix the Proportion of Public Aid that may fairly be solicited.

Appendix Three

Second Report from the Committee on the Survey of the Coasts, &c. of Scotland: Roads and Bridges⁵²⁸

Second Report

The COMMITTEE, to whom the “Survey and Report of the Coasts and Central Highlands of *Scotland*, made by the Command of the Right Honourable the Lords Commissioners of His Majesty’s Treasury, in the Autumn of 1802,” is referred; and who were empowered to report their Observations thereupon, from Time to Time, to the House; -

HAVING considered, in their former Report, the Nature and Extent of the Emigrations from the Western and Northern Highlands of Scotland, and being strongly impressed with the Necessity of affording immediate Employment to the Inhabitants of those Islands, proceeded, in the next Place, to the Consideration of that Part of Mr. Telford’s Survey, which relates to forming an Inland Navigation between Inverness and Fort William, with the View of improving the Fisheries, and advancing the general Interests of the Kingdom, in War as well as in Peace. But, as Your Committee, in order to obtain a more accurate Knowledge of this Subject, have thought it material to order several Persons before them from Scotland, and as some Time must elapse before those Persons can arrive, Your Committee proceeded, without further Delay, to consider with Attention the Part of the Survey relating to Roads and Bridges, which they are of Opinion are of the highest Importance, for the same salutary Purposes which the Inland Navigation is designed to promote; especially such of them as will open Communications with the Fishing Lochs and Stations on the different Coasts, through a District of Country at present nearly inaccessible, and which forms a Barrier against all probable Improvement.

Your Committee are sensible, that Bridges cannot be built, or Lines of Road formed through this mountainous and difficult Country, without the Aid of Public Liberality and Encouragement: The first and original Expenditure of such Works, it is in vain to expect that the Means of the Proprietors of Land can altogether defray; but it seems just that the Land Owners should assist the Public to the Extent of their Ability; and for that Purpose it may be expedient to afford every Facility for enabling them to raise such Sums of Money as may be necessary, as they will share the general Benefit which must result from diffusing Habits of Industry among the People, and opening a free and ready Access to the more cultivated Part of the Country.

It therefore appears to Your Committee to be advisable, That Provision should be made, for the present Year, by Parliament, for defraying One-Half of the estimated Expenditure of the Roads and Bridges, which may appear most immediately necessary:

And, That the Remainder of the Expenditure of making such Roads and Bridges should be defrayed by the Proprietors of Land, or other Persons who may be benefited thereby; and that Provision should be made for keeping such Roads and Bridges in proper Repair:

And, That, in order to provide for the proper Expenditure of the Public Money, and in order that the said Roads and Bridges may be carried on with Prudence and Economy, it will be proper that Commissioners should be appointed to superintend and direct the Execution of the same:

And, That no Aid of any Public Money should be given for such Purposes, unless a Survey and Estimate of the Expenditure, verified upon Oath, shall have been laid before the Commissioners, and approved by them:

⁵²⁸ HCSP 1802-3, 94, IV, 49-51. This excerpt encompasses the entire report.

And, That it may be expedient, by a Legislative Provision, to afford to the Owners of entailed Property, a Facility of raising, either by Charge upon their Estates, or by the Sale or Feu of Part of them, such Sums of Money as may be necessary to enable them to furnish their Proportion of the Expence to be incurred by the making or repairing Roads or Bridges.

Appendix Four

Annexed Paper No. 15

**NOTICES
of the
IMPROVED STATE of the HIGHLANDS of SCOTLAND,
since the
Commencement of the Public Works executed under the direction of
THE PARLIAMENTARY COMMISSIONERS⁵²⁹**

IN March 1799, Col. Anstruther, Superintendent of the Military Roads in the Highlands of Scotland, in a Memorial to the Lords of the Treasury relative to these Roads, states that “they passed through the wildest and most mountainous parts of the Highlands of Scotland, where the people were poor and the country thinly inhabited, and totally unable to keep in repair either the Roads or Bridges by statute labour, or any other means.” The district to which this observation referred, was situated more immediately in contact with the low countries, the Military Roads extending no further northwards than the Murray Firth and the Fortresses along the Caledonian Glen; and the wide and extensive country beyond, comprising the Counties of Ross, Cromarty, Sutherland, and Caithness, with the greater part of Inverness-shire and the whole of the Western Islands, intersected as it was by the arms of the sea, dangerous ferries, deep and rapid rivers, and innumerable lesser streams, subject to frequent and sudden floods, without the accomodation of bridges, piers or other facilities, was, as may be conceived, in a much worse condition. The internal communication was attended with the utmost difficulty and danger, and any considerable intercourse with the low countries was rendered almost impracticable; which was, no doubt, the principal cause that the Highlands, thus insulated, remained in their unimproved condition, while the Southern parts of the kingdom were in all directions making rapid advances in every species of industry and civilization; and to such a degree did the want of safe and easy intercourse between the Northern Counties affect even the ordinary administration of Justice, that until of late years the Counties of Sutherland and Caithness were not required to return jurors to the Northern Circuits at Inverness.

Such may, in a few words, be described as the state of the Highlands previous to the year 1803, when the Parliamentary Commissioners commenced their operations.

Since that period, the progress of these Works has gradually laid open the most inaccessible parts of the country; and the Commissioners, by combining the efforts of all the Counties in the prosecution of one great general measure of improvement, have succeeded in effecting a change in the state of the Highlands, perhaps unparalleled in the same space of time in the history of any country.

Before the commencement of the present Century, no public Coach, or other regular vehicle of conveyance, existed in the Highlands. In the year 1800, it was attempted to establish coaches between *Inverness* and *Perth*, and between *Inverness* and *Aberdeen*; but, from the state of the roads at that period, and the little intercourse which then took place, it was found necessary to discontinue them after a short trial; and it was not until 1806 and 1811 that Coaches were regularly established in these directions, being the first that ran on Roads in the Highlands.

Since the completion of the Parliamentary Works, several others have successively commenced; and during the Summer of last year no less than seven different Stage Coaches passed daily to and from *Inverness*, making forty-four coaches arriving at, and the same number departing from that town in the

⁵²⁹ *HCSP* 1828, 175, IX, 335-42. As can be seen from the title above, this document (reproduced in full) originally appeared as an appendix to the 1828 (Fourteenth) Report of the Highland Roads and Bridges Commission.

course of every week. Three of these, including the Mail, run between *Inverness* and *Aberdeen*; one between *Inverness* and *Perth*, along the Highland Road; two between *Inverness* and *Dingwall*, *Invergordon*, *Cromarty* and *Tain*; and the Mail Coach along the Northern Coast Road from *Inverness* to *Wick* and *Thurso*, extending from the Capital of the Empire, in one direct line, above 800 miles. This latter coach was not established until 1819, and much doubt was entertained at that time of its success. Indeed, some assistance was at first required from the Counties to support it. This was, however, soon afterwards withdrawn, and the encouragement it has since met with, has enabled the contractors to increase its original speed to eight miles an hour, and latterly to employ four horses for the first fifty miles north of *Inverness*, notwithstanding the opposition of the two other coaches above mentioned. There has also been established, within the last two years, a Stage Coach from *Inverary* to *Oban* in Argyleshire, over a considerable part of the improved Military line in that district of the Highlands: and when it is stated that, in connection with these coaches, more than 13,000 passengers went last year through the *Crinan* Canal, that three Steam-boats plied regularly for the conveyance of passengers along the *Caledonian* Canal, and five others from *Glasgow*, along the west coast, and to the different Islands of *Skye*, *Mull*, *Islay*, &c. as well as one occasionally from *Leith*, along the east coast, to *Inverness*, some idea may be formed of the increased intercourse that has taken place between the remotest parts of the Highlands and the Southern counties, within the last few years.

It deserves notice also, that, along all the Roads constructed by the Commissioners (extending in length upwards of 900 miles), excepting in one instance, suitable Inns, affording accommodation superior to what could be expected considering their recent introduction, have been erected or fitted up at regular stages; while formerly, even had other facilities existed, the total want of accommodation for Travellers would of itself have presented a serious obstacle to all internal intercourse.

Post-chaises and other modes of travelling have, during the same period, increased proportionally; and instead of five post-chaises, which was the number kept in the town of *Inverness* about the year 1803, there are now upwards of a dozen, besides two establishments for the hire of gigs and riding horses, all of which find sufficient employment. Post-chaises and horses have also been kept, for the last two or three years, at all the Inns on the Great Highland Road, and also at *Dingwall* and *Tain*, and at *Inverary*.

The number of private Carriages in *Inverness* and its vicinity has likewise increased remarkably during the last twenty-five years, and no less than one hundred and sixty coaches and gigs may now be seen attending the *Inverness* yearly Races; whereas, at the commencement of that period the whole extent of the Highlands could scarcely produce a dozen; and at no very distant date previously, a four-wheeled carriage was an object of wonder and veneration to the inhabitants. In 1715, the first coach or chariot seen in *Inverness*, is said to have been brought by the Earl of Seaforth. In 1760, the first post-chaise was brought to *Inverness*, and was for a considerable time the only four-wheeled carriage in the district. There are at present four manufactories for coaches in *Inverness*.

I may state also, that on all the principal Roads which have been constructed in the Highlands, regular Carriers, for the conveyance of goods, now pass at all seasons of the year from *Inverness* to *Tain*, *Skye*, *Loch-Carron*, *Loch-Alsh*, *Elgin*, *Nairn*, *Campbelltown*, *Aviemore*, &c.; and others from *Glasgow* to *Balachutish*, &c. in the western district.

Perhaps in no instance has the beneficial influence of the Parliamentary Works been more perceptible in its result, than in the speedy and certain conveyance of Intelligence to the remotest quarters of the Highlands. Through their whole extent, this Department is now conducted with as much regularity and dispatch as in any part of the kingdom; and when I state that the following Extract from a Letter, which I have received from a Gentlemen in *the Island of Skye*, is equally applicable to the other Districts in which Roads have been constructed, it will be unnecessary for me to add any thing further on this part of the subject. "The communication of our letters and newspapers by the Mail, is very different now to what it was about twenty years ago. Previous to the completion of the roads, we had first only one, and afterwards two Mails a week; and these were only carried on runners' backs. There was only one runner from *Inverness* to *Janetown*; and there being no piers or landing places, or indeed regular ferry-boats, the detention at the ferries must have been occasionally very considerable. We are now very differently situated. We have a regular communication Three times a week with *Dingwall*, with a change of horses at different stations to the Ferry of *Kyle-haken*; and, as an instance of the facility of communication, I receive

a London *Sunday* newspaper regularly here (*Portree*) every *Thursday* morning; a circumstance which must appear to a stranger almost incredible, and which of course is solely attributable to the Roads made under the authority of the Parliamentary Commissioners.”

Not less remarkable, though more indirect, has been the Impulse given to Agricultural improvement throughout the Highlands. The construction of the Parliamentary Roads having in the first instance opened the means of access through the districts generally, and also the intercourse with the low countries, a desire was naturally excited among the Proprietors and Tenantry, more or less remotely situated, to connect themselves immediately with the general lines of communication, and thus avail themselves of the facilities which they afforded for improvements in Agriculture. Hence, numerous lines of District Road have been constructed during the progress and since the completion of the Parliamentary Works, in every part of the Highlands, by means of Statute labour; and the rapid and important increase in the extent of cultivation, which has uniformly been the consequence, proves in a striking degree the favourable effects resulting from the Works of the Commissioners. Their roads being executed without reference to any individual interest, they were made in lines most calculated for the general good, and necessarily pointed out the proper direction of those subsidiary branches which were required to be made by the statute labour and out of private funds. The public aid afforded for the Parliamentary works, kept the local funds, in great measure, entire for such separate purposes; and the knowledge gained from observing the works of the Commissioners saved much expence, and furnished the assistance of skilful engineers and experienced workmen.

Upon this subject I have received the following communication from good authority:

“In illustration of the spirit which these public Works have excited, and the incalculable benefits which they have produced already, and may produce more extensively hereafter, it may be sufficient to refer to the recent Act for regulating the Statute Labour of the County of *Sutherland*, by which the services in kind were converted into a money payment. The County having been divided by this Act into four Districts, in the first of them, the *Dornoch* District, 19 miles of new Road have been made with requisite bridges, by the joint means of composition for Statute Labour and contribution from Lord Stafford the principal proprietor; in the second, or *Sutherland* District, 75 miles of Road have been made by the like means, besides a line of 25 miles from *Tongue* down *Strathnahaver* to *Altnaharrow*, and a direct line of 37 miles from *Helmsdale* on the east coast, to *Bighouse* on the north coast, both of which have been effected by Statute Labour funds exclusively; in the third, or *Reay* District, there is now constructing a Road of 34 miles from *Altnaharrow* to *Durness*; and in the fourth, or *Assynt* District, several Roads and Bridges also have been constructed, and one line of 44 miles in length from the east coast up *Strath-Orhil* to *Loch-Inver* on the west coast, intersecting this portion of the Island at right angles to the *Helmsdale* Road; this important line has been made partly by the Statute Labour Funds, partly at Lord Stafford’s expence, and four miles of it entirely by the late Lord Ashburton.”

“One immediate result of making these Roads has been the substitution of Carts instead of Ponies for the commercial intercourse of the country; and the saving in point of time, and labour and expence in this respect is beyond all calculation, giving a new impulse to the improvement of the country. The people are extending their smaller roads in all directions for their carts to bring sea-weed from the shore, or their fuel from the peat mosses; and activity, energy and industry have taken place of their former indolence, sloth and idleness; raising every where more comfortable and better-built cottages, with the addition of gardens, an accommodation and source of supply to such heretofore unknown, but now getting into very general use.”

With regard to the state of Husbandry, the following Extract from the Letter before mentioned will suffice, as applying with equal, and in many cases with greater, force to all parts of the Highlands: - “With the exception of a few Carts, which were in the possession of a very few individual principal tenants, paying a rent of from £.200 to £.700 a year, there were none to be found in the island of *Skye*. There are now numerous Carts in every quarter; and their introduction has in like manner been the means of introducing other useful implements, such as the Plough and Iron-teethed Harrows; neither of which were much used, excepting by the principal tenants, not many years ago. These improvements have, without doubt, been caused solely by the Roads made under the authority of the Parliamentary Commissioners, as without Roads there could of course be no Carts; and although it may be true that, by having Roads made

on different farms, certain advantages might have been derived, still, as these Roads would be merely local, no great general good could be derived from them, as they could not possibly open up the communication from one place to another.”

At the commencement of the present Century, from the difficulty of conveyance for exportation, Cultivation was almost entirely confined to narrow strips of land situated along the Sea coast, and in the immediate neighbourhood of the few Seaport towns; and even here, was not brought to that state of perfection, which, since the introduction of implements of a less defective description than those formerly used, it has of late years attained. As an instance of the improvement that has taken place in *Ross-shire*, now the most beautiful and highly cultivated county in the Highlands, I may mention, that there is at present in the service of *Major Gilchrist* of Ospisdale, in Sutherland, as farm manager, the individual who first introduced the Ploughing of land into regular ridges, and the division of fields into any thing like systematic arrangement in that County; the fields being formerly detached pieces of land, ploughed irregularly, as the ground with the least labour suited. The carts generally used were of the poorest description, with a kind of tumbler or solid wheel, and wicker conical baskets; little or no lime was used for agricultural purposes. “I succeeded to a farm in this country about thirty years ago (says *Major Gilchrist*), when the working strength consisted of sixteen oxen and twenty-four small horses called garrons; this farm is now laboured by three pair of horses.”

The total amount of wheat then raised in the County was not equal to what is now produced on many single Farms. It was not until 1813 that the first barley mill, north of the Cromarty Firth, was erected, and in 1821 the first flour mill (at Drummond on the estate of Fowles) by the same individual. To such an extent, however, has cultivation of late years been carried, that the growth of wheat alone is now estimated at 20,000 quarters annually, and the exportation of grain to London, Leith, Liverpool, &c. during the last year, amounted to upwards of 10,000 quarters; besides the supply of the extensive and popular pastoral districts of the County, and the towns of *Dingwall*, *Tain*, *Inverness*, &c. to which places, I am credibly informed, upwards of 10,000 bolls of flour are now annually sent for the consumption of the inhabitants. Among other exports may likewise be mentioned, the produce of various extensive whisky distilleries situated in different parts of the County, and a considerable quantity of salted pork, bacon, &c. from the ports of *Cromarty* and *Invergordon*. I understand, that in the year 1819 the sum estimated to have been expended in the purchase of the latter commodity amounted to about 30,000*l*. Indeed, a marked improvement in domestic animals of every description has taken place in the northern Counties since the improved communication with the south. I need hardly allude to the introduction of Cheviot Sheep, to the pains taken in improving the breed of Cattle by the importation of the most improved sorts from the West Highlands, and of Cows from Ayrshire. Considerable attention has been recently paid to the breed of Horses, both for the purposes of agriculture and draught, and in some instances those of the finest description have been successfully reared. Nor has the breed of Pigs been neglected, several valuable species, both pure and crosses, having been introduced. In short, a general spirit of approximating these Counties, in as far as the soil and climate will permit, to the more advanced Counties in the south, seems every where to prevail.

The improvements in many parts of *Inverness-shire*, have been scarcely upon a less extensive scale than in the County of *Ross*, although the field for agricultural operations in that County is naturally more limited.

In the County of *Sutherland*, the objects of the Commissioners have been promoted in an extraordinary degree, by the liberal exertions of the *Marquess of Stafford*, and other heritors, who have effected a complete revolution in the state of that extensive district of the Highlands. Agriculture is there conducted on the most approved plans, and farm buildings, and other establishments of husbandry, have been erected on a scale equally extensive and complete as in the most improved parts of the kingdom. This is the more remarkable, as not twenty years ago nothing of the kind existed; and until that period, the great body of the inhabitants were confined to the upper parts of the country, and had undergone little change from their primitive and uncultivated habits, living in huts of the most wretched description, and strangers to every species of industry or comfort. Latterly, however, crofts or small portions of ground were gradually lotted out for them near the coast, in such positions as were best calculated to employ their labour with advantage to themselves and to the country; and every encouragement was given for the improvement

of the lands, and the erection of comfortable and suitable cottages; while the upper parts were converted into extensive farms for the rearing of Cattle and Sheep, to which they are naturally adapted, and in which way only they can prove valuable to the proprietors of to the community. That the first impulse to these important changes has been given by the operations of the Commissioners, is no more than is uniformly acknowledged in the statements of those individuals, under whose directions the improvements have been conducted.

In confirmation of these remarks, I have received a Letter from a Gentleman, residing in *Sutherland*, from which the following is an Extract: - "When I came to the Highlands in 1809, the whole of *Sutherland* and *Caithness* was nearly destitute of Roads. This county imported corn and meal in return for the small value of Highland kyloes (cattle), which formed its almost sole export. The people lay scattered in inaccessible straths and spots among the mountains, where they lived in family with their pigs and kyloes, in turf cabins of the most miserable description; spoke only Gaelic; and spent the whole of their time in indolence and sloth. Thus they had gone on from father to son, with little change except what the introduction of illicit distillation had wrought, (and this evil was then chiefly confined to the vicinity of *Caithness*); and making little or no export from the country beyond the few lean kyloes, which paid the rent, and produced wherewithal to pay for the oatmeal imported. But about this time the country was begun to be opened up by the Parliamentary Roads, - by one Road, from *Novar* to *Tongue*, through the barren mountains of which that district is composed, and by another, passing along the east shore towards *Wick*. Certainly, a more striking example of what Roads do effect, - and effect too in an extremely poor country, - has rarely been seen; such a quick exhibition of what natural wealth lay latent in such a country, is unexampled. Your Roads were opened, when the agricultural distresses were just beginning. In the face of that distress we now annually export from the barren district about 80,000 fleeces of wool, and 20,000 Cheviot sheep; and from the sea-coast several cargoes of grain, the produce of three considerable distilleries of Highland whisky, a good many droves of well-fed cattle, and from 30,000 to 40,000 barrels of herrings, besides cod, ling, &c. But the most happy result, in my opinion, is its effect upon the people. The fathers of the present generation of young men, were a great many of them brought by compulsion to the Coast; others after they came to substitute carts and wheels for their former rude contrivances, have drawn down to the Road-side of themselves. The effects of society upon human nature exhibit themselves; - the pigs and cattle are treated to a separate table; the dunghill is turned to the outside of the house; the Tartan tatters have given place to the produce of Huddersfield and Manchester, Glasgow and Paisley; the Gaelic to the English; and few young persons are to be found who cannot both read and write."

Another well-informed Correspondant writes to me thus: -

"About the year 1809, the fifty miles of country between *Sutherland* and *Inverness* was first begun to be laid open by Roads to the South. There was till then no regularly formed Road in that part of the country, - no harbour, no attempt to drain the land, - turnips and wheat were little known; and when Lord Stafford and his tenants originally began their improvements, a well-constructed plough had never been seen in *Sutherland*, and the inhabitants were entirely unacquainted with using ploughs in a workmanlike manner. At the time nothing could have led me to believe, that in the short space of ten years, I should in such a country, see Roads made in every direction, the mail-coach daily driving through it, new harbours constructed, in one of which upwards of twenty vessels have been repeatedly seen at one time taking in cargoes for exportation; coal, salt and lime, and brick-works established; farm-steadings every where built; fields laid off, and substantially inclosed; capital horses employed, with south-country implements of husbandry made in *Sutherland*; tilling the ground, *secundum ariem*, for turnips, wheat, and artificial grasses; an export of fish, wool, and mutton, to the extent of £.70,000 a-year; and a baker, a carpenter, a blacksmith, mason, shoemaker, &c. to be had as readily, and nearly as cheap too, as in other countries."

The same Correspondent informs me - that,

"When the Line of Road from the *Fleet Mound* to the *Ord of Caithness* was commenced, the object of every one was to get it carried as far from their door an arable lands as possible. It was carried therefore, generally speaking, at the outside of the cultivated district, at the base of the mountains. Bitterly do the present possessors lament the blindness of their predecessors. The effect, however, has been extremely advantageous to the country; it has forced the occupiers to cultivate carefully all the uncultivated corners of their arable land below the Road; and this line has served as a new base to start from for the

cultivation of all that lies above it, and that is fit for the plough. The old track which communicated with *Caithness* lay along the beach, close by the sea. But being since carried into the interior, the consequences have been, a village built at *Bonar Bridge*, a great tract of country planted by Messrs. *Houston of Creech* and *Dempster of Skibo*; the whole of the arable part of the *Creech Estate* subdivided with the best inclosures, trenched to a great extent, and all under the best system of modern husbandry; a distillery erected, and a new farm torn from the mountain's side at *Skibo*."

"The effects produced by the Parliamentary Roads in *Caithness* I can from experience state to have been very great: - having had to ride into it, the first time I knew it, in 1813, and having visited it in 1826 in a carriage. About *Wick* the additional cultivation is very great, and all along the Road-side considerable symptoms of improvement are every where seen; the same is still more conspicuous I understand from *Wick* to *Thurso*. They are making a shorter Road to the latter place, called The *Kerseymire Road*, which will bisect the county; but though *Caithness* is capable of vast agricultural improvement, yet that must necessarily be slow, as many of the lands are fettered most strictly by their entails."

I have not been able to acquire more specific information regarding the County of *Caithness*; but it is only necessary to contrast the state of the districts immediately bordering on the Parliamentary Roads passing through it, with that of the more unconnected portions, to perceive the important Effects that have attended them; and as this county is naturally more susceptible of Agricultural improvement than any of the others, the most beneficial consequences may reasonably be expected from still further opening the interior by additional Roads. As an instance of the present condition of some parts of this County along the Parliamentary Roads, I need only mention that one farmer, in the year 1826, exported Grain, the produce of his own farm, to the value of not less than £.2,000. Indeed I may state generally, as equally applicable to the whole of the Highlands, that in my various journeys to the different parts of the country, I notice improvements extending in every direction; and during my short recollection, a considerable extent of Moor-land in various places has been inclosed and converted into cultivated fields. It may also serve to show how systematic farming has become that Societies for the promotion of Agriculture and the rearing of Stock, have been established in all the Northern Counties.

Nor have Plantations been behind in this general state of improvement. Many thousands of acres have within the last twenty-five years been planted; upon the *Dunrobin* estate alone, there have been planted within the last twenty-five years above nine millions of trees; and although the climate is somewhat unfavourable for the growth of large trees, yet the attempts made promise to be attended with profit and advantage in many situations incapable of any other species of culture.

The rapid improvements in agriculture have been accompanied with a corresponding change in the Habitations of all ranks in the Highlands. Proprietors have expended large sums in the erection and ornamenting of suitable mansion-houses; and, in the houses of Gentlemen-tacksmen, every species of comfort and convenience is to be found; while the cotters are gradually exchanging their huts of mud or turf for neat and substantial cottages. To aid this beneficial change in the circumstances of the latter, great encouragement has in various instances been given by the heritors in granting timber, windows, lime, &c.; and I am enabled to state that, in the *Island of Skye* alone, no less a sum than £.100,000 has been expended by the late *Lord Macdonald*, in the erection of buildings and other improvements. I may here also mention a fact, from which the general state of the Highlands, before the Parliamentary Works were undertaken, may be inferred; namely, that at the period of his Lordship's accession, in 1797, to his estates in that Island, comprising nearly five parishes, there were throughout their whole extent no Churches, only one Manse, two or three small slated houses, and only one slated inn.

To this Island, and to the other Islands and Highlands of Scotland, by a recent Act of Parliament, passed in the reign of His present Majesty, the benefit of additional places of Worship has been extended; and substantial Churches, with suitable Manses, have been erected in more than forty places where none existed four years ago, from *Islay* and *Iona* to the *Orkneys* and *Shetland*.

It will naturally be inferred that a great increase in the value of Property must have arisen from the foregoing circumstances; and few facts will serve to place the change that has here been effected, in its strongest light. In *Inverness* and its vicinity, the increase has been in several instances nearly Tenfold; for

instance, the lands of *Merkinch*, situated between the Town and the Canal, rented twenty-five years ago between £.70 and £.80, while the rental for the last year amounted to £.600. In 1790, the property of *Redcastle*, on the opposite shore of the *Beaully Firth*, was sold for £.25,000, and in 1824 was again sold to Sir William Fettes, Bart. for £.135,000. Nor has the change been less striking in the districts of the Highlands more removed from the influence of the Northern capital – It is sufficient to refer to what has been done by capitalists from the Lothians and Northumberland on the *Stafford estates in Sutherland*. The beneficial influence of the operations in that quarter has also been felt through the most inaccessible parts of *Lord Reay's country*, where inclosures have been made, farm-houses erected, and the rental largely increased. The estates of *Chisholm*, situated in the romantic district of *Strathglass*, have risen since 1785 from £.700 to be now upwards of £.5,000 per annum. When *D^d Macdonald of Glengarry* died in 1788, his yearly income did not exceed £.800; the same lands now yield from £.6,000 to £.7,000 a year.

I have little doubt that a corresponding increase has taken place in most parts of the Highlands, but the present is a very unfavourable period for bringing forward instances, particularly in the pastoral districts, owing to the depreciation in the price of wool, sheep, cattle, &c. which has in a peculiar degree affected the value of property in this part of the kingdom. This may well be inferred from the fact, that Wool, which a few years ago was sold at from thirty-five shillings to two guineas per stone, produced at the last Inverness wool market no more than twelve or thirteen shillings.

There cannot be a doubt but the increased facilities of communication, as leading to increased comforts, has naturally brought to market a greater variety and to a larger amount of produce and manufacture, than was heretofore customary in the Highlands. Formerly *Inverness* supplied with Foreign commodities almost all the Highlands, including *Tain, Dingwall, Sutherland*, and part of *Caithness*. Since, however, the means of communication with the south have been more extended, and suitable harbours erected at other places, the supply to the several districts has been direct; and Packets have been established from *London and Leith* to *Wick, Thurso, Helmsdale, Brora, The Little Ferry, Tain, Dingwall, Invergordon*, &c. Yet notwithstanding this division, the Trade of *Inverness* has increased very considerably since the commencement of the present century. About twenty-five years ago, there were only four vessels, averaging 96 tons, that sailed once in every six weeks between *London* and *Inverness*; there are now five vessels of 130 tons, which sail every ten days. Since the opening of the *Caledonian Canal*, also, three regular traders from *Liverpool* have been established, besides a steam-boat for goods from *Glasgow*. In the *Leith trade*, only three vessels existed twenty-five years ago; there are now six regularly employed, and sailing twice every week. Thirty years ago, there was only one vessel of 40 tons trading between *Inverness* and *Aberdeen*; there are now four of 60 or 70 tons each. These vessels are principally employed in the importation of foreign commodities and manufactures; but the increase of general Trade will best be seen by comparing the present amount of Shore-dues with that in the year 1802. At that time, they produced only £.140 annually; while, in 1816, with some advance in the rates for the improvement of the Harbour, they amounted to £.680. In 1817, the lower part of the canal was opened; and from the accommodation afforded in its basin, part of the trade was carried on there, which reduced the rates, in 1820, to £470. Since that period, however, the annual rent has again risen to £560.

The increasing wants of the inhabitants of *Inverness* sufficiently prove their increasing wealth; and since their closer connection with the Southern Counties, a rapid change has taken place in the general state of society. The manufacture of hempen and wollen cloths has been commenced; churches and chapels of various sects built; missionary and Bible societies established; schools endowed; and infirmary erected; reading rooms established; subscription libraries set on foot; two newspapers published weekly; and a horticultural, a literary, and various other professional and philanthropical institutions founded. Two additional Banks have likewise been instituted, three iron foundries, and three rope and sail manufactories have successively commenced; and additional bridge had been constructed; the harbour has been enlarged and improved; the town lighted with gas; and all within the last twenty-five or thirty years. But in no instance is the benefit arising from facility of communication more apparent than in the establishment (in 1817) of the great annual Sheep and Wool Market at this central point of the Highlands, to which all the sheep farmers resort from the remotest parts of the country, to meet the wool-dealers and manufacturers of the south. Here the whole fleeces and sheep of the north of Scotland are generally sold, or contracted for in the way of consignment; and, in 1818, upwards of 100,000 stones of wool and 150,000 sheep were sold at

very advanced prices. This circumstance affords a striking proof of the advantage of Lines of Communication in facilitating the exportation and sale of the staple commodities of the country.

It will not be unimportant to remark here, that Banking offices have likewise been of late years established at *Thurso, Wick, Golspie*; two at *Tain*, and one at *Fort William* and at *Inverary*.

The foregoing Observations, it will be understood, apply more particularly to those Districts which have been opened and accommodated by the various Works of the Commissioners; and although their influence has, in some degree, been felt through the whole extent of the Highlands, yet I have already explained how desirable and necessary various improvements, yet unaccomplished, are for the still further melioration of this extensive country.

JOS. MITCHELL

Office of Highland Roads and Bridges,
Inverness, 6th March 1828.

To
The Lord Colchester

Appendix Five

Knox's Calculations of the Cost of Outfitting a Buss⁵³⁰

Expences of a Vessel of Sixty Tons Burden, fitted out as a Buss for the White Herring Fishery.

ITEM	£	s.	d.
To the ship-builder's account for the hold, at 5 <i>l.</i> 15 <i>s.</i> per ton	345	0	0
To joiner's account, fitting up the cabin, making pumps, &c.	21	10	0
To blockmaker's account, paint, &c.	18	0	0
To rope work account, for sails, rigging, cables, &c.	160	0	0
To smith's account, for anchors, &c.	22	10	0
To spars for mast, bowsprit, boom, &c.	25	0	0
To three fishing boats, at 7 <i>l.</i> 10 <i>s.</i> each	22	10	0
To compasses and furniture for cabin	8	10	0
	278	0	0
Cost of the Vessel	623	0	0

Out-fit of the above Vessel as a Buss to the White Herring Fishery as Follows:

ITEM	£	s.	d.
To 462 bushels foreign great salt, making 11 lasts, at 4 <i>l.</i> 10 <i>s.</i> per last	45	0	0
To 32 lasts herring barrels, at 50 <i>s.</i> per last	80	0	0
To 15,000 square yards of netting, or 156 common herring nets, at 10 <i>s.</i>	78	5	0
To tailing for nets	4	4	0
To buoys and bow-stocks	4	0	0
	211	9	0
To provisions for 14 men 3 months, at 8 <i>d.</i> per man each day	42	10	0
To spirits for men when at work	5	0	0
To 13 mens wages for 3 months, at 27 <i>s.</i> per man each month	52	13	0
To the ship-master's wages, by the run allowed to him	10	0	0
To bond, and clearing out at the custom-house	0	15	0
	110	18	0
	322	7	0
Cost and out-fit for the white herring fishery of a vessel of sixty tons	945	7	0

Supposing the above Vessel to make one Half of her Cargo of Herrings Yearly, which has not been the Case for these Seven Years back, on an Average, the State of Account will stand as under.

Voyage to the Herring Fishery, to Owners Dr.

ITEM	£	s.	d.
To one half of the salt carried out, consumed, on herrings	22	10	0
To one half of the barrels being used with herrings	48	0	0
To tear and wear of 15,000 yards netting, supposing them on third worn	26	1	3
To provisions and spirits consumed as above	47	10	0
To mens wages, including the skipper, ditto	62	13	0
To tear and wear of rigging and vessel, at 5 percent, per month	30	11	2

⁵³⁰ Knox, *View*, 230-31.

To insurance on 957 <i>l.</i> for 3 months, at 2 ½ percent	23	16	0
To interest of 957 <i>l.</i> for 3 months	11	18	0
To waste on salt and barrels, cellarage, &c. at 10 per cent	3	10	0
To freight of herrings to Cork, at 2 <i>s.</i> per barrel, 192 barrels	19	4	0
To duty of herrings in Ireland, at 1 <i>s.</i> per barrel	9	12	0
	305	5	5

Contra - - - - Cr.

ITEM	£	s.	d.
By sales of 192 barrels herrings, at 20 <i>s.</i>	192	0	0
By debenture of the above herrings, at 2 <i>s.</i> 8 <i>d.</i>	25	12	0
By bounty on 60 tons	90	0	0
	307	12	0
Gain on Home Fishery	2	6	7

Extra Expence on such Busses as go to the Irish Fishery

ITEM	£	s.	d.
To duty of 17 ¾ tons salt paid in Ireland, although neither salt nor barrels are landed in Ireland, the duty paid is 12 <i>s.</i> 4 <i>d.</i> per ton	10	19	11
To duty paid in Ireland on 32 lasts of barrels, at 3 <i>s.</i> per last	4	16	0
To fees paid in Ireland, at 42 <i>s.</i> per boat, for 3 boats	6	6	0
	22	1	11
<i>Loss, if upon the Irish Fishery</i>	19	15	4

Appendix Six

Roads in repair in 1828

District	Road Type	Road Name	Mileage	Repair Cost per Mile	Annual Repair Expende	
Argyleshire	Parliamentary	Arran Road	17	4.0.0	68.0.0	
		Crinan and Kieils Roads	4	4.4.0	16.16.0	
		Glendaruel Roads	21	4.0.0	84.0.0	
		Islay Road	14.75	4.12.0	67.17.0	
		Jura Road	17.125	3.0.0	51.0.0	
		Kilmelford Road	8.5	3.15.0	31.17.0	
		Strachur Road	12	4.4.0	50.8.0	
		Ardnoe Road	6.5	5.0.0	32.10.0	
		Military	Dalmally Road	26	9.12.0	249.17.0
			Glenco Road	33	9.12.0	317.0.0
	Glencro Road		21	9.12.0	201.17.0	
	District Totals			180.875		1171.2.6
	Badenoch	Parliamentary	Alford Road	13.5	5.0.0	67.10.0
			Ballater Road Approaches	0.5	0.0.0	25.5.0
Craigellachie Road Approaches			1	11.11.0	11.11.0	
Findhorn Road			14.125	6.10.0	85.15.0	
Inverfaigaig Road (& Pier)			19	3.3.0	63.17.0	
Loch-Laggan Road			39	5.0.0	195.0.0	
Moy Road			14.5	10.5.0	149.2.6	
Speyside Road			14	5.0.0	70.0.0	
Military			Badenoch Road	52	9.13.2	502.4.9
			Coryarrick Road	8	7.1.3	56.10.0
		Duthel Road	6.5	5.0.0	32.10.0	
		Grantown Road	20	9.4.1.5	184.2.6	
Badenoch		District Totals		202.125		1443.7.9
Lochaber		Parliamentary	Ballachernoch Road	5	3.0.0	15.0.0
	Fort Augustus Road		6.5	4.0.0	26.0.0	
	Glenarry Road		31.75	5.15.0	182.1.8	
	Glenmorrison Road		20	5.0.0	100.0.0	
	Invermorrison Road		21.75	7.0.0	152.5.0	
	Rheabuie Road		10	4.16.0	48.0.0	
	Lochy-side Road		12	4.10.0	54.0.0	
	Lochnagaul Road Sector 1 st		15	3.8.0		
	Lochnagaul Road Sector 2 nd		21.5	3.0.0	115.10.0	
	Moydart Road Sector 1st, 2nd & 3 rd		35	3.0.0	105.0.0	
	Military	North Boleskine Road	19	8.11.7	163.0.4	
		South Boleskine Road	14	4.7.3.5	61.2.3	
		Fort William Road	45	4.9.6.5	201.8.10	
		District Totals		256.5		1223.8.1
Skye	Parliamentary	Ardelve & Lochalsh Roads	16.5	4.15.0	78.7.6	
		Glenelg Road	12	4.16.0	57.12.0	
		Glenshiel Road	16.5	4.16.0	79.4.0	
		Kintail Road	10	4.16.0	48.0.0	
	Isle of Skye Roads	Macleod's Road	19	4.10.0	85.10.0	
		Skye Roads	73.5	4.15.0	349.2.6	
		Snizort Road	25	4.10.0	112.10.0	
		District Totals		172.5		810.6.0

District	Road Type	Road Name	Mileage	Repair Cost per Mile	Annual Repair Expense
Ross-shire	Parliamentary	Beauley Road	15.5	12.0.0	186.0.0
		Contin Road	7	10.0.0	70.0.0
		Fearn Road	23.5	7.10.0	176.5.0
		Fortrose Road	14	8.0.0	112.0.0
		Kessock Branch Roads	8	6.0.0	48.0.0
		Kisborn Road	15	3.5.0	48.15.0
		Loch-Carron Road, Sector 1st	33.5	5.0.0	16.5.0
		Loch-Carron Road, Sector 2 nd	16	4.0.0	64.0.0
		Strathglass Road	23.5	5.0.0	117.10.0
		Tain Road	15	6.6.0	94.10.0
	Military	Fort-George Road	13.25	11.8.5.5	151.16.11
	Ross-shire County Roads	Ivergordon Road	18.5	7.7.0	135.19.6
		Dingwall Road	6.75	8.0.0	54.0.0
Ross-shire	District Totals		209.5		1424.1.5
Caithness and Sutherland	Parliamentary	Dunbeath Road	33	11.9.6.5	378.15.0
		Dunrobin, or Coast Road	47	9.9.9	445.18.0
		Thurso Road	20	9.5.4	194.12.6
		Tongue Road	49.5	5.5.0	258.12.6
Caithness and Sutherland	District Totals		149.5		1277.18.0
Road Network	Totals		1171		7350.3.9

Source: *HCSP* 1828, 175, IX, 300-5.

Notes:

1. Road repair rates per mile and total repair expenses for each road are given in pounds, schillings and pence. Thus, 194.12.6 is £194 12s. 6d.
2. Network totals are not given in the original tables, but the remainder of the figures are present in the original tables.

Appendix Seven

Construction of the Parliamentary Roads

This table shows a timeline (of sorts) of the construction of the parliamentary roads. The road names are the same as those found in the previous appendix, only the military and county roads have been removed from the table. The dates at the heads of columns refer to the reports of the Highland Roads and Bridges Commission.

Key:

P = The road was in the planning stage at the time of the report

C = The road was under construction at the time of the report

F = The road was listed as complete at the time of the report (only the first instance of this is listed)

<u>Road Name</u>	<u>Mileage</u>	<u>1803- 1804</u>	<u>1805</u>	<u>1807</u>	<u>1809</u>	<u>1810- 1811</u>	<u>1812- 1813</u>	<u>1814- 1815</u>	<u>1817</u>	<u>1821</u>
Arran Road	17			P	P	C	C	F		
Crinan and Kieils Roads	4	P	C	F						
Glendaruel Roads	21		P	P	C	C	F			
Islay Road	14.75		P	F						
Jura Road	17.125		P	C	C	C	F			
Kilmelford Road	8.5		P	P	C	F				
Strachur Road	12		P	C	C	F				
Ardnoe Road	6.5		P	C	C	C	C	C	C	F
Alford Road	13.5						P		C	F
Ballater Road Approaches	0.5						F			
Craigellachie Road Approaches	1		F							
Findhorn Road	14.125					P	C	C	C	F
Inverfaigaig Road (& Pier)	19	P	P	P	C	C	F			
Loch-Laggan Road	39		P	P	P	P	C	C	C	F
Moy Road	14.5			P	C	F				
Speyside Road	14							P	C	F
Ballachernoch Road	5						P	C	F	
Fort Augustus Road	6.5		P	C	C	F				
Glengarry Road	31.75	P	C	C	C	C	F			
Glenmorrison Road	20		P	P	P	F				
Invermorrison Road	21.75	P	P	C	C	C	F			
Rheabuie Road	10						P	P	C	F
Lochy-side Road	12			P	P	C	F			
Lochnagaul Road Sector 1 st	15	P	C	C	C	C	F			
Lochnagaul Road Sector 2 nd	21.5	P	C	C	C	C	F			
Moydart Road Sector 1st, 2nd & 3 rd	35	P	P	C	C	C	C	C	F	
Ardelwe & Lochalsh Roads	16.5						P	C	F	
Glenelg Road	12				P	P			C	F
Glenshiel Road	16.5						P		C	F
Kintail Road	10							P	C	F
Macleod's Road	19						C	F		
Skye Roads	73.5	P		P	C	C	C	C	C	F
Snizort Road	25			P	C	C	C	F		
Beauley Road	15.5			P	P			P	F	

Road Name	Mileage	1803- 1804	1805	1807	1809	1810- 1811	1812- 1813	1814- 1815	1817	1821
Contin Road	7						P	P	C	F
Fearn Road	23.5				P	P	C	C	F	
Fortrose Road	14								P	F
Kessock Branch Roads	8									F
Kisborn Road	15							P	C	F
Loch-Carron Road, Sector 1st	33.5			P	P	C	C	C	C	F
Loch-Carron Road, Sector 2 nd	16			P	P	C	C	C	C	F
Strathglass Road	23.5			P	P		P	C	F	
Tain Road	15						P	C	C	F
Dunbeath Road	33	P		P	P	P	C	C	C	F
Dunrobin, or Coast Road	47			P	C	C	F			
Thurso Road	20						P	P	C	F
Tongue Road	49.5					P	P	P	C	F

Sources:

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I have chosen to divide this bibliography into four main categories: economic development, miscellaneous, transportation and Scotland. The reader should note that the categories roughly correspond to the various chapters in this work; however, no effort has been made to present the sections of, or the works in, this bibliography in the order in which they appeared in the text. One further note: Many of the works used appear as chapters in collections of essays. I have chosen to list both the collection and the individual articles under their appropriate categorization in the event the reader should wish to examine the entire collection for articles I have not used. Where a work could fit into multiple categories, I have chosen to list it under the category it most strongly falls into. Three dashes are used to indicate the author of a particular work is the same as that preceding it.

Sources for Maps:

Outline map of Scotland used as basis of Figures One, Two and Four available on the internet at: <http://worldatlas.com/webimage/countrys/europe/outline/scotland.htm>

Figure One: Author

Figure Two: Author

Figure Three: *HCSP* 1828, 175, IX, 345: "Fourteenth Report of Commissioners..."

Figure Four: Author, based on map by T.C. Smout, "The Landowner and the Planned Village in Scotland, 1730-1830," in *Scotland in the Age of Improvement*, edited by N.T. Phillipson and Rosalind Mitchison (Edinburgh: Edinburgh University Press, 1970), facing 103.

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4. Parliamentary Acts/Reports

All of the Parliamentary Acts and Reports listed below may be found in the *House of Commons Sessional Papers*, edited by Edgar L. Erickson and published on microprint cards by the Readex Microprint Corporation of New York. For this reason, I list here only the author (if there is one), title of the Act/Report, the session, the paper number, volume, and page range of the Act or Report. Because so many of these sources lack authors, I have chosen to organize them by date rather than alphabetically.

- “Bill for Granting to His Majesty the Sum for Roads and Bridges in the Highlands of Scotland.” 1802-03 Session, Paper no. 117, Vol. I, pp. 535-48
- “Bill to empower JPs in England to allow additional Number of Horses for drawing Carriages on Turnpike Roads.” 1802-03 Session, Paper no. 96, Vol. I, pp. 343-44.
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- “Report of the Commissioners For making Roads and building Bridges in the Highlands of Scotland.” 1803-04 Session, Paper no. 108, Vol. V, pp. 715-67.
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- “Third Report...” 1807 Session, Paper no. 100, Vol. III, pp. 231-327.
- “Fourth Report...” 1809 Session, Paper no. 167, Vol. IV, pp. 1-67.
- “Bill for maintaining and keeping in Repair certain Roads and Bridges in the Highlands of Scotland.” 1810 Session, Paper no. 257, Vol. I, pp. 395-97.
- “Fifth Report...” 1810-11 Session, Paper no. 112, Vol. IV, pp. 393-461.
- “Sixth Report...” 1812-13 Session, Paper no. 110, Vol. V, pp. 1-61.
- “Bill for maintaining and repairing Roads and Bridges in Scotland for the Purpose of Military Communication, and Roads and Bridges under Authority of the Commissioners of Highland Roads and Bridges.” 1813-14 Session, Paper no. 58, Vol. I, pp. 309-21.
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- “Statement by the Commissioners of the Highland Roads and Bridges of the Origin and Extent of Roads in Scotland, and Papers relating to the Military Roads.” 1813-14 Session, Paper no. 63, Vol. III, pp. 401-68.
- “Seventh Report...” 1814-15 Session, Paper no. 205, Vol. III, pp. 427-85.
- Dundas, William. “Report of the Select Committee on the Estimate for Roads and Bridges in the Highlands of Scotland.” 1816 Session, Paper no. 468, Vol. IV, pp. 503-05.
- “Eighth Report...” 1817 Session, Paper no. 110, Vol. IX, pp. 1-81.
- “Bill to Repeal Acts for maintaining and keeping in Repair Roads and Bridges in Scotland, and to make other Provisions.” 1819 Session, Paper no. 208, Vol. I-B, pp. 1213-25.
- “Bill to Repeal Acts for maintaining and keeping in Repair Roads and Bridges in Scotland, and to make other Provisions (as amended by committee).” 1819 Session, Paper no. 208, Vol. I-B, pp. 1213-25.
- “Estimate of the Sum required in 1821 for the Commissioners of the Highland Roads and Bridges.” 1821 Session, Paper no. 603, Vol. XVI, pp. 41-51.
- “Ninth Report...” 1821 Session, Paper no. 432, Vol. X, pp. 37-168.
- “Bill to extend the Powers of the Act for maintaining the Military and Parliamentary Roads and Bridges in the Highlands of Scotland.” 1824 Session, Paper no. 207, Vol. II, pp. 683-90.
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- “Eleventh Report...” 1825 Session, Paper no. 150, Vol. XV, pp. 29-49.
- “Twelfth Report...” 1826 Session, Paper no. 209, Vol. XI, pp. 59-75.
- “Thirteenth Report...” 1826-27 Session, Paper no. 208, Vol. VII, pp. 107-21.
- “Fourteenth Report...” 1828 Session, Paper no. 175, Vol. IX, pp. 277-343.
- “Fifteenth Report...” 1829 Session, Paper no. 114, Vol. V, pp. 135-60.

- “Sixteenth Report...” 1830 Session, Paper no. 181, Vol. XV, pp. 87-110.
- “Seventeenth Report...” 1830-31 Session, Paper no. 286, Vol. IV, pp. 379-94.
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- “Nineteenth Report...” 1833 Session, Paper no. 114, Vol. XVII, pp. 405-24.
- “Twentieth Report...” 1834 Session, Paper no. 164, Vol. XL, pp. 165-87.
- “Twenty-first Report...” 1835 Session, Paper no. 91, Vol. XXXVI, pp. 227-45.
- “Twenty-second Report...” 1836 Session, Paper no. 134, Vol. XXXVI, pp. 423-43.
- “Return of Amount of Debt affecting Turnpike Road from Glasgow to Carlisle.” 1836 Session, Paper no. 480, Vol. XLVII, pp. 267-71.
- “Twenty-third Report...” 1837 Session, Paper no. 159, Vol. XXXIII, pp. 171-93.
- “Twenty-fourth Report...” 1837-38 Session, Paper no. 235, Vol. XXXV, pp. 75-91.
- “Twenty-fifth Report...” 1839 Session, Paper no. 128, Vol. XX, pp. 383-400
- “Twenty-sixth Report...” 1840 Session, Paper no. 172, Vol. XXVIII, pp. 431-52.
- “Return of Names of the Commissioners of Highland Roads and Bridges.” 1842 Session, Paper no. 396, Vol. XXVI, pp. 479-80.
- “Forty-ninth and Final Report of the Commissioners of Highland Roads and Bridges.” 1863 Session, Paper no. 128, Vol. XXVI, pp. 345-74.