EPISODE 109: THE FIRST SPACE RACE

Peter Coyote: Welcome to “Unfinished Journey: The Lewis and Clark Expedition” from PRI, Public Radio International. I’m Peter Coyote. In this hour, the race for the Pacific Ocean and the race for the Moon are linked across two hundred years of American history.

Dayton Duncan: [T]he genius of Jefferson as well as Kennedy is they understood that there were practical purposes involved in it and there was something that transcends practicality.

Peter Coyote: Join me as we revisit America’s two great races for space after the day’s news.

Optional cutaway for News

Allison Frost: Welcome to this edition of the Latest Tidings, a special feature produced in cooperation with the National Intelligencer. In 1807, it’s been America’s Newspaper for seven years. I’m Allison Frost. By now, many Americans have heard about the successful exploration of the Western Territory led by Captains Meriwether Lewis and William Clark. Later in the program, we’ll be bringing you up to date on what they’re doing now that their journey is finished. But first we bring you the latest tidings from another expedition: Lieutenant Zebulon Pike set out last year with a small party to explore the southwestern border of the Louisiana Purchase and identify the source of the Red River. He was also apparently charged with some diplomatic assignments involving Indian tribes. But that mission has come to an abrupt halt after his capture by a troop of Spanish soldiers. Lieutenant Pike and his men remain in the custody of the Spanish government.

Joining us now is the officer who took the American party into custody, Lieutenant Don Malgares of the Spanish Army. Lieutenant Malgares, thank you for joining us on the Latest Tidings.

Don Malgares: It is my pleasure.

Allison Frost: First of all, what is Lieutenant Pike’s condition? How is the party being treated?

Don Malgares: Your American army soldiers were half-dead with cold when we found them. I could not tell what has happened to their uniforms, but I could not see any sign from their clothing that they were soldiers. They looked more like Indians with their long hair and wearing animal skins. I did not see any men looking like that
when I met your first President George Washington. That was a great honor. I digress…where was I?

Allison Frost: The treatment of the party?

Don Malgares: They have been treated and treated well. From the government of España, they have received proper meals and proper clothing, and in all other respects, we have furnished them much as we would a guest. I think you will also want to know that some of the men in your Lieutenant Pike’s command had become lost some miles away. As I was told, they had collapsed from exhaustion and being so bitten with frost. I sent a patrol out to find them so they could be brought to where their companions were. You might say it was less like a capture and more like a rescue.

Allison Frost: An interesting observation. But of course, Lieutenant Pike and his party are not free to return to the United States. What were the circumstances of the capture, or rescue, as you call it? You claim they were on Spanish territory?

Don Malgares: It is a fact! We found Lieutenant Pike and his men in a fort—with an American flag in the front—no more farther away from the Rio Grande than the throw of a stone.

Allison Frost: But certainly misunderstandings happen between friends and isn’t it true that some of the long border between the United States and Spanish territory is not entirely clear?

Don Malgares: A fact Lieutenant Pike exclaimed when we came upon him, that he though he was at the Red River and said he was much surprised where he was. It could be he was not so very good at navigation.

Allison Frost: Are you accusing the United States of knowingly sending spies into Spanish territory?

Don Malgares: Those are your words not mine. I accuse no one; my duty is to follow my orders, which I have done faithfully. I am sure your government and mine will be in discussion about this in the extremely near future.

Allison Frost: And do you know when the party will be released from Spanish custody?

Don Malgares: Again, I am afraid that is not for me to say.

Allison Frost: Spanish Lieutenant Don Malgares, speaking with us about the capture of a group of American explorers led by U.S. officer Zebulon Pike.

Finally, the U.S. Congress has rewarded the triumphant expedition of Meriwether Lewis and William Clark. Our correspondent Ley Garnett has our report.

Ley Garnett: A grateful nation welcomed explorers Lewis and Clark back to civilization last fall. Congress has now awarded 1,600 acres of land to the two Captains and 320 acres to each of the enlisted man on the journey. President Thomas Jefferson further rewarded the captains by appointing Captain Lewis governor of the Territory of Upper Louisiana. Captain Clark is now Superintendent of Indian affairs. The expected publication of two books about the journey has generated some controversy. Two enlisted men announced their forthcoming books, but Captain Lewis denounced those efforts in a letter written to the National Intelligencer, saying they would not be scientifically accurate. The Philadelphia publishing house of C. & A. Conrad & Company has announced that they will print Lewis’s account of the journey in two volumes titled “Lewis and Clark’s Journey to the Pacific Ocean and
the Interior of the Continent of North America.” Also expected soon: Lewis and Clark’s Map of North America. I’m Ley Garnett.

Allison Frost: And we’ve reached our final destination for this edition of the Latest Tidings. I’m Allison Frost. Our program is produced in cooperation with the National Intelligencer. For seven years, it’s been American’s Newspaper, since 1800.

[Program theme music]

Peter Coyote: Lewis and Clark achieved their fame as earth-bound explorers.

Clay Jenkinson: Yes, but the Lewis and Clark Expedition might be considered America’s first space race.

[Theme music continues]

Peter Coyote: The Lewis and Clark Expedition left St. Charles, Missouri on May 14, 1804 and traveled 7,689 miles to the Pacific Ocean and back again. The trip took more than 28 months. The expedition was President Jefferson’s brainchild, commanded by his friend and protégé Meriwether Lewis and his old Army friend, William Clark. It is considered the most successful exploration in American history. Today, we explore America’s first space race, the Lewis and Clark Expedition. Joining me is Clay Jenkinson, humanities scholar-in-residence at Lewis & Clark College in Portland, Oregon. Clay, tell us how a 19th century exploration could be considered America’s first space race?

Clay Jenkinson: First of all, Lewis and Clark were pursuing scientific exploration on behalf of the United States government—just as the astronauts would a century and a half later, particularly in the space station and shuttle era. Furthermore, President Jefferson sent Lewis and Clark on their mission spurred in part by competition with other imperial powers for commercial and territorial gain. In some respects, America’s modern space venture was a race to dominate the Soviet Union and to challenge international communism after the launch of the satellite Sputnik in 1957. In other words, pure science and imperialism are at the heart of both the space race and the Lewis and Clark Expedition.

President John F. Kennedy: I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to the Earth. No single space project in this period…

(fades out)

Peter Coyote: President John F. Kennedy’s famous “To the Moon” speech, delivered May 25, 1961. Dayton Duncan is the co-producer of Ken Burns’ documentary on Lewis and Clark.

Dayton Duncan: When John Kennedy pointed to the Moon and said we are going there in ten years I think the response to that was probably in certain quarters similar to the response to Thomas Jefferson saying, ‘We’re sending a group of people across the continent,’ and in the midst of that also purchased the Louisiana Territory. There are a lot of people saying this is a waste of money, why are we doing this. But the genius of Jefferson as well as Kennedy is they understood that there were practical purposes involved in it and there was something that transcends practicality. This is who we are as human beings, and this is who we are most particularly as Americans.

Peter Coyote: Stephen Dow Beckham is a professor of history at Lewis & Clark College.
Stephen Dow Beckham: The expedition catapulted the United States into federally-financed scientific investigation. It set a trend that would persist right through the launching of satellites and exploring to the Moon and space probes at federal expense.

Peter Coyote: Clay, how did President Jefferson inspire American citizens in his day about the race to find a route to the Pacific?

Clay Jenkinson: Well, of course, there was no television then, and Jefferson admitted that he was a poor orator. But he was a very persuasive man. However much he liked to talk about himself as an Enlightenment philosopher, Jefferson had a hard-headed commercial sense, too. He was an ardent American nationalist, and it’s not coincidental that he built Monticello looking west toward the American interior. Jefferson had continental aspirations and he wanted the United States to garner at least its share of the economic activity of his time. This is his message to Congress in January, 1803 recommending an exploratory mission into the American West:

While other civilized nations have encountered great expense to enlarge the boundaries of knowledge, by undertaking voyages of discovery, and for other literary purposes, in various parts and directions, our nation seems to owe to the same object, as well as to its own interests, to explore this, the only line of easy communication across the continent, and so directly traversing our own part of it. The interests of commerce place the principal object within the constitutional powers and care of Congress, and that it should incidentally advance the geographical knowledge of our own continent cannot but be an additional gratification.

Thomas Jefferson, January 18, 1803

Peter Coyote: Did imperial powers outside the United States suspect that Jefferson was putting a commercial stake in the ground with the Lewis and Clark Expedition?

Clay Jenkinson: Yes, they saw immediately what was really going on. The Spanish foreign minister clearly suspected that there was an ulterior motive that went way beyond Jefferson’s claim that what he had in mind was a literary and scientific excursion.

Most Excellent Señor: The President asked me the other day in a frank and confident tone, if our Court would take it badly, that the Congress decree the formation of a group of travelers, who would form a caravan and go and explore the course of the Missouri River. . . . He said they would give it the denomination of mercantile, inasmuch as only in this way would the Congress have the power of voting the necessary funds. I replied to him that making use of the same frankness with which he honored me, I would take the liberty of telling him, that I persuaded myself that an expedition of this nature could not fail to give umbrage to our Government.

Carlos Martinez de Yrujo, Spanish consul to the United States, December 2, 1802.

Peter Coyote: Thomas Jefferson was a complex man, that there was always more than one thing going on in his great brain, but what exactly was it that led him to launch the Lewis and Clark Expedition?

Clay Jenkinson: If there was any one precipitating cause, it was the Alexander Mackenzie expedition across Canada in 1793, and more particularly, publication of Mackenzie’s book, Voyages from Montreal in 1801. Jefferson instantly realized the United States was in danger of losing the American West. Suddenly, his lifelong interest in western exploration met geopolitical reality just as the launch of Sputnik caused the United States to create a crash program to dominate space in the 1960’s.
By opening this intercourse between the Atlantic and Pacific oceans and forming regular establishments through the interior...the entire command of the fur trade of North America might be obtained latitude 48 north to the pole...to this may be added the fishing in both seas and the markets of the four quarters of the globe.

*Alexander Mackenzie, Voyages from Montreal, 1801*

Peter Coyote: I can see why that caught Jefferson's attention. Just who was this Alexander Mackenzie, and what exactly did he accomplish?

Barbara Belyea: He was employed as a trader with the North West Company and that was sort of like a large franchise.

Peter Coyote: Barbara Belyea teaches history at the University of Calgary in Alberta, Canada.

Barbara Belyea: Mackenzie decided when he was posted to what is now northern Alberta that he would use the summer to go to the sea. He decided he would find the Pacific Ocean and the fabled Columbia River. So in 1789 he set out and ended up in the Arctic Ocean he tried again in 1792, and eventually ended up at Bella Coola on the Pacific coast.

*After I had observed these culinary preparations, I paid a visit to the chief, who presented me with a roasted salmon....Copper and brass are in great estimation among them, and of the former they have great plenty: they point their arrows and spears with it, and work it up into personal ornaments; such as collars, ear-rings, and bracelets, which they wear on their wrists, arms, and legs. I presume they find it the most advantageous articles of trade with the more inland tribes.*

*Alexander Mackenzie, July, 1793*

Peter Coyote: Clay, tell us more about the economic connection between Mackenzie’s cross-country trip and the Lewis and Clark Expedition.

Clay Jenkinson: Jefferson immediately realized what was at stake here. It wasn't just about which explorer crossed the continent first. It was about the entire future of the American Northwest. He who controls the commerce probably controls the future destiny of that region. So Mackenzie not only provoked the Lewis and Clark expedition, but in a better sense it in some ways served as a manual for Lewis’s own journey.

David Nicandri: Literally Mackenzie threw the gauntlet down with a grand strategic vision about how British commercial interests could dominate the northern fur trade.

Peter Coyote: David Nicandri is director of the Washington State Historical Society.

David Nicandri: There's no question but that the publication of Alexander Mackenzie’s Voyages from Montreal was the functional equivalent of Sputnik in the fall of 1957 to the modern space race from the Cold War era. And the geopolitical implications of the nascent United States of America not responding were so dire that Jefferson literally sprung into action and what became known as the Lewis and Clark Expedition and much of its story during the course of the expedition was a running and concurrent response to Alexander Mackenzie.

Peter Coyote: Clay, what does David Nicandri mean when he says the Lewis and Clark Expedition was a “concurrent response” to Mackenzie?
Clay Jenkinson: Peter, all scholars agree that there is a connection between Mackenzie and Lewis and Clark. but, David Nicandri is arguing that the explorers, and particularly Lewis, were walking directly in the shadow of Alexander Mackenzie.

David Nicandri: Lewis had a copy of Mackenzie’s Voyages with him. He was after all the only man who had been out in that country, approximately speaking. And as later observers noted, Mackenzie’s text was frequently referred to, and Lewis learned a great deal from Mackenzie in terms of field application, field tactics and the like. Lewis never lost site of the fact that Mackenzie was the reason he was out there, that Mackenzie was the opponent and that Mackenzie’s standard in terms of geographic discovery, literary flair, and geopolitical import was the standard to which Meriwether Lewis had to live up to, and he was fully and always conscious of that fact.

Harry Fritz: So, if you’re looking at the immediate causes of the Lewis and Clark Expedition, rather than the long range causes, the publication, I think, of Voyages from Montreal is one of those immediate causes.

Peter Coyote: That’s University of Montana history professor Harry Fritz. Does Lewis ever reference Mackenzie directly?

Clay Jenkinson: No, not directly. There is no actual reference to Mackenzie in the journals of Lewis and Clark. But a number of passages in the journals are clearly written with Mackenzie’s text and discoveries in mind. This is particularly the case when Lewis is discussing how Canadian and American rivers interlock. However there is one famous example of Mackenzie’s direct influence on the journals of Lewis and Clark. Let’s hear it.

I now mixed up some vermillion in melted grease, and inscribed, in large characters, on the south-east face of the rock on which we had slept last night, this brief memorial: ‘Alexander Mackenzie, from Canada, by land, the twenty-second of July, one thousand seven hundred and ninety-three.’

Clay Jenkinson: But now listen to William Clark on the Pacific coast:

I marked my name and the day of the month and year on a large pine tree on this peninsula, and By Land, Capt William Clark December 3rd 1805.

Peter Coyote: That sure does have a familiar ring…

Clay Jenkinson: Yes, in 1793 Mackenzie wrote his inscription on a rock in today’s British Columbia and twelve years later, Clark carved his inscription on a pine tree several hundred miles to the south. But there can be no doubt that Clark had Mackenzie in mind when he began to chip away at that tree.

Peter Coyote: Clay, we’ve talked in general about trade and commerce as one of the underlying reasons Jefferson launched the Lewis and Clark Expedition. What exactly was the great engine of commerce at the time?

Clay Jenkinson: That’s a great question. Here’s a hint: it’s warm, fuzzy, it has huge teeth and it’s worth a fortune.

Peter Coyote: The answer later in our show. And coming up next, a modern-day explorer compares notes with Meriwether Lewis.

Tom Jones: Once again thanks to the United States Army, where Meriwether and Captain Clark got most of their supplies, we borrowed the best of their food for use in the field. We had meals ready to eat, the army rations that forces use overseas in the field.
Peter Coyote: I’m Peter Coyote. You’re listening to “Unfinished Journey: The Lewis and Clark Expedition” on PRI.

[Program Break: Aaron Meyer/ Bill Lamb—Unfinished Journey: The Lewis and Clark Expedition Soundtrack (Kentucky)]

What will we call home one century from now—a thicket, a nation, the earth itself? According to a common proverb in the Middle Ages, “most of us are at home one place on earth, while experienced travelers are at home many places on earth but the truly wise are at home no place on earth.”

Peter Coyote: That’s Oregon writer Kim Stafford, reading from his book Having Everything Right. Stafford is director of the Northwest Writing Institute at Lewis & Clark College. Let’s spend some time talking about the kind of people who are willing to walk off the map of the known world, the people who are at home many places on earth and, sometimes, no place on earth.

Neil Armstrong: That’s one small step for man, one giant leap for mankind.

Peter Coyote: That’s astronaut Neil Armstrong, of course, setting foot on the Moon on July 20, 1969.

Dayton Duncan: I think Lewis felt like Neil Armstrong in two places. I think he felt it at Lemhi Pass, when he became the first American citizen to reach the continental divide, the source of the mighty and heretofore deemed endless Missouri river, and expected to be the Columbus who would see this passageway to the Orient, the waterway to the Indies, which is what Columbus had been seeking. So for hundred of years, others had tried and failed and he thought, ‘this is my moment,’ and immediately saw instead mountain after mountain after mountain where mountain after mountain after mountain were not supposed to exist. That was his first Neil Armstrong moment. I think that when he got to the Pacific coast and carved his name in the tree just as William Clark did… you can feel it in Clark’s journal entry when he says I carved my name and the date, that was Clark’s Neil Armstrong moment, for sure, and I think Lewis was feeling it with him. Lewis got two of them, and Clark got one.

Peter Coyote: Lewis and Clark expert Dayton Duncan.  

Thus far I had accomplished one of those great objects on which my mind has been unalterably fixed for many years, judge then of the pleasure I felt in allaying my thirst with this pure and ice cold water which issues from the base of a low mountain or hill of gentle ascent for ½ a mile…here I halted a few minutes and rested myself. Two miles below McNeal had exultingly stood with a foot on each side of this little rivulet and thanked his god that he had lived to bestride the mighty & heretofore deemed endless Missouri. 

Meriwether Lewis, August 12, 1805

Peter Coyote: OK, we’ve drawn many analogies between 19th century and modern-day exploration. But let’s take a different approach and examine the subject through the eyes of the explorers themselves. Clay, if you would, please step into the shoes, or moccasins, of Meriwether Lewis for us. I know it’s a role you’re very familiar with.

Clay Jenkinson: Peter, I’d be glad to, but you’re going to have suspend your disbelief. My voice is going to sound more or less the same.

Peter Coyote: Captain Lewis, glad you could join us.

Clay Jenkinson (as Lewis): Greetings, Citizen Coyote. I bring you the best wishes of the President of the United States.
Peter Coyote: I’d like to introduce you to a 21st century explorer, an astronaut who has traveled into space. Tom Jones trained as an Air Force officer and became an astronaut in 1991. He’s been a mission specialist on four flights of the space shuttle Endeavor. Welcome, Tom.

Tom Jones: Hello, Peter and hello, Captain Lewis. It’s a pleasure to be with you both.

Peter Coyote: Gentlemen, I’d like to ask you some questions about your respective missions. First of all, what was the nature of each of your missions? Let’s start with you, Tom.

Tom Jones: I had four expeditions into space. Each of them was designed to unlock new discoveries in some facet of our fields of knowledge in science, and particularly about the earth. My first two flights were missions to planet Earth. We were looking at the changing face of our planet from the perspective of space, looking back at our home. I think one example I might cite that Meriwether might enjoy was that we were mapping large segments of the Earth’s surface using a new camera called a synthetic aperture radar. And we would actually chart the changing course of rivers, like the Missouri that he traveled up, and look at the changing shapes of volcanoes around the planet. Some of the Cascade volcanoes that the Corps of Discovery first encountered, we looked at those in terms of their eruption potential and trying to discover whether they would be changing shape, bulging before a volcanic eruption. So these two flights were very much looking at the same kinds of terrains and forests and potential agricultural lands that the Corps of Discovery looked into.

Clay Jenkinson (as Lewis): I made just one mission on behalf of the government of the United States and it was directly inspired by President Jefferson himself. In fact, he wrote the instructions of June 20, 1803. My mission was really twofold, partly geographic, and partly about the sovereignty of the Louisiana Purchase. Mr. Jefferson wanted me to get the latitude and longitude of every key place that we saw in the course of the journey. He wanted me to survey the land types to see whether they were possible future locations of family farms in the American West. But he also wanted me to treat with the Indians we encountered, to inform them that the United States had now purchased the vast Louisiana Territory and even though we did not wish to purchase a single acre of land from the Indians, whatever formal relations they hereafter had with a white government would be exclusively with the United States and not with France or Spain or Britain or anybody else. So my mission was partly scientific, and partly geopolitical.

Peter Coyote: And how detailed were the instructions that you had?

Clay Jenkinson (as Lewis): Mr. Jefferson’s famous instructions were heavily detailed. He was an expert at questionnaires, and he knew as much about the American West as any man alive, and so I felt very fortunate that he had planned our mission with great care and precision. But from the minute we left St. Charles, Missouri on May 14, 1804, until we returned on the 23rd of September, 1806, we were beyond communication. All of that immense distance, we had to decide for ourselves how we would fulfill Mr. Jefferson’s general instructions.

Tom Jones: For each of these trips we had an incredibly detailed book called the flight plan. So, before we left Earth, we had detailed instructions for almost every five minutes of our eleven or fourteen or eighteen days in space. Naturally we adjusted our plan according to changing conditions. And it’s great to be flexible, and part of the challenge of space flight is to respond to the unexpected. But we really did train for more than a year in each of these cases to carry out and execute this flight plan. So we had quite good orders from on high.

Peter Coyote: What a contrast in missions! Gentlemen, what did you eat and how did you get rid of waste?
Tom Jones: Well, once again thanks to the United States Army, where Meriwether and Captain Clark got most of their supplies, we borrowed the best of their food for use in the field. We had meals ready to eat, the army rations that forces use overseas in the field. And as far as the trash, that’s one of the unique things about flying on the space shuttle. There’s no way to dump trash overboard or leave it behind. You have to pack it all up compactly, seal it away, and then bring it all back to Earth with you. It’s a kind of recycling that’s forced on you by the fact that you can’t dump things overboard with ease.

Clay Jenkinson (as Lewis): Well, we regarded a buffalo as a “meal ready to eat.” Through most of the country through which we traveled, there was an immensity of game: elk, buffalo, grizzly bears, mule deer, white-tailed deer, antelope, bighorn sheep, sometimes even dogs. We ate an immense amount. To feed our company of about forty, I reckoned that it took every day a buffalo, four deer, or an elk and a deer. And for most of our 28-month journey we ate sumptuously. The only difficulty we had in feeding ourselves was in the Bitterroot Mountains. It was an early winter that year and no game was readily at hand. During that period we came not close to starvation but certainly to nutritional collapse. As to wastes, we left carcasses of animals behind us, occasionally some pieces of wood. But we had no imperishables with us. And as to personal wastes, well that’s a subject that I think that polite people don’t talk about in public.

Peter Coyote: Well, Captain Lewis, I think we can all agree that we’re in polite company, so no need to get into that subject. Finally, I want to ask you both when you felt the most like explorers? What was the moment that crystallized the experience for you?

Tom Jones: I think it crystallized for me on my last trip to the Space Station when I was out doing a space walk. On the third of those three space walks, I had about five minutes near the end to hold onto the front end of the Space Station and quietly look around at my surroundings. And 200 miles below my boots were the oceans and clouds of the Pacific, scrolling by as we circled the planet every 90 minutes. Straight up above me were these golden feathery solar arrays that were generating the electricity that we used aboard the Space Station, and beyond that just the black of space. And out to each side of me was the Earth’s horizon, gently curving, yet 1,000 miles away from where I rode with the space station. And at that point, I felt poised between the known Earth and the unknown cosmos, and that was a very emotional moment and made me think of so many other explorers who have looked over the next horizon or stood at the top of a peak for the first time and looked into the unknown.

Clay Jenkinson (as Lewis): I will say that I felt most like an explorer when I was alone somewhere in the American West with my dog Seaman, my gun and my notebook; when the rest of the men were performing their duties somewhere in the distance and I was a man of the Enlightenment, a representative of Mr. Jefferson, walking alone through an immense and virgin landscape taking notes on behalf of binomial science. It was then I felt like Captain Cook, or Columbus.

Peter Coyote: Well thank you both, Captain Meriwether Lewis and astronaut Tom Jones, for coming in and talking to us about your experiences as explorers.

Peter Coyote: Clay Jenkinson, we talked earlier about Alexander Mackenzie, but not too many Americans have heard of him. Most people do know about the famous explorer Captain James Cook. Wasn’t he the great hero of 18th century exploration?

Clay Jenkinson: Captain James Cook of England, who lived from 1728 to 1779, was the supreme explorer of his age. A great navigator and mapmaker, he circumnavigated the globe; charted unmapped coasts, including
Australia, New Zealand, Hawaii and Tahiti; and he spent time searching for the Northwest Passage on the Pacific coast. Lewis held him in the highest esteem, and at a key moment in his own journey, paid homage to James Cook.

> Our vessels consisted of six small canoes, and two large perogues. This little fleet altho’ not quite so respectable as those of Columbus or Capt. Cook were still viewed by us with as much pleasure as those deservedly famed adventurers ever beheld theirs; and I dare say with quite as much anxiety for their safety and preservation.
> Meriwether Lewis, April 7, 1805

Peter Coyote: What about the other explorers in Lewis’s generation? What were their backgrounds and concerns?

Clay Jenkinson: The explorers of Thomas Jefferson’s era had one thing in common: they were all attempting to apply Cook’s success on the sea to land exploration. There was, for example, Zebulon Pike, who led an exploring party to the source of the Mississippi River in 1805, and then up the Arkansas in 1806 where he was captured by Spanish imperial authorities. Perhaps the greatest land explorer of the age was the German scientist Alexander von Humboldt, who explored Central and South America at about the same time as Lewis and Clark. Humboldt and Jefferson had a famous meeting in Washington in 1804. Thereafter, they exchanged letters. In one letter to the baron, Jefferson apologized posthumously for Pike, and lamented that Lewis, who was by now dead, had never published his journals.

> The measures taken by his surviving companion, Clarke, for the publication, have not answered our wishes in point of despatch. I think, however, from what I have heard, that the mere journal will be out within a few weeks in two volumes 8vo.
> Thomas Jefferson, December 6, 1813

Clay Jenkinson: William Dunbar, a Mississippi planter, scientist and surveyor, was another explorer sent by Jefferson to lead an expedition along the southwestern boundary of the Louisiana Purchase. His expedition was not fully successful, but he did reach the hot springs in what is now Arkansas. In one of his letters to Dunbar, Jefferson philosophized about the purpose of western exploration:

> The work we are now doing is, I trust, done for posterity, in such a way that they need not repeat it. We shall delineate with correctness the great arteries of this great country: those who come after us will extend the ramifications as they become acquainted with them, and fill up the canvas we begin.
> Thomas Jefferson, May 25, 1805

Clay Jenkinson: Jefferson’s grand design was to map the country, assess its natural resources and learn what he could about Indians. He also wanted to extend the sovereignty of the United States to the Pacific coast. The science and the politics were inseparable, just as they would be with NASA in the 1960’s and ‘70’s.

Peter Coyote: One of the names for the Lewis and Clark Expedition was the “Corps of Discovery.” What were they discovering?

Clay Jenkinson: It’s important to remember that Lewis and Clark were traveling through a country that had long been populated by other peoples. American Indians were the first to map it and explore its flora and fauna for their own cultures. “Discovery” is a controversial term and there is a certain Eurocentrism in the way people like Jefferson and Lewis tend to use it.

Peter Coyote: Gerard Baker is a Hidatsa Indian and Superintendent of the Mount Rushmore National Memorial.
Gerard Baker: From our standpoint, from the American Indian standpoint, they weren’t exploring. I don’t think we knew the term of “exploring” back in those days. You have two different angles there. I totally agree from the white America standpoint, yes, they were exploring because they did not know the territory. From the American Indian standpoint, we already knew it. We were created here, we were created at that location. We came in and established ourselves there. If you want to think black and white, if you say, ‘Well, yeah, they were exploring, the white people were’—they were, no question about that. But we already knew what was out there.

Peter Coyote: Elliot West, professor of history at the University of Arkansas, speaking at a Lewis & Clark College symposium, suggests another name for the expedition.

Elliot West: This is far better named, I think, not the Corps of Discovery, but the Corps of Invention. Because Lewis and Clark as they came up the Missouri, came into that area that people in their culture had not seen before, past Fort Mandan, Lewis and Clark were inventing the West—literally, in all the older and newer meanings of that word. They were coming into it, and they were inventing it in the sense the word has come to mean to us. They were creating it. Lewis and Clark were creators. They were creating a particular kind of West, a West that I would suggest to you that would persist in our culture and our minds ever since.

Peter Coyote: Clay, we talked earlier about Jefferson’s commercial motives for finding an easy route to the Pacific. What was the object of all this trade activity?

Clay Jenkinson: Much of the trade of that day was fueled by fur, beaver pelts, to be exact—that “warm, fuzzy and toothy” product I alluded to earlier—to feed the insatiable European demand for fur hats.

David Nicandri: It is nearly impossible to underestimate the importance of the fur trade in the context of the time of which we are speaking. Lewis and Clark and Mackenzie, everyone involved in this era, were part of a highly contested piece of terrain and business which tended to focus upon the northwest quadrant of North America. This was, after all, the last temperate part of the continent to be explored by Euro-Americans and it fit precisely into place relative to this contest of commercial aspirations over who was going to dominate the fur trade.

Peter Coyote: David Nicandri is director of the Washington State Historical Society.

Clay Jenkinson: Charles Mackenzie, a trader with the British North West Company, was present when the expedition wintered at Fort Mandan. He recorded the tribal leaders’ bewilderment at the European obsession with beaver pelts.

White people do not know how to live—they leave their homes in small parties; they risk their lives on the great waters, and among strange nations who will take them for enemies. What is the use of Beaver? Do they preserve them from sickness? Do they serve them beyond the grave? The white people came, they brought with them some goods; but they brought the smallpox, they brought evil liquors—the Indians since are diminished, and they are not longer happy.

Charles Mackenzie

Clay Jenkinson: Jefferson was always antagonistic to the class system and particularly critical of artificial fashion. But Jefferson would have understood that the fur trade was a necessary phase in the evolution of the American West. Before family farms could be planted in the Louisiana Territory, some preliminary development had to occur. Jefferson understood that the fur trade was the essential first step to his continental vision, however ridiculous it might intrinsically be. He also was a student of the Scottish philosopher David Hume who believed that commerce is the great civilizing force of the world and that our relations with American Indians would be
made less problematic by any commercial activity that engaged their interests and provided them a fair price for raw materials. Jefferson would not have been caught dead in a beaver hat, but as usual he had a longer, more noble vision in mind.

Peter Coyote: Coming up next, we break the bonds of this earthly sphere for a fresh perspective on exploration.

John Phillips: I think the real key in the exploration business is that you never really know what’s around that next bend in the river, you never know what surprises are in store for you.

Peter Coyote: I’m Peter Coyote. You’re listening to “Unfinished Journey: The Lewis and Clark Expedition” on PRI.

[Program Break: Aaron Meyer/Bill Lamb-Unfinished Journey: The Lewis and Clark Expedition Soundtrack (Upbeat)]

Dayton Duncan: I remember exactly where I was when Neil Armstrong planted his feet on the Moon. I was in my home town of Indianola, Iowa and I was the manager of the municipal swimming pool, and we had this little television set that had a very small screen, which added to the static of what was already a staticky image. And I remember looking up at the Moon, and the Moon was the size of my thumb, and I just remember this exaltation somehow. It wasn’t an American boastful exaltation to me, it was just this human thing of how many thousands and thousands of years had people looked up there and wondered about it, and now we as a species had landed there.

Peter Coyote: Dayton Duncan remembers the Moon landing. So what is it that propels humans to try seemingly crazy things like going to new planets? What causes us to envision a future where we plant our feet on new ground?

Come, my friends,
’Tis not too late to seek a newer world.
Push off, and sitting well in order smite
The sounding furrows; for my purpose holds
To sail beyond the sunset, and the baths
Of all the western stars, until I die.

Peter Coyote: That’s from Alfred Tennyson’s Ulysses, about an urge that has carried the human race into “new worlds” again and again. Clay, you recently had an opportunity to do something that would have flabbergasted Thomas Jefferson. On the ground at the heart of the Lewis and Clark trail, you talked with an astronaut more than 200 miles above the Missouri River on the International Space Station. Let’s listen in on your conversation:

Clay Jenkinson: Station, this is Clay Jenkinson representing Lewis & Clark College and Oregon Public Broadcasting. How do you hear me?

John Phillips: Hi, Clay. I hear you loud and clear. It’s great to talk to you today.

Clay Jenkinson: Dr. John Phillips, it’s an honor for us to have this opportunity to talk to you today. How do you see parallels between what you’re doing now—you’re in the fourth month, as I understand it, of a six month mission—and the 28-month expedition of Lewis and Clark.
John Phillips: Well, I think we have a lot in common, although there are a lot of differences, too. We’re both on government mandates to push back the horizons of the people of America and, in our case, of our international partnerships. Now Lewis and Clark basically used proven technology, although they did design and build boats for their trip. But they used the same technology that people had been using for hundreds of years. And that’s not the case in our trip. The trip I’m talking about, the big trip, would be the trip to Mars. And we’re not ready to do that yet because it’s a huge technological challenge and we’re still sort of feeling our way. So we’re in the stage where we’re proving the technology, proving the operational concepts and it’s not as glamorous as actually making the big trip, but it’s necessary and I’m proud to be doing it.

Clay Jenkinson: And do you think that the future of space exploration begins with the Moon and Mars?

John Phillips: I believe it does. I think 33 years ago when we were finished with the Apollo project we should have kept our momentum going and built a longer-term colony on the Moon, and then pressed on to Mars. And I’m glad to see that we seem to have the national mandate to do that at this point and I think that’s where we’re going sometime in the next couple of decades.

Clay Jenkinson: Jefferson wanted Lewis and Clark to explore the American West because he knew that at some point the American people would actually inhabit the West. These were advance agents of what later would become American pioneer settlement. What’s the purpose of our reconnaissance and exploration of the Moon and Mars? What’s in the long run, 150 or 200 years from now?

John Phillips: I agree that the mission was more clear cut in the days of land exploration. You were pushing back the physical frontiers so that the people could follow. I think we’re doing that in space, too, but I think that frontier is more than the 100 or 200 years away that you’re talking about. I think it’s going to take us many hundreds of years to the point where we’re settling space, where we’re moving large numbers of people to other worlds. But I think it will happen. And I think that the real key in the exploration business you never really know what’s around that next bend in the river, you never know what surprises are in store for you. And we don’t know what we’re going to discover. In some ways the goals are not quite so clear until you find them. So we’re still sort of following our noses in the short-term goals of the Moon and Mars.

Clay Jenkinson: Let me ask you one last question, Dr. Phillips. Will you make the case for exploration?

John Phillips: I can give you my personal viewpoint, and everybody doesn’t agree with me. Some people believe that we’d be perfectly content to live in a society where each generation is just like the last, where we don’t know more than the last generation, where our horizons have not broadened. I think personally I would feel stifled in such an environment. I feel like we need to keep growing, we need to keep pushing back the boundaries of our knowledge, whether it be moving into space or deeper into the oceans or deeper into technology or medicine or nuclear physics. I think we need to keep expanding our horizons. I think that a society that only looks inward will get passed by by other societies.

Clay Jenkinson: Dr. John Phillips, thank you so much for your time today. We know how busy you are on the International Space Station.

John Phillips: Thanks very much.

Control: Station, this is Houston ACR. That concludes the event. Thanks.
Peter Coyote: Explorers don’t always have to travel for months at a time to travel to distant places to make discoveries. What if the next big thing in exploratory science is really small? Welcome to the world of quantum mechanics, where even the most high-powered microscopes are inadequate to see the newest frontier. Lewis and Clark explored a continent, but today’s cutting edge exploration occurs deep inside a single atom. We sent correspondent Julie Donnelly to the Thomas Jefferson National Lab to see how cutting-edge explorers are charting the world of inner space.

Julie Donnelly: On the day in 1776 that our founding fathers adopted the Declaration of Independence, Thomas Jefferson recorded the temperature four times. Jefferson's appetite for knowledge of the natural world was so voracious, it launched the Lewis and Clark Expedition. The former president's legacy has led the U.S. Department of Energy to name a very modern center of exploration after him. The Thomas Jefferson National Accelerator Facility in Newport News, Virginia, is marked clearly by long rows of flagpoles. It’s not a difficult route to travel, especially if my keelboat is a modern rental car. But the drive to the building is only the beginning of this journey into the world of nanotechnology and infinitesimal space.

Warren Funk: Our interest is not in new geographical territory but in new scientific territory. We're interested in studying the fundamental interactions that determine why matter behaves the way it does. The terrain that we’re trying to explore is the terrain of the extremely tiny.

Julie Donnelly: Warren Funk, who’s giving me a tour of the test lab, says that instead of a canoe and a guide, scientists at the J Lab use an Electron Accelerator as their main tool. It acts as a very powerful microscope, enabling them to perform experiments too small to see with the human eye. Essentially the scientists hurl tiny particles at electrons. They cause a crash and then, like crime scene investigators, they survey the damage. And this helps give them insight into the nature of matter, the terra incognita of the 20th and 21st centuries. It’s hard science, but as with the Lewis and Clark expedition, the U.S. military is a central player. But I want to know how far this technology can go. I want something a little, well… (Jetsons theme plays) Jetsons! Much of the work done at the Jefferson lab, does have practical uses. Many of them stem from the lab’s cash cow, the Free Electron Laser. The laser is special because scientists can dial up any length waveform they like. This allows them to do things like build a better sunscreen by working with UV rays. The laser also enables scientists to change the chemical structure of surfaces like fabrics.

Michael Kelly: So these are fabrics that close-up like we're talking now are maybe a bit garish. But seen from the stage at a great distance, they're just right.

Julie Donnelly: Michael Kelly worked for DuPont for many years, and is now the chief applications scientist at the Jefferson Lab. He’s showing me some swatches of theater costumes that are covered in sparkles. Nanotechnology can embed the sparkles in the fabric, so they don’t fall off, creating waste. Permanent sparkles might not have held any appeal for Lewis and Clark. But what about fabric that repels microbes? There’s an application that might have offered a useful disease prevention tool on the long journey to the Pacific in an age before antibiotics. Today, this development could reduce the number of infections in hospitals by using the fabrics for curtains, bed linens and lab coats. And the Jefferson Lab also has a deal with the Department of Homeland Security to test the fabrics in police stations and firehouses.

Michael Kelly: Well, if we imagine a bioterrorism incident, at the focal point of the incident, the contamination
is very intense and people will come in moon suits to clean it up. But besides the area where the contamination is intense, there is a huge area where the contamination is tiny. But it cannot be ignored, either. It will buy a margin of safety. It will be a new link in the chain of protection.

Julie Donnelly: The Jefferson Lab’s focus on commerce and national security are two more ways that this new expedition mirrors that of Lewis and Clark. The heady mix of science and politics can sometimes cause friction, but physicist Jim Boyce says the scientists at the Jefferson Lab take it all in stride.

Jim Boyce: The tension between the bureaucrats that give us the money and the researchers that just want to do exploration is not going to go away and it’s just something that we just have to work with and the nice thing about this particular place is that we do have a very good working relationship.

Julie Donnelly: Boyce says both sides - scientists and government leaders alike are united in their commitment to the quest for knowledge.

Lewis and Clark, who took such careful observations along their route to the Pacific, might have been thrilled to learn about picosats—tiny satellites the size of hockey pucks. They could be used to gain multiple perspectives out in space. Think of it like putting a disposable camera on every table at a wedding. They wouldn’t replace the big satellite - the professional photographer. But they could be launched from the underbelly of an airplane and they could even help with repairs.

As the scope of Lewis and Clark’s journey was unprecedented in the annals of American history, so too is the exploration of nanotechnology. The work being performed at the Jefferson Lab extends deep into space, and back to the beginning of time, according to physicist Frank Close.

Frank Close: The experiments that we do are able to describe what the Universe was like a billionth of a second after the Big Bang and how things have developed since then. But why there was a Big Bang at all, science cannot address.

Julie Donnelly: For Lewis and Clark, there was a clear end to their journey. Thomas Jefferson told the men to consider their mission accomplished when they returned their men and journals safely to St. Louis. But there will be no such neat ending to the physicists’ journey into nanotechnology. Thomas Jefferson, the Enlightenment scholar who inspired the lab, would likely relish such a limitless challenge.

In Newport News, Virginia, I’m Julie Donnelly

Peter Coyote: T.S. Eliot reading his fourth quartet, Little Gidding.

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.
Through the unknown, unremembered gate
When the last of earth left to discover
Is that which was the beginning;

Peter Coyote: Do the poets have it right? In exploring the unknown, are we in fact exploring something in ourselves? Or is commerce the real driving force, whether it’s the desire for beaver pelts or fancy microbe-repelling fabrics? Can we ever really know what leads us to walk off the map of the known world? To close, we
Clay Jenkinson: Because we look at things in retrospect, we take it for granted that the United States was going to dominate the North American continent. It feels almost as if it was our ‘manifest destiny’ to extend the republic from sea to shining sea, as the late Stephen Ambrose liked to put it. But that’s not how Thomas Jefferson saw it. Jefferson did not doubt that the United States deserved to dominate the continent, but it was not clear to him that we would do so. In 1804, everything was up for grabs. The United States had a paltry little navy and a modest frontier army. Meanwhile, Britain was master of the seas and France was throwing its armies all over Europe and Russia. Imperial Spain was in decline, but she had been engaged in colonial extraction for centuries, and she was not willing to stand by as the Americans infiltrated the interior. Spain actually sent out three military intercept missions to cut off Lewis and Clark. All failed.

To his Enlightenment friends, Jefferson liked to emphasize the scientific agenda of the Lewis and Clark Expedition, but the mission was sold to Congress as a commercial enterprise. And behind both goals was a hardheaded commitment to making sure that nobody but the United States would dominate the West.

Lewis’s speeches were delivered to Indians, but they were actually designed for Europeans and their message was simple: This was America’s country now. Keep out.

Jefferson’s lifelong anxiety about keeping the Mississippi River open to American commerce was part of the global space race of the 18th century. The great European powers wanted new colonies, new sources of raw materials, new markets for their goods. That “space race” inspired Jefferson’s war time support of George Rogers Clark’s military activities in the Ohio Valley. That same concern led Jefferson to dispatch his trusted protégé, James Monroe, to Paris to buy New Orleans. That he returned with all of the Louisiana Territory was the ultimate space race triumph—828,000 square miles to the United States for three cents per acre. So, too, the Lewis and Clark Expedition, the Freeman-Custis Expedition up the Red, the Pike Expeditions up the Mississippi and the Arkansas, and the Dunbar and Hunter Expedition up the Ouachita were all part of America’s plan to explore, map and dominate the continent.

There had to be winners and losers in such a geopolitical contest. The winners would be the citizens of the United States. The losers would be the French, British, Spanish and, of course, American Indians. It was a space race in a more literal way than all the rocketry of the 1960’s.

President Kennedy challenged the American people to land a capsule successfully on the Moon and return safely. But he did not talk about occupation colonies or resource extraction. The race to the Moon was less about geography and national boundaries than it was about technological capacity and national prestige. The drama may have been higher but the stakes were decidedly lower in the Mercury and Apollo years. And yet, when Neil Armstrong and Buzz Aldrin stepped foot on the surface of the Moon in 1969, one of the first things they did was plant an American flag in the Sea of Tranquility. “We come in peace for all mankind,” they intoned like good children of the Enlightenment. But President Jefferson would instantly have understood that flag as a sovereignty token representing not the world community, but the United States of America.

For the Unfinished Journey, I’m Clay Jenkinson.