

RURAL MUSEUMS: HARNESSING THE POWER OF
PLACE TO CONFRONT SILENCES AND
REVITALIZE COMMUNITIES

by

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DEDICATION

It is my honor to share the histories of Carter County Museum, the stories of how the staff and volunteers contribute to communities both local and worldwide, and the narratives that have been previously silenced or omitted in discussions of rurality, American Studies, and Museum Studies. My thanks to the community for trusting me with these histories and to all my friends and family in Ekalaka for the relationships that make this work possible.

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TABLE OF CONTENTS

1. INTRODUCTION	1
Defining Rural	4
Museums and Rural Community Life	6
A Case Study: Carter County Museum.....	7
Rural Social Space	9
Methodology	12
Literature Review	14
Rural Research	15
Outline	19
2. HISTORY, LOCAL IDENTITY, AND POWER OF PLACE	23
A Brief History of Ekalaka and Carter County.....	24
Founding of the Carter County Museum	31
The First County Museum in Montana.....	38
Growth of the Museum as.....	41
an Educational Institution	41
1946 - 1996: Marshall Lambert as Director of Carter County Museum	43
The Carter County Museum as a Community Anchor Institution	48
The Annual Dino Shindig	49
Relationship with Medicine Rocks State Park.....	51
Place-Conscious Curriculum at CCM and The Teacher Advisory Council	53
Museum Exhibits Defined by the Community	57
The Tooke Bucking Horses Collection.....	58
The Carter County Heritage Orchard.....	61
Conclusion	64
3. CARTER COUNTY MUSEUM AS AN EPICENTER OF PALEONTOLOGY	73
The Fossil History of the United States through the Collections of.....	74
Carter County Museum.....	74
The Mastodon Tooth: Big Bone Lick and Silenced Histories	75
The Marsh Pick: Economics and the Great Bone Rush	83

TABLE OF CONTENT CONTINUED

The Cycad: Fossil Ownership, Public Lands, and Private Property	91
Fossil Sales.....	95
The Mystery Skull: Museums and Fostering Understanding of the Scientific Process	99
Connecting Natural History	104
Museums and School Classrooms	104
The Annual Dino Shindig: Contributing to Rural Economic and Community Vitality	106
Contested Representations: Cultural Narratives and Creation Museums.....	111
Conclusion	117
4. CONFRONTING THE USUAL SILENCES	134
INDIGENOUS HISTORIES OF PLACE.....	134
Written & Archaeological Histories of Place	135
Indigenous Geomythology.....	138
Indigenous Fossil Histories.....	142
Paleontological Dispossession on Indigenous Lands	146
The Land and its Settlement	151
Lulu Harmon: A Local Indigenous Narrative of Homesteading.....	158
The Russell Family and the Pierre Indian School.....	160
Modern Museum Methods to Address Decolonization.....	163
Conclusion	169
5. “SHOTS FELT ‘ROUND THE WORLD”: MUSEUMS AND RURAL COMMUNITY VITALITY.....	177
A Brief History of Dahl Memorial Hospital	180
Rural Museums and Healthcare Collaborations	181
A Useful Life	185
Past Pandemics, Present Problems.....	188
Smallpox and the Anti-Vaccination Movement	189
Influenza	191
Measles, Mumps and Rubella	193
COVID-19.....	195
COVID-19 Vaccines	198
Museums and Civic Health: The “Hilleman & Vaccines” Curriculum.....	199

TABLE OF CONTENTS CONTINUED

Shots Felt ‘Round Montana: Weaving Histories in Rural Montana	209
Conclusion	213
6. CONCLUSION.....	238
REFERENCES CITED.....	254
APPENDICES	264
APPENDIX A: Measurement Of Museum Social Impact Survey Instrument.....	265
APPENDIX B: Dino Shindig Visitor Survey Instrument.....	276
APPENDIX C: “Shots Felt ‘Round The World” Exhibit Survey Instrument	285

LIST OF FIGURES

Figure	Page
1. A model of rural social space.	22
2. Sawmills in Carter County. Clockwise from left: Hall Sawmill (1905-06) glass plate negative by Septon Cady. Ed Conger's Sawmill (1911). Lantis Sawmill (undated). Glenn Brewster Sawmill, nine miles south of Ekalaka (undated). Ernest Brewer's Sawmill (1947).	66
3. Page from the 1938 Safari (Limited) journal of the Edmontosaurus excavation kept by Walter H. Peck. This section shows one of the local visitors at the camp and the bones that had been dug up and plastered by the time of his visit.	67
4. Interior of the Carter County Geological Museum in the basement of the old high school in Ekalaka (1930s). Images courtesy Carter County Museum archives.	68
5. Digging out a Triceratops femur on Blacktail Creek, October 23, 1939. Pictured here: (1) Morris Renshaw and N.Y.A students (2) Frank Quas, (3) Vernon Parke, (4) Anna Lee Cleveland, and (5) Margaret Shelden. Image courtesy Carter County Museum archive.	68
6. Marshall Lambert and high school students Garth Quade and Norton Walker posing in front of the stone arches they helped construct in the new museum building. Image courtesy Carter County Museum archives.	69
7. Students surrounding the 1938 Edmontosaurus on display at the museum in the high school (1954). Images courtesy Carter County Museum archives.	69
8. Residents of Carter County engaged in fossil preparation and fieldwork. Photos by Ross Madden for Life Magazine (1954).	70
9. 1940s style corral constructed at the Tooke Ranch for the Feek's Vision Documentary film shoot. Photo by Mary Peters reprinted with permission.	71
10. Tooke Bucking Horses exhibit at Carter County Museum. Photo by Sabre Moore.	71

TABLE OF FIGURES CONTINUED

Figure	Page
11. Volunteers harvesting buds from apple trees around Carter County, Montana. Photo by Stewart Cook.	72
12. Mastodon Tooth from Big Bone Lick, Kentucky. Carter County Museum collections.	118
13. The Artist in His Museum. By Charles Willson Peale	119
14. Paleontologist Dr. Tyler Lyson, Associate Curator of Vertebrate Paleontology, Denver Museum of Nature and Science) posing with the Marsh Pick given to Ted Snyder by Dr. Barnum Brown. Lyson was an Annual Dino Shindig Speaker from 2013 - 2017. Tintype photo by Tom Fowlks, courtesy Carter County Museum (2017).	120
15. Diplodocus Carnegii (Hatcher, 1901).	121
16. Postcard: Restoration of a Giant Dinosaur Apatosaurus by Charles R. Knight. Chicago Field Museum. Chuckman's collection of Chicago postcards, uploaded February 2015.	122
17. Artist Ethel Frye painted a mural in the style of Charles Knight at Carter County Museum (1980s). Image courtesy Carter County Museum archives.	122
18. Barnum Brown of the American Museum of Natural History, ready to depart on a bone hunting expedition in 1934 (Spence, 1966).....	123
19. First mounted dinosaur specimens in Carter County Geological Museum at the old high school building (1934). Triceratops horns at bottom right. Left leg of Tyrannosaurus rex also on display, though not pictured. Photo by Reverend R. T. Loesch, courtesy	123
20. Screenshot from the online exhibit regarding the Triceratops "Horridus" showing the origin of the fossil. Note that it appears to come from western Montana (rather than the eastern corner where it was found) and does not address any further information.....	124

TABLE OF FIGURES CONTINUED

Figure	Page
21. Screenshot of the “Homer” Triceratops containing detailed information about the origin of the fossil.	124
22. Map showing public lands in the United States and their associated Federal Agencies. Image courtesy National	125
23. Paleontologist Dr. Kirk Johnson, Sant Director of the National Museum of Natural History, Washington, D. C. holding the fossil cycad from the Carter County Museum collections. Johnson was an Annual Dino Shindig Speaker in 2014, 2016, 2017, and 2020. Tintype photo by Tom Fowlks, courtesy Carter County Museum.	126
24. Letter dated October 8, 1940, from Charles Gilmore regarding the mystery skull specimen at Carter County Museum. Image courtesy Carter County Geological Society Founder’s Archive at Carter County Museum.....	127
25. Walter Peck’s response to Gilmore’s letter, dated October 13, 1940. Image courtesy Carter County Geological Society Founder’s Archive at Carter County Museum.	128
26. Mystery skull as it was found by Winkley, 1940. Photos by Walter H. Peck, courtesy Carter County Museum.....	129
27. AMNH Accession page. Image courtesy Carter County Geological Society Founder’s Archive at Carter County Museum.....	130
28. Photograph of the mystery skull as it appeared on December 4, 1940, at the laboratory of the American Museum of Natural History in New York City. The skull is being prepared by Mr. Falkenbach of the AMNH. Photo sent to Walter Peck by Dr. Walter Granger in December 1940. Image courtesy Carter County Geological Society Founder’s Archive at Carter County Museum.....	131
29. Letter regarding the teeth of the mystery skull and their resemblance to Troodon. Image courtesy Carter County Geological Society Founder’s Archive at Carter County Museum.	132

TABLE OF FIGURES CONTINUED

Figure	Page
30. Annual Dino Shindig data compiled from the Annual Dino Shindig Analysis (2016-2022).....	133
31. Carter County Museum volunteers at Mill Iron Dig, early 1980s. George Frison in center, Marshall Lambert at top left. Image courtesy of Carter County Museum archives.	170
32. Replica of a Goshen point found at the Mill Iron Site in the early 1980s held by Carter County Museum. Image by Sabre Moore.....	170
33. Randall Mammoth dig in the Powder River area of Southeastern Montana. Note the sump pump hose in the upper part of the image, the skull in the middle and the additional tusk. Image courtesy Carter County Museum.....	171
34. A local landowner lifts a mammoth skull from the Powder River to the back of a pickup for transport back to Carter County Museum. Note the field jacket around the bone constructed of plaster and burlap. Photo by Sabre Moore.	171
35. A series of vertebrae from the Pinto Plesiosaur dig. Photo by Stewart Cook, courtesy of Carter County Museum Archives.....	172
36. Skeletal remains of Vickie the mosasaur in fossil jackets in the Carter County Museum collection. Note the image on top which shows the full skeleton. Image by Nathan Carroll, courtesy Carter County Museum.....	172
37. Quetzalcoatlus on display at left at the Carter County Museum. Image by Sabre Moore.....	173
38. Local fossil find -- an ammonite that resembles an Iniskim or buffalo stone.....	173
39. Lakota Territory 1851 Fort Laramie Treaty. Green shaded lands (529) are Arikara, Hidatsa and Mandan, Yellow are Crow. Government Printing Office, 1899, Public domain, via Wikimedia Commons.	174

TABLE OF FIGURES CONTINUED

Figure	Page
40. Map of Federal Indian Boarding School sites in South Dakota. Pierre Indian School is located at the dot on the city of Pierre.	175
41. Table showing the institutions in Montana that have Native American remains in their collections. Note Carter County Museum at the bottom.	176
42. COVID-19 Vaccination Motivators and Barriers. February 2022 Report to National Rural Health Association.	216
43. Local panel on display at Dahl Memorial Clinic (Ekalaka, Mont.). Photo by Sabre Moore (2021).	216
44. Satellite CCM exhibits at Dahl Memorial Hospital (Ekalaka, Mont.). Photo by Sabre Moore (2023).	217
45. Results from Carter County Museum respondents during the second wave of the survey “Culture & Community in a Time of Transformation: A Special Edition of Culture Track” conducted from April 5-30, 2021.	218
46. Local panels on Healthcare and Infectious Disease in Carter County designed by Sabre Moore with reference to materials in the Carter County Museum Archives, Montana Memory Project, and Montana Newspapers.	219
47. “Fate Overtook Them” from Dire Threat at Health Official, Ekalaka Eagle, April 26, 1918.	220
48. Clockwise from left: Big Timber Pioneer (1968), Wotanin Wowapi (1980), Dillon Daily Tribune (1952) coverage of rubella and mumps epidemics in Montana towns.	221
49. “How Vaccines Work” Illustration by Claire Jorgensen adapted for “Hilleman & Vaccines” Curriculum, p. 82.	222
50. Community Discussion Guide for “Hilleman & Vaccines” Curriculum high school Lesson 1, p. 150.	223

TABLE OF FIGURES CONTINUED

Figure	Page
51. “Hilleman & Vaccines” Curriculum high school Lesson 2 example, p.161.	224
52. “Hilleman & Vaccines” Curriculum high school Lesson 2 example, p.159.	225
53. “Hilleman & Vaccines” Curriculum elementary Lesson 5 example, p. 137.	25726
54. “Hilleman & Vaccines” Curriculum high school Lesson 5 examples, p. 186.	227
55. “Hilleman & Vaccines” Curriculum high school Lesson 5 examples, p. 187.	228
56. Poster describing “Hilleman & Vaccines” K12 curriculum, presented at American Alliance of Museums Annual Meeting (May 2021).	259
57. Poster describing “Hilleman & Vaccines” K12 curriculum, presented at American Alliance of Museums Annual Meeting (May 2021).	230
58. Local panels designed by Sabre Moore in consultation with Frontier Gateway Museum.	231
59. Local panels designed by Sabre Moore in consultation with Big Horn County	232
60. Local panels designed by Sabre Moore with reference to materials from Lewistown Public Library, Montana Memory Project, and Montana Newspapers.	233
61. Local panels designed by Sabre Moore with reference to materials from Great Falls on Montana Memory Project and Montana Newspapers.	234
62. “Shots Felt ‘Round the World” on display in communities around Montana as part of a SHARPS project grant from Humanities Montana. Top row (left to right): Chinook, Billings, Great Falls. Middle: Lewistown. Bottom (left to right): Hardin and Miles City. Made available through the Carter County Museum Archives.	235

TABLE OF FIGURES CONTINUED

Figure	Page
63. Chart depicting demographics of survey participants during the tour of the “Shots Felt ‘Round the World” exhibit through Montana (2022-23).....	236
64. Chart summarizing the level of understanding selected by survey participants regarding specific subjects before and after attending the “Shots Felt Round the World” exhibit during its tour through Montana (2022-23).....	236
65. Chart summarizing type of impact selected by survey participants after attending the “Shots Felt ‘Round the World” exhibit during its tour through Montana (2022-23).	237
66. Chart summarizing reasons why survey participants visit museums as identified during the “Shots Felt ‘Round the World” exhibit during its tour through Montana (2022-23).....	237
67. MOMSI Study Inputs and Outcomes.....	2501
68. Indicators identified by CCM-based participants in the quantitative data results regarding significant impact of continued learning & engagement in the MOMSI study.....	251
69. Indicators identified by CCM-based participants in the quantitative data results regarding significant impact of valuing diverse communities in the MOMSI study.....	251
70. Indicators identified by CCM-based participants in the quantitative data results regarding significant impact of strengthened relationships in the MOMSI study.	252
71. Indicators identified by CCM-based participants in the quantitative data results regarding significant impact of increased health & wellbeing in the MOMSI study.	252
72. CCM MOMSI Qualitative Data Table in response to “How does this museum benefit your community?”	253

ABSTRACT

In the United States, 43 percent of all museums are in rural towns; in Montana, rural towns account for 56.5 percent of museums. Contemporary research has neglected museums based in rural communities. While scholarship on libraries and education in rural communities thrives, there is a gap in research on rural museums. This dissertation acknowledges that gap. It explores how rural museums, like the Carter County Museum in Ekalaka, Montana, can employ the Rural Social Space Model to identify and confront the usual silences about the land and its settlement and explore the ways that power is exercised in the practices of place. Using this framework, this dissertation draws connections between the museum and the areas of environment, social well-being, and economic development, which produce rural social space and contribute to community vitality. This strategy recognizes the value of a physical place, its unique and varied histories, and the diversity of people within and connected to that place, both past and present. Rural communities have distinctive histories embedded within the culture and historical context of a broader region. Rural museums foster the experience of these histories as meaningful and personal, nurturing identity and connection to local places. As such, museums play a vital role in rural community life and provide tools to address equity challenges facing rural places. These museums regularly engage in civic work and can leverage their positions as community congregant spaces and trusted institutions to further civic action, including fostering deliberate discussion, offering volunteer opportunities, hosting public meetings, and engaging visitors in exhibits that explore the connection of past history to present action.

CHAPTER ONE

INTRODUCTION

Rural places are always present but often overlooked in research. Roderick A. Ferguson, in his 2018 presidential address to the American Studies Association Annual Conference, referred to the rural as “a site of heterogeneous temporalities and spaces [...] that even the most vaunted intellectual formations have strained to appreciate and acknowledge.”¹ This research neglect has occurred despite the fact that the rural demographic accounts for 19.3 percent of the population which occupies 97 percent of the nation’s land area.² Furthermore, rural areas typically contain most of a nation’s natural resources and physical infrastructure and are thereby key to “a nation’s social and economic wellbeing.”³ Like American Studies, the field of Museum Studies also overlooked the importance of rural spaces in academic research. The last time a nation-wide study of rural museums was compiled in the United States was in 1992 in a report to Congress. This report served to present the results of the Institute of Museum Service’s *National Needs Assessment of Small, Emerging, Minority and Rural Museums*. The study found that “these museums account for a vast reservoir of educational and cultural opportunities”⁴ and provided a foundation for the modern IMLS grant programs that focus on small and rural

¹ Roderick A. Ferguson. “To Catch a Light-Filled Vision: American Studies and the Activation of Radical Traditions” (2019) p. 318.

² U.S. Census (2020).

³ David L. Brown. “Why Rural People and Places Matter in Urbanized Society,” in *Rural People and Communities in the 21st Century: Resilience and Transformation*, Second edition (Medford, M.A.: Polity, 2019).

⁴ Rebecca W. Danvers. *National Needs Assessment of Small, Emerging, Minority, and Rural Museums in the United States*. edited by Institute of Museum Services. (Washington, DC: Institute of Museum Services, 1992). p. 3.

museums. In the years since, museums have become more public-service and community minded,⁵ and in turn, museums are increasingly seen as vital institutions in their communities, “integral to building healthier communities and contributing to a community’s well-being.”⁶ However, while contemporary research has increasingly focused on libraries and rural communities, the same cannot be said for museums in rural areas despite the fact that museums located in small, rural towns account for 43 percent of all American museums.⁷ This is greater than the share of museums in any other locale. The difference is even more dramatic in Montana where 56.5 percent of museums are in rural areas.

This dissertation acknowledges this gap in contemporary scholarship and explores how rural museums, like the Carter County Museum, can employ the Rural Social Space model to identify and confront the usual silences about the land and its settlement and explore the ways that power is exercised in the practices of place. The Rural Social Space model was developed by Jo-Anne Reid et. al. (2010) in the TERRAnova project as a theoretical framework for understanding the complex nature of contemporary rurality. This framework conceptualizes rural space as it is perceived geographically through particular places and locations, scientifically in terms of quantitative measures, metaphorically as an image/idea/icon in culture, history, policy

⁵ M. Margaret Kadoyama, *Museums Involving Communities: Authentic Connections* (New York: Routledge, Taylor & Francis Group, 2018). p. 41.

⁶ Ibid, p. 18.

⁷ For example, a search of “museums and rural” on the Institute for Museum and Library Services website reveals four results, all of which are related to grant announcements. By contrast, a search for “libraries and rural” on the same site returns over four pages of articles, including white papers and a variety of studies linking these institutions to critical change in their communities.

and economics, and practiced as a matter of everyday life.⁸ Using this framework, I draw connections between the museum and the areas of environment, social wellbeing, and economic development, which produce rural social space and contribute to community vitality. Community vitality is closely associated with notions of vibrancy, growth and wellbeing and is often measured by a community's ability to address and adapt to change so it may sustain itself and thrive in the future.⁹ If "community wellbeing is the combination of social, economic, environmental, cultural and political conditions identified by individuals and their communities as essential for them to flourish and fulfill their potential,"¹⁰ then museums can contribute to wellbeing at the community level by focusing on four areas: lifelong learning and cultural engagement, physical and mental health, economic development, and place-making and the environment.¹¹ This place-attentive strategy recognizes the value of physical place, the diversity of people within and connected to that place (both past and present) and frames place with power.¹²

⁸ Bill Green and Jo-Anne Reid, "Rural Social Space: A Conceptual-Analytical Framework for Rural (Teacher) Education and the Rural Human Services," in *Ruraling Education Research: Connections between Rurality and the Disciplines of Educational Research* (Singapore: Springer Nature, 2021), pp. 34-35.

⁹ Dianne Thomson and Steven G. Hertz. "Exploring the Link Between Rural Schools, Community Vitality, and Wellbeing." *Journal of Contemporary Issues in Education*, 2018, 13(1), pp. 37-57.

¹⁰ Kadoyama, p. 18.

¹¹ Michael H. Norton et. al. *Strengthening Networks, Sparking Change*. (2016) p. 11.

¹² Simone White and Jayne Downey, "Introduction: International Trends and Patterns in Innovation in Rural Education" in *Rural Education Across the World: Models of Innovative Practice and Impact*. (Singapore: Springer Nature, 2021), p. 13.

Defining Rural

Rural America means different things to different people. It can be a small town in Kentucky supported by coal mining, or a one-room schoolhouse in the prairies of Montana. It can be acres of corn in Nebraska, an Indigenous community on the northern coast of Alaska, or a parish in Louisiana. As a reflection of this diversity, “rural” has been defined in over a dozen separate ways in scholarly literature. In 2017, authors Hawley, Koziol and Bovaird collected these myriad definitions in their article “Defining and Communicating Rural,” which grouped them into the following categories: county level systems; sub-county level systems; educational jurisdiction systems; and researcher developed systems. Each has a cautionary note about the problems associated with such inflexible definitions. For example, county level definitions often ignore the diverse collection of communities within the same boundary line and are at risk of falling into the “county trap,” such as a metropolitan city in a county being the reason for classifying an entire county as “metropolitan,” omitting the rural areas.¹³ Similarly, the Office of Management and Budget (OMB), which uses county level classification systems to determine eligibility and funding for federal programs, uses the terms metropolitan, micropolitan, and non-core based statistical areas. Here, metropolitan is over 50,000, micropolitan is at least 10,000, and the rest are non-core. This translates in some research as rural being defined according to the OMB designated non-core based statistical areas.¹⁴ Sub- County systems base classifications of rural and urban on census tracts, census blocks, and/or ZIP codes. These are then defined by

¹³ Leslie R. Hawley, Natalie A. Koziol, and James A. Bovaird, “Defining and Communicating Rural,” in *Rural Education Research in the United States* (Switzerland: Springer International Publishing, 2017), p. 33.

¹⁴ Ibid, p. 37.

population density, for example: urban areas having 50,000 or more; urban clusters 2,500-50,000; rural everything else.¹⁵ Here again we see rural as a byproduct, defined as “not-urban” instead of by features unique to rural locations.

In December 2022, the United States Census Bureau released a new definition of “urban America,” which raised the population threshold of urban areas from 2,500 to 5,000 people, added housing units to the definition, and eliminated the distinction of micro clusters. This new criterion shifts the urban-rural population ratio from 79.6 percent urban and 20.4 percent rural. This represents the largest modification to the definition since it was first introduced in 1911 and it is also the first time that housing units have been added to the definition, which states that an area is considered urban if it has at least 2,000 units (calculated at 2.5 people per unit). This addition was made to address issues in the 2020 data related to privacy protection.¹⁶

Common factors in each of these definitions of “rural” are that they emphasize geographic distances from urban centers and population density. They overlook the complexity of rural places, each of which has its own distinctive histories, ecologies, economics, and politics. The reality is that most of the United States is rural, which argues for a definition of rural first, and non-rural second. The “current phenomenon of always putting rural at the back of the line is called urban centric or urban normativity, [which] implies that urban is the norm and rural is therefore, by process of elimination, abnormal or deviant.”¹⁷ Thus, I will borrow an

¹⁵ Hawley et. al., Page 41.

¹⁶ Mike Schneider, “US Census Bureau Redefines Meaning of ‘Urban’ America,” *Associated Press*, December 29, 2022, <https://apnews.com/article/census-bureau-urban-rural-redefining-smaller-areas-322bb1a04109bd7eda8c6994e3456bd0>.

¹⁷ Ellen Greene Stewart, *Mental Health in Rural America* (Routledge, 2018). p. 2.

inclusive definition that conceptualizes “rural” as:

A quantitative measure, involving statistics on population as described by the U. S. Census; as a geographic term, denoting particular regions and areas or spaces and places; and as a cultural term, one that involves the interaction of people in groups and communities.¹⁸

Therefore, in this study, rural is defined as a local or regional spatial structure, which has a low population density with a specific culture, or way of being, that has been shaped by local history, demography, environment, and economy.¹⁹

Museums and Rural Community Life

Rural communities each have distinctive histories that are embedded within the culture and context of a broader region, and rural museums foster the experience of these histories as meaningful and personal, nurturing identity and connection to local places. As such, museums play a key role in rural community life and provide tools to address equity challenges facing rural places. Many rural museums are located on Main Street, the hub of rural communities, alongside other businesses, and key offices, like the school or county courthouse. In rural communities, museums further fit the role of “Third Places,” public places where people can gather and interact, which are central to local democracy and a community’s social vitality.²⁰ Economically, rural museums serve as employers, but also as tourist destinations, and further

¹⁸ Kim Donehower, Charlotte Hogg, and Eileen E Schell, *Reclaiming the Rural: Essays on Literacy, Rhetoric, and Pedagogy* (Carbondale: Southern Illinois University Press, 2012). p. 2.

¹⁹ Jo-Anne Reid et al., “Regenerating Rural Social Space? Teacher Education for Rural—Regional Sustainability,” *Australian Journal of Education* 54, no. 3 (November 2010): 262–76, <https://doi.org/10.1177/000494411005400304>.

²⁰ Ray Oldenburg, *The Great Good Place: Cafés, Coffee Shops, Bookstores, Bars, Hair Salons, and Other Hangouts at the Heart of a Community* (Philadelphia, PA: Da Capo Press, 2005).

contribute to the community by hosting events and school groups. Rural county museums are often funded in part by a county tax base, providing support for their status as an essential service to the community and extra incentive for their work as civic institutions. As such, rural museums regularly engage in civic work, and can leverage their positions as community congregant spaces and trusted institutions to further civic action, including fostering deliberate discussion, offering volunteer opportunities, hosting public meetings and advertising service learning or community service programs.²¹ Often, rural museums do not have the luxury of specialization like their urban counterparts. Where urban museums might focus only on cultural or natural history, rural museums routinely encapsulate both cultural and natural history collections, thereby providing a space to engage with the community's geographic and demographic past, present and future.

A Case Study: Carter County Museum

The Carter County Museum (CCM) is a nonprofit organization located in Ekalaka, Montana, in the southeast corner of the state, and is uniquely positioned as a strong case study due to its longevity in the community, geographic isolation from metropolitan areas, relationship with other museums and organizations in rural places, and status as a community anchor – an institution defined by spatial immobility, nonprofit status and public service mission. Museums fit this definition as they are “place-based, perceived as public assets and have a public service mission.”²² My focus on a single case study extends the theory of rural social space as a

²¹ Anthony Pennay, *The Civic Mission of Museums* (American Alliance of Museums, 2020).

²² Michael H. Norton and Emily Dowdall. *Strengthening Networks, Sparking Change: Museums and Libraries as Community Catalysts*. (Institute for Museum and Library Services, 2016). p. 8.

conceptual-analytical framework to include the through-line of history as it relates to the economy, demography, and geography of Carter County, Montana. I chose to study the Carter County Museum using the rationale that a single-case study “can represent a significant contribution to knowledge and theory building” by including museums as critical rural institutions alongside schools, hospitals, and local government. The Carter County Museum is a sister institution to the Museum of the Rockies in Bozeman, Montana, a non-department of interior repository for Bureau of Land Management fossils, and a member of the Kumamoto Montana Natural Science Museum Association and Montana Dinosaur Trail. The museum uses these associations and others to work across borders, providing the option to examine the production of rural social space in a transnational context as well as locally in Montana and Carter County.

My position as executive director of the Carter County Museum and residency in Ekalaka, Montana provides the immersion and perspective necessary to best know the place.²³ I was raised on a sheep and cattle ranch outside Douglas, Wyoming and am part of the fifth generation to carry on the traditions of ranching in the area. I attended rural schools in Wright, Wyoming, with a graduating class of thirty-three people. At Montana State University in Bozeman, Montana, I majored in history with minors in Native American studies, museum studies, and English literature. I studied abroad on Semester at Sea in 2010 and began thinking about a career in museums, as this experience taught me the value of place-attentive histories and contemporary interpretation. After graduating in 2013, I moved to Ekalaka for the first time, serving as an

²³ Ibid.

intern who redesigned the American Indian displays at the Carter County Museum. I was also a founder of the now-annual Dino Shindig event. In subsequent years, I attended Johns Hopkins University where I earned a dual master's degree in museum studies and Nonprofit Management, which prepared me for my current position as executive director at the Carter County Museum. As part of my work with the museum and other boards, I travel regularly to rural communities, especially those along the Montana Dinosaur Trail – a fourteen institution membership of Montana museums where dinosaur fossils comprise a significant portion of their collections. This background in rural communities and my status as a resident of Carter County means that my work is with and for rural communities and can “resonate with rural respondents [and] help build relationships and bridges.”²⁴

Rural Social Space

In 2010, Jo-Anne Reid and Bill Green published a paper, “Regenerating Rural Social Space? Teacher Education for Rural-regional Sustainability,” which examined the issues affecting rural-regional sustainability alongside the discussion of the attraction and retention of high-quality teachers for rural youth. This article modeled a concept of rural social space, which brought together social, economic, and environmental dimensions of rural regional sustainability (Figure 1). As such, the authors combined demographic and social data across geological and cultural formations.

This model was developed to “draw attention to issues impacting on the lives and learning of people living in particular places,” in this case highlighting rural places, and to

²⁴ Norton, p. 60.

“support us in complexifying our thinking about any place, rather than simplifying it.”²⁵ This is in response to a demonstrated deficit view of rural schooling, in which the rural had been named as “problematic, as difficult to staff...the myth of the loneliness of rural living is real...pictures of drought and decline; of the failure of rural schools to achieve educational outcomes comparable to those of city schools.”²⁶ This quote depicted one way of describing life in the Australian Outback, which provided the focus for the TERRAnova study; I would argue that the same narrative is present regarding rural America. Indeed, rural America has been represented in movies, magazines, and academic journals as an area in perpetual decline, “a constant focus on out-migration, population decline, and other trends that indicate a decline in the economic well-being and social vibrancy of these communities.”²⁷ In both rural America and rural Australia, these representations are acknowledged as “most certainly not the whole truth” and therefore substantiate the need for a conceptualization of rural social space as a diversity of discourse which recognizes the value of difference, and that “many rural communities are characterized by extremes of wealth, age, health and capacity as well as by racial and cultural diversity.”²⁸ This, as discussed earlier, points toward the need to define rural geographically, demographically, and culturally, insofar as how the rural is lived -- how people and communities understand their existence and place in the world and how that culture was developed in a particular place.²⁹ From here, Reid brings in two other scholars, Lefebvre and Halfacre, who further define rural space as

²⁵ Green, p. 30.

²⁶ Ibid. p. 32.

²⁷ John Crabtree, “A Different Path for Rural America,” *The American Journal of Economics and Sociology* 75, no. 3 (2016): 605–22, <https://www.jstor.org/stable/45129314>. p. 605.

²⁸ Reid, p. 267.

²⁹ Green, p. 33-34.

lived or practiced space, “framed by capitalism and is thus closely linked to notions of production and economy and also power.” It is understood that space is never neutral, and that the bringing together of rural space and social space complexifies and showcases the richness of rurality. The Rural Social Space Model, in exploring these developments and practices of place, gives particular attention to the historicization of relationships in the context of time³⁰ and the ways that power is exercised in the practices of place:

When the particular rural social space produced from the history of the interrelationships between the socio-environmental context and resources of any particular place, the people who have lived, and live there now, and the things and work they have done and now do, to live their lives in that place, is properly accounted for, power relations are thereby inscribed and embodied across all dimensions of the model—in and across the geography, the economy, and the population, and their interrelations.³¹

Carter County Museum, as a historical institution that chronicles the development of that culture in Ekalaka, Montana, provides a lens through which we can extend this framework of rural social space by tracing history through time, from the environmental aspects of prehistoric southeastern Montana to the social demographics of settlement by Indigenous cultures and European immigrants, and the economic spheres of the community today. In each, the museum both shows the practices of place through time and is itself an example of a practitioner of place. This is achieved using inward-looking place-based exhibits, which foreground the local and the known and an outward place-attentiveness, which values physical space, the diversity of people in and connected to that place, and how the place itself can be used as a teaching tool.³²

³⁰ Ibid. p. 36.

³¹ Reid, p. 41

³² White, “Introduction: International Trends and Patterns in Innovation in Rural Education,” p. 13.

Methodology

Recognizing that “American Studies is an interdisciplinary practice that aims to understand the multiplicity of the social and cultural lives of people in -- and relation to -- the United States, both past and present,”³³ I have designed a case study with multiple methods of data collection in order to answer the question “How does a rural county museum, as a local anchor institution operating within rural social space, contribute to community vitality?”

Case study research is a distinctive mode of social science inquiry³⁴ and a preferred method for this study as it addresses a question of “how,” which “deals with the tracing of operational processes over time”³⁵ and focuses upon contemporary events—in this case, the current work of the Carter County Museum. This methodological approach ensures a clear path from the literature review to designing study questions as well as incorporating experience from the field.³⁶ That in turn enables an in-depth focus on a case to understand and describe complex social phenomena. While this describes the first part of the twofold definition of case study as a research method, the second half is this:

A case study: (1) copes with the technically distinctive situation in which there will be many more variables of interest than data points (2) benefits from the prior development of theoretical propositions to guide design, data collection, and analysis (3) relies on multiple sources of evidence, with data needing to converge in a triangulating fashion.³⁷

³³ Alexander I. Olson and P. J. Deloria, *American Studies - a User's Guide*. (University Of California Press, 2017).

³⁴ Robert K. Yin, *Case Study Research and Applications: Design and Methods*, 6th ed. (Thousand Oaks, CA: Sage Publications, Inc, 2018), p. 18.

³⁵ Ibid. p. 10.

³⁶ Ibid. p. 3-4.

³⁷ Ibid. p. 15.

I chose the case study method for this study as it provides an avenue by which to incorporate quantitative and qualitative data collection and analyses into a single study through measuring the social impact of a museum within its community and identifying key relationships with other anchor institutions. To strengthen the construct validity of this single-case design, I utilize multiple sources of converging evidence in collecting and triangulating data to conduct an in-depth study of the Carter County Museum and its contributions to community vitality in its real-world context:³⁸

1. **Documents** corroborate and augment evidence from multiple sources, which help with establishing separate timelines in the study and construction of background information. This category of data includes internal records from the museum, primary documents from the founders of the Carter County Geological Society and museum, as well as the writings of its longest-serving director, Marshall Lambert, which shed light on the actions of the museum within rural social space.
2. **Archival records** inform the contemporary work of the museum considering its community. They include items such as maps and charts of the geographical characteristics of Carter County (helpful in discussing aspects of rural social space), organizational records from Carter County Museum, public use files (particularly useful in defining “rural”), Annual Dino Shindig analyses, the Director’s Report archive, and survey data produced by the Measurement of Museum Social Impact.

³⁸ Yin, p. 63, 127-128.

Literature Review

Museum studies literature ignores rurality. However, certain texts in museology are useful for demonstrating the linkages between museums and local history, community involvement, and social well-being. *Museums Involving Communities* (2018) by Margaret Kadoyama examines the museum-community relationship, making a case for museums as vital members of society and the reciprocal impact of museum collections and programs on the cultural and civic lives of local communities.³⁹ It provides a roadmap for exploring the history of museums and communities, the creation of a community involvement action plan, and the challenges, rewards, and accountability involved in creating such relationships. Randi Korn's *Intentional Practice for Museums* (2018) calls for deliberate planning to maximize impact, asking museums to decide what they want to achieve, align their action accordingly, then reflect upon and evaluate what they have learned. Of primary importance in this text is the discussion of the intrinsic benefits of museums that characterizes the public impact of art, science-based, natural history and history museums and the ways in which each type of museum may engage with the future. For example, the responsibility of natural history museums is to "give voice to the Earth's immense story and to secure a sustainable future."⁴⁰ Anthony Pennay's *Civic Mission of Museums* (2020) connects museums and communities to the wider service of democracy, asking how museums can build bridges in this time of division and cultivate a new generation of citizens.⁴¹ Like the other books, this text grounds itself in thinking about the past, emphasizing

³⁹ Kadoyama.

⁴⁰ Korn, p. 29.

⁴¹ Pennay.

the place of museums as centers of education and their link to democracy. It highlights the work of Robert Putnam, who described the gradual decline of civic institutions in *Bowling Alone: The Collapse and Revival of American Community* (2000), and Elaine Heumann Gurian's *Civilizing the Museum* (2006), which defined museums and other civic places as congregant spaces.⁴²

Pennay defines civic knowledge, placing it within a civic framework that also combines skills and action. As with *Museums Involving Communities* and *Intentional Practice*, this text also ends with a toolkit for museums to put the civic-minded mission into practice. *Defining Memory: Local Museums and the Construction of History in America's Changing Communities* (2017) calls focus to the local institutions that are more regularly encountered by Americans and asks how these museums construct histories, include, or exclude diverse populations, and the changes in their educational policies over time. Its key argument is "small and medium-size museums play a key role in defining American culture and history."⁴³ This work gives special consideration to small museums in small towns that function as part of the social structure of the community. From this text we can draw a line to the importance of rural museums as agents of local history and their distinct connection to local places.

Rural Research

Recent books published about rural communities discuss the experiences of rural women in American literature, race and rurality in the global economy, income inequality, the rural/urban divide in U.S. Politics and the LGBTQ experience in rural America, among others.

⁴² Elaine H. Gurian, *Civilizing the Museum: The Collected Writings of Elaine Heumann Gurian* (London: Routledge, 2007).

⁴³ Amy K Levin and Joshua G Adair, *Defining Memory: Local Museums and the Construction of History in America's Changing Communities* (Lanham, Maryland: Rowman & Littlefield, 2017).

Within academic fields, most scholarship on rurality lies in the disciplines of education, health, and library science. These fields recognize rural as “important precisely because of the way it is both connected to and different from the burgeoning urbanizing landscapes of the contemporary world”⁴⁴ and devote attention based on territorial equity, among others. *Rural Communities: Legacy + Change* (2018) creates a unique community capitals framework to examine America’s diverse rural communities and how they use natural, cultural, human, social, political, financial and built capital to address modern challenges.⁴⁵ Characterized as an introductory text to rural sociology, each chapter in this book begins with case studies of communities facing specific challenges. This text mentions museums only in the example of heritage tourism. It would be strengthened by considering museums’ connections to cultural and other types of capital. Indeed, “The Factors Associated with Rural Community Success,” classifies community knowledge of history as an important characteristic of resilient rural communities and an indicator that the “social infrastructure of the community is intact and [...] plays a key role in fostering interactions across the community.”⁴⁶

John Fraser Hart’s *The Rural Landscape*, published in 1998, is an older book, but covers themes that continue to resonate. Hart provides a unique perspective into the impacts of humans on nature, specifically looking at the traditions carried on and new practices introduced by

⁴⁴ Brown, p. 14-15.

⁴⁵ Cornelia Butler Flora, Jan L. Flora, and Stephen P. Gasteyer, *Rural Communities: Legacy and Change* (Routledge, 2018).

⁴⁶ Lena Etuk, Matthew Keen, and Conor Wall, “The Factors Associated with Rural Community Success: A Review of Rural Community Vitality Research” (Corvallis, OR: Oregon State University, 2012). P. 30.

generations that change rural landscapes.⁴⁷ He discusses different rural industries such as agriculture and mining, as well as forestry and recreation. Not only does this text show the interconnectedness between mineral, animal and vegetable components that make up the landscape, it also places the subject within the critical contexts of population rise, urban sprawl, and technological inspiration. The United States is discussed in depth, but Hart also considers examples in Europe, giving international breadth to the work. This provides a model of exploring rural geography and demography, as well as the discourse of rural communities and contemporary culture.

Finally, *Rural People and Communities in the 21st Century: Resilience & Transformation*, released in 2020 and 2021 as a second edition, addresses the social, economic, and environmental roles of rural communities and people in a world where societies are rapidly urbanizing. This contemporary text is useful as a foundation for rural sociology, from which I will draw connections between museum community work and rural areas, especially concerning the interaction between the museum and other community anchors like the hospital, school, and local government.

In addition to the texts listed above, there are several books about specific rural communities. *What You are Getting Wrong About Appalachia* by Elizabeth Cate, which focuses on the contemporary representations of Appalachia (popularized during the 2016 election of President Donald Trump), and argues against the harmful stereotype of unemployed, drug users that “fill Appalachia” in J. D. Vance’s *Hillbilly Elegy*, while examining the long history of social

⁴⁷ John Fraser Hart, *The Rural Landscape*. (Johns Hopkins University Press, 1998).

justice action in the area and calling for Appalachians to foster their own representations of themselves and their lands. Cate has also written about farming in Kansas in *Ogallala Road*, which looks at the 100-year history of a family farm against the backdrop of water scarcity and corn subsidies that made farming a “process of destruction: killing weeds, rodents and insects; killing the soil with chemical fertilizers; and of course, killing the aquifer, all in the name of maximizing yield.”⁴⁸ Finally, *Grasslands Grown* by Molly P. Rozum, explores “regional identity and sense of place on North America’s northern grasslands as both developed through settler-colonial generations and over the life span of core individuals.”⁴⁹

Outside of the realm of books are podcasts including *Reframing Rural*, which “seeks to share stories of people and places in rural America to celebrate culture, preserve history and cultivate curiosity and conversation across geographic, class and cultural divides. Host Meghan Torgerson was born and raised on a farm in Dagmar, Montana, graduated with a B.A. in English from the University of Montana, and launched the podcast while she was an MFA student at Seattle University.⁵⁰ Season one included profiles of individuals in her hometown of Dagmar, such as the integral role that women play in rural communities across the country. Season two considered stories of professionals fostering vitality in their communities, including succession planning for family farms. Now in its third season, this podcast focuses on specific issues, most

⁴⁸ Mark Bittman, “Unsustainable Living,” *The New York Times*, April 25, 2014, sec. Books, <https://www.nytimes.com/2014/04/27/books/review/the-ogallala-road-by-julene-bair.html?smid=url-share>.

⁴⁹ Molly P. Rozum, *Grasslands Grown: Creating Place on the U. S. Northern Plains and Canadian Prairies* (U of Nebraska Press, 2021). P. 13.

⁵⁰ Megan Torgerson, “Reframing Rural,” *Reframing Rural* (Tree Ring Records, LLC, 2022), <https://www.reframingrural.org/episodes>.

recently looking at environmental resiliency through regenerative agriculture and food systems in the Blackfeet Nation.⁵¹ Another popular podcast about rural communities is *The Modern West*, an award-winning show from PRX and Wyoming Public Media, which explores the evolving identity of the American West—its deep connections to the landscape, problematic history, modern day struggles and resilience, and how its present and future are being shaped. Now in its sixth season, called “Mending the Hoop,” the podcast is exploring the Plains Indian Wars from the seldom heard point of view of Indigenous tribes.⁵²

These media open questions about rurality in general and reveal a plethora of diverse narratives and understandings about, for, and within rural places, thus allowing for research that recognizes the specificity of the rural and the implications of such research for the future of rural communities.⁵³

Outline

This dissertation opens with the position of the Carter County Museum (hereafter CCM) as a rural institution that plays a key role in preserving culture and defining the identity of its local place, the community of which in turn helps define the work of the museum. This positionality is key in extending the Rural Social Space Model to include the throughline of history, which highlights the “complexities and richness of the social and cultural histories that

⁵¹ Meghan Torgerson, “Podcast,” Reframing Rural (Tree Ring Records, LLC, 2022), <https://www.reframingrural.org/episodes>.

⁵² The Modern West, “Season 6: Mending the Hoop,” The Modern West (Wyoming Public Media, 2023), <https://www.themodernwest.org/mendingthehoop>.

⁵³ Patrick H. Mooney, “Specifying the ‘Rural’ in Social Movement Theory,” *Polish Sociological Review* 129 (2000): 35–55, <https://www.jstor.org/stable/41274735>.

have been (and are still being) made in these specific and material places.”⁵⁴ It delves into each of the museum’s founders, who were themselves settlers in the region; the location of the museum alongside other institutions that were collecting dinosaurs in the area; and the growth of the museum as an educational and civic institution. It discusses settlement, power, and practices of place, especially as they are concerned with historical context at the time including the settlement of Carter County, the movements of the Montana State Legislature, formation of the Carter County Geological Society, shift of the museum volunteer force during World War I and II, and the development of the museum as an educational resource during the leadership of its second director, Marshall Lambert, who served for 50 years.

Chapter Three explores the environmental side of the Rural Social Space model through the subject of paleontology and museums, paying particular attention to the scientific and cultural struggles over paleontology in Montana, and how that reflected and contributed to national and international issues in the field including fossil ownership and creationism. The story centers on the Carter County Museum as an epicenter of paleontology as evidenced by an extensive archive of letters between the museum’s founders and leading paleontologists of the day, which help illuminate discussions of the history of paleontology in the United States and extend the narrative to include citizen science conducted in rural communities, which is often ignored.

Chapter Four confronts the silences about the land and its settlement by illuminating Indigenous histories of the area. This is a key component of the rural social space model in that it

⁵⁴ Reid, p. 30-31.

recognizes the unresolved issues related to the theft of Indigenous lands and how its effects manifest in environmental, demographic, and economic relationships of place. Examples of decolonizing museum practices are given, such as the strategies taken by the CCM to comply with the Native American Graves Protection and Repatriation Act and how museums like the CCM may review their collections and work with tribes to become partners in fossil stewardship.

Chapter Five puts the lessons of the previous chapters to work in the discussion of the exhibition and companion K12 curriculum “Shots Felt ‘Round the World: Dr. Maurice Hilleman and the Montana Origins of the Fight Against Pandemics,” which was directly inspired by the COVID-19 pandemic and created out of collaboration between the museum, hospital, and school, which are three community anchor institutions. I show that while the subject of vaccines became politically charged, this emphasis on local ties to rural places helped audiences to find common ground and learn about the subject from a position of place, surrounded by the experiences of their ancestors and their relevance to modern day pandemics.

Chapter Six concludes the dissertation with a discussion of how the CCM and other rural museums may adopt practices to confront silences in interpretation, collection, and stewardship and revitalize their communities.

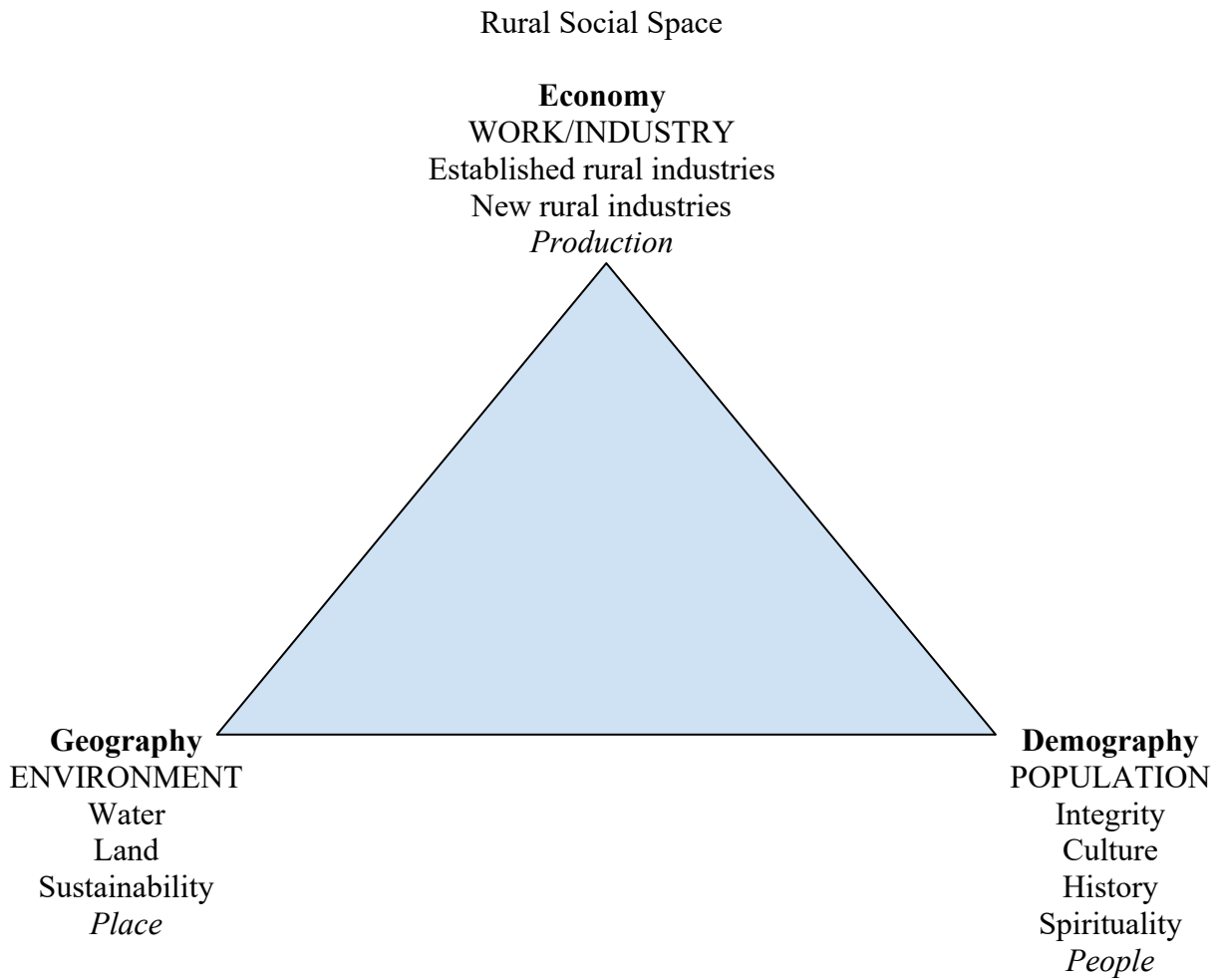


Figure 1. A model of rural social space.⁵⁵

⁵⁵ B. Green and J.-A. Reid, “Rural Social Space: A Conceptual-Analytical Framework” (2021)
p. 266

CHAPTER TWO

HISTORY, LOCAL IDENTITY, AND POWER OF PLACE

The Carter County Museum (hereafter CCM) is foremost a local museum. Its primary emphasis of collection is the area local to the southeastern region of Montana. This definition incorporates exhibits and collections that define local history, such as the archive of *Ekalaka Eagle* newspaper, but also quirky objects like the two-headed calf, which draws a local audience that remembers seeing the specimen during their adolescent visits to the museum.⁵⁶ These museums are natural focal points for their communities and can serve as frames for understanding wider conversations about America and the globe. By using the Rural Social Space Model to understand place, one can explore the ways the museum positions itself as an epicenter of paleontology, as an institution with the responsibility to address silences about the land and its settlement by including diverse histories, and as a community anchor institution that contributes to community vitality. This chapter explores how the museum defines the identity of its local community and is in turn defined by the community that it serves. These sections follow the Rural Social Space Model by beginning with the museum as it exists in the present, then transitioning to the historical context of colonial settlers who became homesteaders, ranchers, and businessmen and women. This sets the stage for the founding of the museum and its place within the community as it evolves from a collection in the basement of the local high school to a vital center of learning, civic engagement, and social impact for the community. Throughout, it

⁵⁶ Levin, p. 3.

shows how the CCM demonstrates the importance of amateur scientists for the advancement of scientific knowledge.

A Brief History of Ekalaka and Carter County

Many current Ekalaka residents are direct descendants of original homesteading families of the late 1800's. They see the museum as the primary steward of the community's cultural history and have donated relics of their lives for generations, making for a robust cultural collection that includes projectile points made of stone and steel, pottery, military uniforms from different American wars, photographs of rodeo legacies, a cabin homestead, one room schoolhouse, and an orchard, among others. These items and others like them help tell the human story of the area and contribute to the identity of modern residents in Carter County. Beyond the collections and displays, the CCM conducts educational programming and outreach, working with a local Teacher Advisory Council to create curricula and collaborating on projects with other anchor institutions, including Dahl Memorial Hospital, Southeast Electric Co-Op, and Ekalaka Airport. These programs reflect the contemporary philosophy that museums both have a responsibility to their communities as civic institutions and can foster the experience of history as meaningful and personal, nurturing identity in a diverse world.

A visitor may observe the three aspects of the Rural Social Space Model in the exhibits at CCM: (1) geographic changes in the area over time as it shifts from the subtropical climate of the Late Cretaceous to the frigid cold of the Pleistocene, and then to the gradual warming of the planet after the Ice Age; (2) demographic composition and change including Indigenous and colonial settler histories of the area; and (3) economic industries such as extensive Indigenous

trade networks, ranching, sawmills, and electrical infrastructure that tell a relational story with the landscape.

Located in southeast Montana, Carter County resides on the ancestral lands of the Lakota (Sioux), Tsistsistas and So'taa'ee'o (Northern Cheyenne), Apsaalooke (Crow), Minnetaree (Hidatsa), Sahnish (Arikara) and Mandan Indigenous nations. The county consists of 3,350 square miles of land area and is home to approximately 1,415 people. According to the US Department of Health and Human services, using the Office of Management and Budget system, Carter County is classified as frontier rural (having six or fewer people per square mile)⁵⁷. It was created in 1917 by an act of the Montana State Legislature and is named for the first Montana United States Senator, Thomas Carter. According to the Economic Innovation Group (EIG), Carter County, Montana is among eight percent of rural communities with “budding prosperity” meaning that it rose into the top two quintiles of economic well-being during the 2014-2018 period after being outside of them through 2000-2013. This study is known as the EIG’s Distressed Communities Index, which further classifies Carter County as having prosperity that is less reliant on extraction of natural resources, meaning that it is less vulnerable to boom-and-bust cycles common to such industries. As of the 2020 Census, the population of Carter County, Montana, increased by 22 percent from 2010-2020, second only to Gallatin County in Montana’s census report. While the statistical noise added to the 2020 census may factor into this increase, there are numerous community indicators that the town is experiencing a resurgence, including new businesses, jobs, members of the 30–50-year age group returning to the area, and more

⁵⁷ Stewart, p. 3.

students in local elementary and high schools. The museum is a key contributor to Carter County's economic growth through tourism,⁵⁸ having increased its visitor ship since the inception of the Annual Dino Shindig in 2013 from 2,751 to 5,844 in 2019. This growth in tourism brought travelers to the museum but also to the surrounding rural community. As a result, Carter County has made headlines as a rural area which may be able to offer lessons for other communities working toward revitalization.⁵⁹

A historical approach is essential in understanding population composition and change, as well as its distribution and density in relationship to environmental and economic shifts.⁶⁰ The original catalyst for economic and demographic change in the area that now comprises Carter County was the warfare directed against Indigenous peoples. This involved the western shift of tribes during a period of systemic genocide and removal organized by the United States (described in detail in Chapter Four). During this period, colonial settlers moved into the area that now comprises Carter County. One letter from the CCM archive provides a snapshot of this early frontier:

In those far off days we did not know about the Folsom, Yuma, or Sandra man, but just of the present-day Indians, like the Sioux, Crows, Cheyennes, etc. I have seen with my own eyes the places where soldier, emigrant (sic), or other folks had had their wagons burnt by the Indians. I saw hundreds of carcasses of the buffalo that had been killed and never skinned, that of course was the work of the white-man, not the Indians, for they did not waste any meat. The white man is a destroying angel, or devil, whichever you may call him.⁶¹

⁵⁸ Rebecca Knapp, *Carter County Long Range Plan*. Ekalaka Field Office (Carter County, MT: Natural Resources Conservation Service, 2020). P. 33

⁵⁹ Eric Dietrich, "Growing Home in Ekalaka, Montana," Montana Free Press, October 6, 2021, <https://montanafreepress.org/2021/10/06/explaining-rural-growth-in-ekalaka-montana/>.

⁶⁰ Ibid, p. 42.

⁶¹ Correspondence: Walter H. Peck to Mr. Edw. "Red" Kircher in Capitol, Montana dated January 22, 1946. CCGS Founders Archive. Carter County Museum.

This letter refers to state-sponsored buffalo hunting, which first drew settlers to the area. This included David Russell and his wife Ijkalaka, an Oglala Lakota woman, who were the first to file a claim on land in the area through the Homestead Act. Ijkalaka was born around 1856 on the Powder River, the daughter of Eagle Man and niece of Chief Red Cloud, a leader of the Oglala Lakota nation. In the Lakota language, *Ijkalaka* means to pick up and move. Her mother died when she was young, and she was raised by her aunt at Fort Laramie. Ijkalaka married Russell on February 16, 1874, near the fort and used the name Mary Kelly on her marriage certificate. They lived first in Wyoming, then moved to the Black Hills and finally to southeastern Montana in 1881. Their son James Russell left an account, now part of the CCM's collection, of the family's reasons for moving to the area:

[David Russell] heard that the government had sent out word for anybody that wanted to hunt buffalo was to go to Montana and kill off all the buffalo they could. We had word from the United States Army to do this, as long as there were buffalo on the range, they (Indians) can live and fight. This is our only show to conquer them, is by killing off all the buffalo. This is why the government made this call, and the hunters could keep the hides of what they killed but they must be killed off.⁶²

During his lifetime, Russell killed a total of 22,000 buffalo between 1881-1883, sometimes with the help of Issac Down, another man local to Ekalaka. Mostly he sold the hides, which were skinned by two other men that he hired. In addition to hunting buffalo, Russell built a trading post in a dugout at his ranch, which sold goods to American Indians, other buffalo hunters, and travelers passing through. This was the first store opened in the area. After helping to hunt the buffalo herds to near-extinction, David Russell, like many settlers in the area, turned

⁶² Carter County Geological Society, *Shifting Scenes*, vol. 1 (Ekalaka, MT: Carter County Geological Society, 1978). p. 751.

to ranching livestock, raising horses, and farming. The first herd of cattle from Texas trailed to the area occurred in 1881 and several other ranches were then established in the area. At this time, cattle companies like the Continental Cattle Company, which was established on the Box Elder Creek on July 17, 1882, dominated the prairie, some running up to 40,000 head of cattle on the open range. This period lasted until 1886, after which ranchers fenced in their land and livestock.

Timber from early sawmills in the area was used to extend the Northern Pacific Railway into the Dakotas and Montana, though none would be built in Carter County. These mills were in the Long Pine Hills and the first began operating in 1882. In 1883, Claude Carter, an immigrant from Nebraska, came to southeastern Montana and planned to start a saloon. His wagon bogged down in what was later called Russell Creek (named for the Russell family) and he decided to construct the business there. It was called the “Old Stand” and became the first building erected in Ekalaka. The Cartwright Brothers opened the general store and post office in 1885 in the same river valley. When a government official wanted a name for the post office he asked David Russell and was given “Ijkalaka,” then simplified the spelling to “Ekalaka” for ease of pronunciation for colonial settlers.⁶³ In the years that followed, several other sawmills were founded in the area (Figure 2) “rendering an important service to the early day stockmen and the homesteaders who arrived in great numbers in 1908.”⁶⁴ Other small communities in addition to Ekalaka were founded, including Albion, Alzada, Belltower, Boyes, Capitol, Chalk Buttes,

⁶³ James Speiser et al., *Changing West* (Miles City, MT, 1975). 22-34.

⁶⁴ “Sawmills” in *Shifting Scenes*, vol. II (Ekalaka, MT: Carter County Geological Society, 1978), p. 768.

Hammond, Mill Iron, Pinele, Ridge and Ridway.⁶⁵ The area of Carter County was originally in Big Horn County, then Custer County, followed by Fallon County in 1913. In 1914, the city of Baker became the seat of Fallon County, prompting State Senator John Oliver of Ekalaka to work a bill through the legislature that would make Ekalaka the seat of a new county. The Montana House chose the name “Carter” for Thomas Carter, a former U.S. Senator who had been the territorial delegate for Montana to the federal government in Washington D. C. Carter County was created on February 22, 1917. Since the county was formed, the population has ranged from 2,972 in 1920 to a high of 4,136 in 1930 and is now 1,428.

The Southeast Electric Cooperative was established on February 12, 1946, at a time when no ranches in Carter County had electricity. The founders of the Southeast Electric Cooperative borrowed money from the U. S. Department of Agriculture’s Rural Electrification Administration after conducting many community meetings, gathering public support, and designing a plan for the construction of power lines and substations. In 1947, a loan of \$500,000 was approved on the condition that both Baker and Ekalaka be served, as well as the area in between, to guarantee enough revenue to repay the loan. However, the loan funds were not released until December of 1949. Construction began early in 1950 and before the end of the year the Baker substation came to life, giving power to the Baker and Ekalaka areas. Electrical service was extended south of Ekalaka in 1952; by 1957, the entirety of Carter County had received electrical service through Southeast Electric.

⁶⁵ Many of these towns no longer exist, though in some cases a church or community hall remains.

Carter County has an area of 3,340.75 square miles and, according to the 2020 census, a population density of 0.3 people per square mile, with about 73 percent of the community living within the County on ranches and in unincorporated communities. The median age is 47.8 years, with 26.1 percent of the population aged sixty-five and older. The average number of persons per household is 2.07, with a total number of households at 628, based on 2019 estimates. The population is even, with 50.1 percent female and 49.9 percent male. According to a 2019 Census estimate, the median household income is \$48,000 and the poverty level is 14.2 percent. As a reference, the state level for Montana is 12.6 percent. Range land makes up 90 percent of land in Carter County, with forest and crop land comprising the remaining 10 percent. The two main water sources in Carter County are Box Elder Creek and the Little Missouri River. Temperatures range from an average of 71 degrees in July to 18 degrees in January. Average precipitation is 15.19 inches, and average snowfall is 32.1 inches. Agriculture, consisting of livestock grazing and farming, primarily of small grains, is the most prevalent industry in Carter County. Natural resource mining accounted for 13,137 barrels of oil in 2017 and the removal of an estimated 2.4 million board feet of saw timber on an annual basis. Carter County is also one of the few counties in Montana where bentonite is mined.⁶⁶ Critical facilities, which are essential to the health and welfare of the population, include the courthouse, museum, airport, fire and town halls, hardware, and grocery stores, electric and telecommunications co-ops, and repeater towers, among others.⁶⁷

⁶⁶ “Carter County & Town of Ekalaka Pre-Disaster Mitigation Plan.” Great West Engineering. 2022.

⁶⁷ “Carter County & Town of Ekalaka” (2022), pp. 5-6.

Founding of the Carter County Museum

In 1904, Elmer S. Riggs of the Chicago Field Museum brought his field crew to southeastern Montana in search of specimens for the museum. He dug on lands belonging to Walter Peck, Septon Cady and DeLoss Hall, who learned about paleontology from Riggs.⁶⁸ They also met and learned from Barnum Brown of the American Museum of Natural History in New York, who discovered the first documented remains of *Tyrannosaurus rex* in southeastern Montana in 1902. These were two of many paleontologists working in the area from some of the United States' largest museums,⁶⁹ excavating fossils and taking them out of Montana to exhibit to a public that "was intrigued with the immensity of geologic time and with direct evidence of the size and variety of animals that once lived on this earth."⁷⁰ Riggs' 1904 dig culminated in the excavation of a triceratops skull in the Chalk Buttes area; thus inspired, Peck, Cady, and Hall undertook an organized search for fossils in Carter County.

Septon "Zip" Cady was born December 4, 1862, on a farm near Northfield, Minnesota, and moved to the Black Hills at the age of sixteen after hearing about the discovery of gold in the area. In 1886, he and his uncle moved to the Chalk Buttes area of southeastern Montana and founded the Keystone S ranch where they raised horses and cows. Walter Peck was born in

⁶⁸Gwen Schultz, "Geological Society Founder Spotlight: Septon McCook Cady," *The Ekalaka Eagle*, January 3, 2020, <https://www.ekalakaeagle.com/story/2020/01/03/local/geological-society-founder-spotlight/2045.html>.

⁶⁹ Gregory A. Liggett, "From Public Lands to Museums: The Foundation of U.S. Paleontology, the Early History of Federal Public Lands and Museums, and the Developing Role of the U.S. Department of the Interior," *Museums at the Forefront of the History and Philosophy of Geology: History Made, History in the Making* Geological Society of America, no. Special Paper 535 (2018), [https://doi.org/10.1130/2018.2535\(21\)](https://doi.org/10.1130/2018.2535(21)). p. 319.

⁷⁰ Marshall Lambert. "Southeastern Montana: The Fossil Story", in *Shifting Scenes, vol. II* (Ekalaka, MT: Carter County Geological Society) (1976), 814.

Cornwall, Connecticut on March 5, 1870, and moved west on the advice of his doctor, who recommended a higher and drier climate for his asthma. A friend of his family owned a ranch near Ekalaka and invited Peck there to work as a ranch hand, which he did for many years. Peck and Cady met on a roundup in 1890 and bonded over their mutual interest in natural history.

DeLoss Hall, born in Hennepin County, Minnesota, moved to the Ekalaka area in 1890 with his parents and siblings. Fresh from college graduation, Hall met Cady and Peck in 1898. The three became friends and, due to their concern for the destruction and waste of fossils in the area, began collecting specimens throughout the prairie.

While the dig with Riggs provided the spark, the three were preoccupied for many years trying to make their stake in the area. Cady bought shares in the formation of the Ekalaka Commercial State Bank and was named President. He supported many community organizations and was a member of the Masonic Lodge and school board. In 1909, 47-year-old Cady undertook a five-month tour of the Mississippi River, which he called “The Adventure.” In Cady’s journal of the experience, now in the CCM archive, he describes riding the train to Minneapolis and taking a boat south down the river to New Orleans. Among the highlights of his trip were seeing the Barnum & Bailey Circus in Quincy, Illinois, and playing violin and guitar with farmers that he helped along the way. Cady was also an avid photographer, and his glass plate negatives are among the collections at the museum. Over the years, Walter Peck worked as Deputy Assessor, Deputy Treasurer, Deputy Sheriff, and Justice of the Peace of Carter County. In 1904, he opened a general store called “W. H. Peck Company” and ran the Tri Valley Creamery. He enlisted in the army during World War I, becoming the oldest volunteer from the area. In 1918, he was commissioned as a second lieutenant in the United States Guard. In

addition to serving as a Senator to the Montana State Legislature, he was a lifelong member of the Independent Order of Odd Fellows and helped found the Beaver Lodge Cemetery. Peck filled scrapbooks with news clippings pertaining to the museum, the Geological Society, his political life, and subjects of interest. Today, these, his field notes, and personal library are part of the museum's archives. In 1908 DeLoss Hall studied at Chadron Academy where he specialized in steam engines. Upon his return to Ekalaka that same year, he began operating several sawmills in the area with his brothers and partner Frank Snow. He was an active member of the Independent Order of Odd Fellows and Masonic Lodge, as well as the county's Representative in the 1935 session of the Montana State Legislature.

A quarter of a century later, Peck, Cady, and Hall returned to the field. Looking back over their lives, they realized "that we were becoming old and broken in health, [and] we decided to take up our hobby of years ago. In 1933 the crew, which by then included William C. Rowley, principal of the high school in Ekalaka, discovered the partial remains of a *Tyrannosaurus rex*. This inspired them to found the Carter County Geological Club. Septon Cady became the first president with DeLoss Hall as Vice President and Walter Peck as Secretary/Curator. In 1934, Jean Winkley, a rancher in the Powder River breaks area, discovered a partial "Diceratops," which had two horns where triceratops have three.⁷¹ Later that fall, Hall located a triceratops skull of nearly the same size and species as that found by Riggs in 1904. The Club needed space to exhibit these finds. In 1934, the basement of the high school in Ekalaka served the purpose to "show not only the students of the county high school the life that has lived here [...] but to try to

⁷¹ It is worth noting that the *Diceratops*, later called the *Nedoceratops*, was later ascribed to the *triceratops* family.

impress upon the minds of all who visit us the interesting facts about the prehistoric life of this particular part of south-eastern Montana.”⁷² This exhibit included the first public displays of fossil bones in Montana. The next step was to formally incorporate the Carter County Geological Society on November 28, 1936, under the laws of the state of Montana with the following mission:

To increase and diffuse knowledge and appreciation of history, art, and science; to discover, excavate and preserve fossils, fossil bones, and human artifacts; to advance the science of archaeology and paleontology; to collect and preserve objects of historic, artistic, and scientific interest; and to acquire a library to assist in the above purpose.

DeLoss Hall served as President and Walter H. Peck as Secretary/Curator.⁷³ Idella Kennedy, a teacher in the local high school, joined as the society’s librarian. Born July 3, 1911, in Carter County and raised on the family ranch, Kennedy attended rural schools before moving to Ekalaka for high school. In 1928, she graduated as valedictorian, and went on to Montana State College, where she completed a degree in English and journalism in 1932. She returned to Ekalaka and taught English and journalism at the high school from 1932-36. She was a regular member on fossil field expeditions and in 1933 discovered a partial jawbone of a small rodent. George Gaylord Simpson later described it as “by far the best Multituberculate specimen yet discovered in the American Cretaceous period.” Kennedy continued her education with summer courses in geology and paleontology and served as an instructor for girls in the New Deal’s

⁷² Correspondence: Walter H. Peck to Dr. Childs Frick at the American Museum of Natural History in New York dated January 14, 1943. CCGS Founders Archive. Carter County Museum.

⁷³ Septon Cady died in September of 1936 at the age of 73. In his 1937 director’s report, Peck relates the story of traveling over 800 miles looking for a fossil tree trunk that would make a suitable monument to the late president of the Society, before finally finding a sequoia which weighed over 1000 lbs. Today it can be seen in the Beaver Lodge IOOF Cemetery.

National Youth Administration Program. She was passionate about education and would later help design the CCM's first educational kits, which would give students hands-on experience with local minerals, fossils, plants and other artifacts. As librarian, she corresponded regularly with Drs. Barnum Brown, Walter Granger, and George Gaylord Simpson of the American Museum of Natural History (New York City) and others regarding the identification of specimens and collections care. Inspired by her conversations with Brown during the Montana Natural Historical Society Meeting in Billings, she became proficient in classifying and cataloging specimens using the Smithsonian system, which she instituted at the CCM. Idella Kennedy was not initially (nor for many years) recognized as a founder of the Carter County Geological Society, nor were many other women including Margaret Peck and Laura Hall (wife of DeLoss Hall) who devoted countless hours to the endeavors of the young society.⁷⁴

Walter Peck was appointed Director of the CCM in April 1937 and spent the summer roaming the hills collecting specimens. In his first Director's Report, Peck describes the first official meeting of the newly incorporated society:

One of the highlights of the meeting was made by our President, Mr. Hall, on the Los Angeles Museum that he and Mrs. Hall had just recently visited. It might be interesting to note that the particular museum which they had visited had its beginning very much like our own back in 1912, but now it is one of the outstanding museums in the United States. Their collection of fossil bones from Rancho La Brea tar pits are unsurpassed in the world. What they have accomplished we, too, can do in a much smaller way.

⁷⁴ Gwen Schultz, "Geological Society Founder Spotlight: Idella Alta Kennedy," The Ekalaka Eagle, March 6, 2020, <https://www.ekalakaeagle.com/story/2020/03/06/local/geological-society-founder-spotlight/2174.html>.

According to Peck, in that first year, there was little trouble finding local volunteers for field work because it was exciting to discover and dig up dinosaur bones, but it was challenging to get the same individuals to prepare the specimens, identify and label them, then put them on exhibition.⁷⁵ From March through May, Peck worked on preparing specimens for exhibition, which could be a slow and laborious process. DeLoss Hall also worked on the preparation of specimens and often instructed students and others the art of cleaning fossil bones. Throughout the summer, the museum organized several discovery trips throughout the county and found pottery, Oligocene turtles, ammonites, triceratops remains, a partial skeleton of a mosasaurus and more. Members also attended a Montana Natural History Society meeting in Billings, which featured a tour of the nearby Pictograph Cave and a keynote speech by Barnum Brown, visiting from New York City. During his speech, Brown remarked that communities everywhere “should have a museum such as that of the Carter County Geological Society which he complimented highly.”⁷⁶

The summer of 1938 was a momentous time for the members, as Walter and Margaret Peck, Idella Kennedy, and Ted Snyder undertook a field trip that resulted in the discovery of a large, *Edmontosaurus*. This duck-billed herbivorous dinosaur was excavated from the Winkley Ranch, some thirty miles west of Ekalaka. Walter Peck recorded the details of the expedition in the journal “Safari (Limited) 1938,” describing a sixty-five-day ordeal of digging in the sweltering summer sun and excitement of the discovery of what would become one of the four

⁷⁵ Peck refers to the preparation of fossils as tedious work that required attention to detail and long hours in the winter months.

⁷⁶ Idella Kennedy, “Report of Attendance at Session of the Montana Society of Natural History at Billings, August 17, 1937”. Carter County Museum Founder’s Archive.

largest *Edmontosaurus* on display in the world. A community affair, the excavation was frequently visited by townspeople who brought food, helped dig, or simply stopped by to chat as work progressed (Figure 3). DeLoss Hall donated the lumber for the supply trailer and would often drive out to the site with his wife, Laura, on Sundays with a hamper of refreshments and spend a few hours digging. Kennedy lived at the camp, cataloging each bone, and helping to preserve them as they were excavated. When the excavation was complete, the fossils were loaded onto a trailer and driven back to Ekalaka along a two-track road. The Society stored their findings in the high school basement until they were mounted for display sixteen years later, in 1954.

During the 1940s, the Carter County Geological Museum became the little museum that big museums visited. Barnum Brown visited in December 1940 and proclaimed it “the best local museum in the United States” in the museum’s visitor register. In a letter to Peck dated February 24, 1941, Barnum’s AMNH colleague Walter Granger, curator of fossil mammals, describes the Carter County Geological Museum:

About these small local museums; you people in Ekalaka may well feel proud of your museum. It is much larger and more important in relation to your population than the Salt Lake Museum is in proportion to the size of that city. As a matter of fact, where is there, outside of the Butte School of Mines, another Natural History Museum in Montana? A small one at Fort Peck, an archaeological collection at Billings and others at Lewistown and Helena and what else? I feel that for a town of a few hundred people, forty miles off a railroad, you have an exceptional little museum and one which must be of considerable teaching value to your High School students and it has the advantage of having an active organization [The Carter County Geological Society] in back of it.

By 1942, Professor Erling Dorf of Princeton University, Brown of the Smithsonian Institution, Granger, and Simpson of AMNH, and Drs. Horace E. and Florence Wood of the Smithsonian had signed the register at the little museum in southeastern Montana. In February 1942, S. J.

Emswiler, U. S. land commissioner at Ekalaka, joined a KRJF Miles City radio broadcast where he related the highlights of the then 3,800 specimens of scientific interest found in Carter County and prepared, classified and cataloged by museum staff. These included the discovery of the partial remains of a *Tyrannosaurus rex*; Kennedy's multituberculate; a seven-foot-long *Triceratops horridus* skull; a 10-foot-long mammoth tusk; and the *Edmontosaurus*. All these specimens, he noted, were available for study by the faculty and students at the local high school. He concluded:

Hundreds of people annually visit our museum, registering from nearly every state in the Union and a few from foreign countries. Many have made special trips to Ekalaka for that purpose alone. We invite all of our listeners to do the same, and assure them of a cordial welcome, and the courteous services of the museum staff. No charge is made, and the museum is open any weekday. I thank you for listening. So long –I'll see you at the Museum.⁷⁷

As the museum continued to grow in fame on a worldwide scale, it was important to the founders that it remain free to the visiting public, a factor that would lead them to establish funding sources for theirs and other museums.

The First County Museum in Montana

Interest in, and support for the museum grew when Peck was elected as a senator to the Montana State Legislature in 1943. During his term, he helped draft legislation that allowed county commissioners to levy a tax to provide for the care and maintenance of non-profit bearing museums, archaeological, geological, and historical societies incorporated under the State of Montana. The bill was introduced as House Bill 26 by his counterpart, Representative John

⁷⁷ S. J. Emswiler, "The High School Museum and Carter County Geological Society." KRJF Broadcast Feb. 1, 1942. Carter County Geological Society Founder's Archive.

Oliver of Ekalaka, as first author, along with L. W. Busch (Baker) and Charles A. Bovey (Great Falls). This bill represented an opportunity to help county high schools throughout the state where so much of their teaching was concerned with natural history. It also provided a source of funding to the CCM, which in 1943 would help carry out the work of the society, including preparation of fossil specimens, in the absence of 14 active members of the CCGS who had left to serve in World War II.

Governor Sam C. Ford signed into law on February 16, 1943, the bill:

An Act to Provide for the Acquisition, Care and Maintenance of Non-profit Bearing Museums, Archaeological, Geological and Historical Societies Incorporated Under the Laws of the State of Montana and Permit the County Commissioners to Levy a Tax as Set Forth in Section 2 of This Act, and Repealing All Acts and Parts of Acts in Conflict Herewith.

Be it enacted by the Legislative Assembly of the State of Montana:

Section 1. The board of county commissioners of the several counties of the State of Montana, in addition to all other powers now conferred upon them, shall have authority to accept or acquire by gift or donation from non-profit bearing museums, archaeological, geological or historical societies, incorporated under the laws of the State of Montana and whose principal place of business is located in the county.

Section 2. The county commissioners may, in their discretion, levy a tax not to exceed one-half mill upon the taxable valuation of the county to defray the expense of maintaining and operating the non-profit bearing organizations mentioned in Section 1 of this act.

Section 3. All acts or parts of acts in conflict herewith are hereby repealed.⁷⁸

During the bill's passage, correspondence records at the museum from Peck describe Section 2 as being controversial. On January 26, 1943, Peck wrote:

⁷⁸ "House Bill 26" in Laws Resolutions and Memorials of the State of Montana. State Publishing Co. Helena, MT 1943. Pp. 68-69.

Our bill to allow county commissioners to make a small levy for maintenance and care of natural history specimens and giving commissioners the same powers as now enjoyed by the larger cities and colleges. Twice Rep. Oliver has saved it in the committee room and now today I learned that Silver Bow County, the richest county in the state, wants to have it amended. Just what they want we do not know as yet, but probably will in a day or two.⁷⁹

This turned out to be changing the “one mill” to “one-half mill,” which became the final language of the bill. This cut the potential funding for the bill’s measure in half. In 1975, the tax levy was increased to the original 1 mill and the word “museums” was further defined as “buildings or parts of buildings of which a principal purpose is the exhibition of objects of historical interest or of interest in one or more of the arts and sciences.”⁸⁰ Currently, Montana Code Annotated allows for counties to impose a property tax levy for any public or governmental purpose not specifically prohibited by law—leaving the mill amount up to individual county governments. These governmental purposes include support for a museum.⁸¹

This was not the first time Peck had seen opposition from the Butte area; in his 1937 director’s report, Peck mentions another bill that was defeated due to the

antagonistic action and attitude of the Butte members of the M. H. F. [Montana Natural History Society]. They are not so much interested in the preservation of fossils, etc., as they are in the preservation of the mineral wealth of the state. Much could be said of it, but why? As long as we know that the city of Butte controls the laws for the state of Montana, there would be no use inquiring further about the matter.⁸²

⁷⁹ Correspondence: Walter H. Peck to Dr. H. H. Wood II in Chatham New Jersey dated January 26, 1943. CCGS Founders Archive. Carter County Museum.

⁸⁰ Senate Bill No. 260 (1975).

⁸¹ Montana Code Annotated (2021) 7-6-2527.

⁸² Walter Peck, *1937 Director’s Report*. CCGS Founder’s Archive. Carter County Museum.

This reflects a time in which the Anaconda Copper Company had significant clout in the Montana Legislature and “loomed over Montana’s political and economic consciousness.”⁸³

As a result of the bill’s passage, the Carter County Geological Museum was given to Carter County and renamed the Carter County Museum, becoming the first county museum in the state.⁸⁴ Peck returned to Ekalaka following his term as state senator and continued to work as the CCM’s director until his death in 1946. During his time at the museum, Peck collected and rebound many issues of *The Natural History Magazine* and created volumes on local geology and paleontology. He kept all copies of his correspondence and created a scrapbook of twenty-four letters between himself and Granger, which detail the discovery of a complete fossil skull and its preparation at the AMNH, which is further described in Chapter Three. This collection and his personal library of natural history books were donated to the museum and have since served as an invaluable resource for community members and museum staff alike.

Growth of the Museum as an Educational Institution

In 2021-22, a detailed study of the relationship between CCM and Ekalaka Public Schools. It considered the reasons stakeholders from community anchor institutions establish and sustain a partnership to design and implement a place-conscious approach to education in a rural context. Interviews conducted during the course of the study revealed “how rural community members are connected through multiple roles and intentionally build long-standing relationships

⁸³ Dennis L Swibold, *Copper Chorus: Mining, Politics, and the Montana Press, 1889-1959* (Helena, Mont.: Montana Historical Society Press; Guilford, Conn, 2006).

⁸⁴ Lambert, “Southeastern Montana: The Fossil Story,” 815.

to support students beyond the classroom” and highlighted the elevation of the relational aspects of partnerships and the critical role that they play in everyday rural life.⁸⁵ The study found that the connection between the CCM and Ekalaka Public Schools was most successful through the relationships of individuals, usually teachers at the local school and staff at the museum. This began alongside the founding of the museum in the basement of the high school and the relationship with the Carter County Superintendent of Schools, programming with the National Youth Administration, deepened through the leadership of Marshall Lambert, and continues today with the Teacher Advisory Council, which was created by the CCM.

The CCM’s relationship with the school began with its inception in the basement of the high school (Figure 4) and the participation of Carter County Superintendent of Schools on the museum board of trustees. Mrs. Hall, wife of DeLoss Hall, served as the county superintendent and was instrumental in organizing the Carter County High School.⁸⁶ In September of 1909, the first students enrolled in Ekalaka high school; the first class graduated in 1919. School activities included a newspaper, literary society, glee club, a variety of sports and an annual play. During World War I, Peck organized the “High School Volunteers of the United States” in which students of all genders learned exercises pertaining to the life of a soldier.⁸⁷

⁸⁵ Angela Hewitt Weikert, “Community, Agency, and Place: An Instrumental Case Study of a Relational Partnership between Rural Museum and School Stakeholders” (Ph.D. dissertation, Montana State University, 2022).

⁸⁶ H. B. Albert. “Cady, Peck and Hall” in *Shifting Scenes*, vol. III. (Ekalaka, MT: Carter County Geological Society, 1978) p. 24.

⁸⁷ Anita Ewalt Rose “The Ekalaka High School: 1909-1921” in *Shifting Scenes*, vol. I (Ekalaka, MT: Carter County Geological Society, 1978), p. 218.

In 1938, it moved to a new building, large enough to accommodate 165 students. The Carter County Geological Society Museum hosted several students from the local high school as part of the New Deal's National Youth Administration. A collection of their essays is held by the museum, in which students describe their service as members of the fossil field team, exhibit developers, collection cataloguers, and even tour guides of the museum (Figure 5). During this time, the N.Y.A. also built several collections display cabinets that are still in use at the museum. Of the experience, one student wrote:

My reactions are a bit difficult to explain. For the first time, I have come into direct contact with work of this kind. Before, I had considered it a work that people merely engaged in for a pastime and for no practical purpose whatsoever. It took actual contact with work in the museum and in the field to bring home to me the realization that here is a study that is, and can remain, fascinating and absorbing. To be able to read, as from the pages of a book, the story of how, where and when these prehistoric animals lived and the functions they performed, would seem to me to be a goal well worth striving for.⁸⁸

This program illustrated the effect that the CCM could have on students in developing skills that could be used across diverse types of careers, including geology, science, and hospitality, among others. Though technology has changed, similar experiences of students today have also helped build careers, with both local, national, and international students.

1946 - 1996: Marshall Lambert as
Director of Carter County Museum

Marshall Lambert became the second director of the Carter County Museum in 1946 and taught at Carter County High School as the science teacher. He found both positions to be challenging and interesting, and during those first few years, "learned more than did my

⁸⁸ Anna Lee Cleveland, "Field Trip," *1939 Field Trips N. Y. A. 1940, 1941 and other articles*. (October 23, 1939). pp. 4-5.

students.” His leadership of the museum for fifty years deepened the foundation of scholarship and preservation begun by the CCGS and cemented the relationship between the museum and the local high school, even as it moved into its own building in the 1980s (Figure 6). Lambert often conducted field trips with his class, where they learned a hands-on approach to fossil excavation and preservation. Today, many of the community trace their interest in science back to Lambert’s classroom and bring their children to the museum as a result.

Lambert was born December 2, 1914, in Baker, Montana, to Brice and Myrtle Lambert. At the age of eight, a tornado killed his parents, and he was sent to be raised by his grandparents, Frank and Ida Castleberry near Ekalaka. He spent summers with his aunt Nell and cousin Bob Kinsey, often hunting for fossils on horseback, which he carried back to the family ranch. He graduated from Fresno State College (now California State University, Fresno) with a BA in business and minors in geology and Spanish. He then earned a bachelor’s in education from the University of Alaska and spent a summer collecting fossils with Otto Geist, who was an archaeologist at the University of Alaska. Among these finds were woolly mammoths from 30,000 years ago and a *Bison crassicornis* that is still on display at the CCM today. Lambert joined the Army Air Corps in 1941 and flew fifty combat missions in the Mediterranean as a bomber pilot. After serving in the war, he returned to Ekalaka in the hopes that he could continue to learn about the collection and preservation fossils from Peck. However, Peck’s sudden death in 1946 meant that Lambert did not get this chance and instead he was chosen as the next director of the museum.

In May of 1947, Lambert presented his “1946-47 Annual Report of the Carter County Museum Director,” covering his first year at the helm of the museum. He began the report at the

beginning of the school year in September 1946 with the move of the museum workshop to the storage room across the hall. This served to familiarize him with the equipment and supplies on hand and gave him a chance to survey work left unfinished due to Peck's death. Lambert then began reorganizing the existing museum displays, including repainting cases and grouping specimens according to their classifications and time period to "help prevent the layman from confusing them with other prehistoric animals, i. e. the dinosaur." The geology and biology classes frequently helped in this process. During this time, students also organized a high school science club, "Science Incorporated," and became junior active members of the Carter County Geological Society.⁸⁹

Lambert engaged in continual education, both academically in subjects of geology and paleontology, and learned fossil prep from professionals. He built on the foundation laid by the founders of the museum and their dedication to a high standard of collections preservation. In 1949, he learned to prepare rhinoceros bones for display at the University of Nebraska's State Museum and in 1953, he began mounting the 1938 *Edmontosaurus* find for display in the CCM, a task which he finished in 1954 (Figure 7). This specimen was featured in the 1954 Life Magazine article, "The Town that Hunts Bones." Images that accompany the article depict women in their Sunday best strolling along exposed rock, picking up items that may be fossils. Another photo shows Lambert standing on the side of a butte with a picture of a dinosaur, pointing out parts of its skeleton to a rapt crowd. The series continues as individuals pack bones back to a building where they are prepared, and DeLoss Hall is joined by children interested in

⁸⁹ Marshall Lambert, "Annual Report of Carter County Museum Director (1946-47)." CCGS Founder's Archive. Carter County Museum.

learning the skills of fossil preparation. The Carter County Museum archives contains many more of the photos, featuring similar scenes (Figure 8). This article, featured in a national magazine, and the associated photo archive established the rural area of Ekalaka as a notable area for fossils to half of the population of the United States.⁹⁰

In 1956, Lambert discovered isolated mammal teeth north of Ekalaka in the Medicine Rocks area, which inspired his interest in Paleocene vertebrate paleontology. This discovery caught the eye of Glen Jespen, a vertebrate paleontologist with Princeton University, and began Lambert's partnership with multiple Princeton students. Lambert took a leave of absence from the museum and the school to work in the paleontology lab of Princeton from September 1967 to 1968 and spent a summer at the Yellowstone Bighorn Research Association south of Red Lodge, Montana.

In 1975 Lambert retired from teaching at Carter County High School and turned his full attention to the construction of the new CCM building. The museum had outgrown its previous location in the high school, which lacked climate control and fireproofed walls.⁹¹ The museum's new home was to be in a garage originally built by stone mason Nick Folack in 1926 and owned by Vernon Silvis, a mechanic. Stones from deteriorating homesteads were donated, along with petrified wood from local ranches, including those of Pat LaBree, Richard Malmquist, and circus owner Paul Ringling. A local carpenter, Rankin Dean, joined Lambert in laying up stone walls and remodeling the building to house the museum's collection while an endowment fund was

⁹⁰ Erika Doss, *Looking at Life Magazine*. Washington, D. C.: Smithsonian Institution Press, 2001).

⁹¹ Letter from Carter County Geological Society Archives. 1965-09-03_Lambert_Woodgerd02.

established. Science students and other community members helped with the construction. The community completed the building's renovation in 1984. Lambert's correspondence from this time period frequently includes updates on the construction: in December 1975, for example, Lambert recounts insulating the walls and purchasing a fireproof safe and vault door to safeguard rooms just a paragraph after he thanks the addressee for naming a fossil after him.⁹² The museum remains in that building today and, in the words of former trustee Vivian Castleberry, "provide[s], as well, an interesting and beautiful introduction to your county seat and home town."⁹³ This visual connection of the museum to the prehistoric environment of the area as well as the natural history collections within its walls helps to define the role of the museum as an agent of environmental preservation and education.

Lambert continued to roam the hills of Southeastern Montana throughout the 1980s, collecting fossils and working with a variety of researchers that came to the Carter County Museum to study its collections. His reputation spread in paleontology circles around the country. Colleagues he had worked alongside named several species after him; in June of 1993, the Society of Vertebrate Paleontology—a professional organization founded in 1940 to advance the science of vertebrate paleontology around the world—hosted a symposium in his honor at the Pioneer Trails Museum in Bowman, North Dakota. Paleontologists from around the world gathered in Bowman to share their memories of Lambert and Ekalaka. In the words of paleontologist F. D. Holland, Jr. at the 1993 symposium, "While Marshall Lambert was never successful in reviving a dinosaur, it is no exaggeration to say that his enthusiasm, care,

⁹² Letter from the Carter County Geological Society Archives. 1975-12-09_Lambert_Bishop.

⁹³ *Shifting Scenes*, vol. 1, 131.

persistence, and skill in administering them first aid is known from coast to coast.”⁹⁴ research of specimens in the area. In 1996, Lambert ended his half century at the museum as Director. He died in 2005.

The Carter County Museum as a Community Anchor Institution

This chapter has followed the Rural Social Space Model by covering the historical context of the community and the foundation of the museum, its environmental function as a steward of natural history collection, and its demographic function as an educational institution and an exhibitor of cultural history collections. The final aspect of the model will examine the function of the museum as an economic engine in the rural community.

One of the key factors in rural tourism development is the establishment of infrastructure that enables travelers to enjoy the journey as much as the destination.⁹⁵ Such is the case with Southeastern Montana -- prior to 2010, the paved highway ended in Ekalaka, placing the community quite literally at the end of the road. A gravel road continued to Alzada, Montana but it was difficult to travel in adverse weather conditions and contributed to the desire of travelers to choose the highway that led from Miles City through Broadus to reach the Black Hills. In 2010, however, paving of the 72-mile State Highway 323 in Carter County, Montana, was completed. According to a 2010 article in the Billings Gazette, this was an endeavor that began in the 1920s

⁹⁴F. D. Holland, Jr., “First Aid to Dinosaurs from Marshall Lambert,” in *The Marshall Lambert Symposium Contributions and Road Log* (Geology and Geological Engineering Faculty Publications, 1993).

⁹⁵ Laetitia Jacobs, Elizabet A. Du Preez, and Felicite Fairer-Wessels, “To Wish upon a Star: Exploring Astro Tourism as Vehicle for Sustainable Rural Development,” *Development Southern Africa* 37, no. 1 (2020): pp. 87-104.

and upon completion, “Ekalaka could no longer bill itself as the only county seat in the United States that didn’t have a paved road running through it.”⁹⁶ Traffic began to pick up immediately, particularly as oil development in Eastern Montana grew, and attendance at the museum followed suit, increasing from 1,679 in 2009 to 2,384 by the end of 2010.

The Annual Dino Shindig

In 2013, staff and volunteers at the CCM founded the Annual Dino Shindig, which built upon the idea that place-based education “responds to contemporary human needs and fosters meaningful connections between the museum and its audiences, positioning it at the heart of a community.”⁹⁷ This event celebrates paleontology from southeastern Montana, northern Wyoming and the western Dakotas and was created in answer to a community desire to learn the science behind the fossils excavated in the area. Paleontologists working in the region were invited to share their research in the format of a public forum, augmented by paleontology-based activities for children, new exhibits at the Carter County Museum, a barbeque, and a street dance. Museum staff and a local ranch also held an event to thank speakers, volunteers and landowners featuring a pitchfork fondue—steak and frybread deep fried in a large cauldron and served up on pitchforks—that kicked off the weekend, enabling attendees to visit with scientists.

This event brought science communication to the community level and gave the public a chance to see the process of paleontology in action -- from excavation techniques to display and research while using the local landscape as “context or ‘text’ to prompt direct experience,

⁹⁶ Ed Kemmick, “Road Paved,” *Billings Gazette*, October 23, 2010.

⁹⁷ Pat Villeneuve and Amanda Martin-Hamon, “At the Heart of It,” *Journal of Museum Education* 32, no. 3 (September 2007): 251–60, <https://doi.org/10.1080/10598650.2007.11510575>.

inquiry, knowledge and skill development.”⁹⁸ On the second day of the Shindig, visitors either participate in the field expedition, which takes fifty people to one of the museum’s active field sites, or the Science and History Gathering at Medicine Rocks State Park. Aided by marketing grants from the Montana Office of Tourism and Visit Southeast Montana, the Shindig grew to become the largest summer tourism driver to Ekalaka⁹⁹ and won Event-of-the-Year in 2017 at the Montana governor’s tourism conference in Helena.

Based at the CCM, the Shindig remains community centered as local businesses are invited to sponsor auction items, kids’ activities, and the street dance. Three eating establishments -- the Stompin’ Grounds coffee shop, Dawghouse Pub, TSO Cantina, and Wagon Wheel Cafe -- participate in serving meals and libations to visitors and locals, contributing to a welcoming atmosphere with signature Montana hospitality. Stompin’ Grounds has invented a spin off enterprise opportunity¹⁰⁰ with Breakfast in the Back. Patrons can choose one of three meals, including the “Wyrex” a combination of biscuits and gravy and a breakfast scramble named for the museum’s *tyrannosaurus rex* mount. Restaurants, lodging, and the gas station see profits double or triple during the weekend and public camping areas at Medicine Rocks State Park and the Custer Gallatin National Forest are routinely full every year. In 2019, the Dino Shindig served an audience of approximately nine hundred people and raised over \$18,000. During the COVID-19 Pandemic, the Annual Dino Shindig was reinvented as a hybrid program

⁹⁸ David A. Gruenewald, Nancy Koppelman, and Anna Elam, “Our Place in History,” *Journal of Museum Education* 32, no. 3 (September 2007): 231–40, <https://doi.org/10.1080/10598650.2007.11510573>.

⁹⁹ Knapp.

¹⁰⁰ Jacobs, *To wish upon a star*.

in which in-person talks and kid's activities were limited to participants local to Ekalaka and field expedition registrants. Strict sanitization and masking policies were enacted. In 2020, a total of 118 people attended the talks in person and 216 viewed the talks on YouTube and Facebook through the Shindig Island Private Group. In 2021, 257 attended the talks in person and an additional ninety-three joined online through Shindig Planet. The fossil field expedition was reorganized to four different field sites to keep the site groups to family units and each group was responsible for their own transportation.

The 10th Annual Dino Shindig saw a return to pre-COVID Dino Shindig events with the benefit of lessons learned during two years of the pandemic, including the addition of sanitation stations and outdoor hand washing facilities, as well as the multi-site field expedition. The latter allowed for participants to have more one-on-one interaction with CCM associated paleontologists. Attendance for this all in-person event totaled 526. For the first time, the Carter County Museum participated in the Institute for Tourism & Recreation Research event survey program, which found that 79 percent of respondents would return next year and 21 percent within the next five years. The economic results of this survey will be discussed more in depth in Chapter Three of this dissertation.

Relationship with Medicine Rocks State Park

Medicine Rocks State Park is in southeastern Montana, eleven miles north of Ekalaka and twenty-five miles southwest of the town of Baker. The park area encompasses 330.34 acres of low rolling grassland hills interspersed with sandstone formations that include caves, columns, pillars, flat-topped towers, holes, arches, and spires. The distinctive Medicine Rocks State Park geology is estimated to be between 60 and 65 million years old and is part of the Fort Union

sandstone ridge system that has been eroded into sandstone pillars.¹⁰¹ In the decade since 2013, Medicine Rocks State Park experienced a marked growth in visitation from just under 10,000 people to over 16,000 in 2019. As the park's popularity increases, so does the importance of public education regarding the park's cultural and natural history resources. The museum has worked on several collaborative partnerships with Montana State Parks and used its status as the primary visitor resource for Medicine Rocks State Park to position itself within a geography of social location.

Medicine Rocks was used by the Crow, Northern Cheyenne, and Sioux nations for sacred and ceremonial purposes. By 1880, white settlers started moving into the Medicine Rocks area, including buffalo hunters and cattle ranchers. In 1883, Teddy Roosevelt visited Medicine Rocks and stated in his journal that it was "as fantastically beautiful a place as I have ever seen." In 1919, the first homestead records were recorded in Medicine Rocks State Park area. Carter County had ownership of the remaining land until the county commissioners deeded the land to the state of Montana in 1957 for a state park.¹⁰² In 2017, Medicine Rocks State Park joined the National Register of Historic Places because of its significance as a cultural and natural resource. As a National Historic Place, Medicine Rocks carries great significance to the cultural and natural history of the region and requires preservation of the landscape.

Star-observation parties and astrophotography workshops conducted within the park by the CCM have put the park on the map as a destination for astronomical observers in addition to

¹⁰¹ Tim Urbaniak. "Medicine Rocks State Park." National Register of Historic Places Inventory/Nomination Form. Ekalaka, MT. (2017)

¹⁰² Ibid.

history enthusiasts. These interpretive programs that go along with the dark sky “can have a positive impact on sustainable tourism demand since potential visitors may seek out dark sky parks more so than they have done previously.”¹⁰³ The ability of Montana’s dark skies to generate tourism is a state priority, as evidenced by a 2019 \$75,000 grant to support astro-tourism in Eastern Montana. This niche market “is categorized as sustainable tourism in which its greatest assets never need to be maintained or developed; making it completely unique in its features.”¹⁰⁴ As this campaign moves forward, it will be necessary to use the sky quality data generated in Medicine Rocks State Park and monitored by the CCM to educate area residents about the generation of light pollution and the harm it may cause. To build a foundation of awareness about dark skies, CCM hosted the program “Don’t Rustle Charlie’s Stars,” which relates culture to natural history by comparing the growing effects of light pollution in Montana through the work of photographer John Ashley and Charlie Russell’s paintings of the night sky. CCM staff continue to engage the population in Baker and Ekalaka area in dialogue centered on area night-sky preservation and help identify opportunities to help minimize the communities’ impact on the quality of night sky at Medicine Rocks State Park.

Place-Conscious Curriculum at CCM and The Teacher Advisory Council

The success of the Dino Shindig and partnered programming at Medicine Rocks State Park helped catapult the museum back into position in 2013 as a learning instrument within the community, inspiring a series of new exhibits on subjects ranging from native plants to

¹⁰³ Frederick M Collison, “Astronomical Tourism: An Often Overlooked Sustainable Tourism Segment,” 2011.

¹⁰⁴Jacobs, *To wish upon a star*.

archaeology, paleontology, and taxidermy. Educational programming encompassed both on-site and outreach events, lectures, and curriculum, which reach a broad audience.

In 2017, the CCM formed a teacher advisory council with members from the local Carter County High School and piloted a program in conjunction with Museum of the Rockies. Titled MAIA: Mobile Science Lab, this traveling outreach program combined the osteology collections of the CCM, the *Maiasaura* dinosaur growth series from the Museum of the Rockies, and partnership with Carter County High School (CCHS). The result is a learning experience that connects Montana rural students to math, agriculture, and natural science. The lab features a lesson developed by the math and science departments at CCHS and engages students in measuring femurs of cattle, chicken, deer, and the dinosaur *Maiasaura*. By including the four different animal growth series, it is possible to engage students from a rural background who hunt wild game (deer), raise livestock (cattle), or keep chickens. Those from urban backgrounds may be more familiar with their local dinosaur museum and recognize the *Maiasaura* series or relate it to Montana as its state dinosaur. Since its inception, MAIA has traveled throughout the state and reached over 5,000 students.

In the years since, the CCM developed several other examples of place-based learning designed in concert with local teachers that included museum exhibits. The first is one that occurs at the museum and encourages students to engage with environmental, ecological, and mathematical concepts through participation in the Hell Creek Amber Citizen Science Project. Throughout the summer, members of the CCM field crew and Shindig field expedition participants collect amber from Carter County's Hell Creek formation, which creates a window into the environment at the time of the dinosaurs. One local student went on to use their research

for the basis of their study at Montana State University as an undergraduate in paleontology with a minor in entomology.

In 2019, staff from the museum teamed up with students in the CCHS family and consumer sciences class to read several archaeology themed books during story hour at Ekalaka Public Library. Students in the class read the books aloud, while museum staff led archaeology-based activities. After a two-year hiatus due to the COVID-19 pandemic, story hour resumed during the summer of 2022 with a three-day series of activities rooted in museum collections and library summer reading themes. In July of 2019, the museum's curator and director traveled to Kalispell at the behest of ImagineIF libraries and provided an interactive exhibit based on paleontology at their summer reading experience. In two days, 1,068 children and their families participated from Big Fork, Kalispell, and Columbia Falls. This event served to educate participants about Montana's unique prehistory and inspired students to check out more books on dinosaurs and science.¹⁰⁵ Through a collaborative relationship with Museum of the Rockies, the CCM hosted a portable StarLab planetarium from April - August 2019. The museum's director and educator created a number of custom shows in addition to those offered by StarLab, traveled 2,888 miles, and regaled 2,076 people through the StarLab Rural Outreach Program.

From 2020 to 2021, the CCM shifted focus to hybrid and online formats to continue reaching audiences at home during the COVID-19 pandemic. In addition to the hybrid Dino Shindig Island and Planet mentioned earlier, staff designed take-home educational kits to supplement science, math and history subjects and embarked on an initiative to scan fossil

¹⁰⁵ Maggie Doherty, "Meeting Jane," *Flathead Beacon*, July 26, 2019, <https://flatheadbeacon.com/2019/07/26/meeting-jane/>

specimens within the collections and put them on SketchFab. This project was accomplished with the use of a ArtecLeo 3D scanner purchased with museum funds in the Carter County budget. As of 2022, 50 models are on the museum's page, several of which are referenced in college entry-level courses that deal with Earth Sciences. During these years, the museum hosted a series of virtual interns from Montana State University and Johns Hopkins Universities. These remote internships involved creating a database for the Carter County Geological Society Founder's Archive, virtual exhibits on Montana Memory Project and Artsteps, and the creation of digital curation policies, among others. In 2020, 15,602 people engaged in online educational content produced by the CCM.¹⁰⁶ In 2021, online-based education engaged an audience of 22,561.¹⁰⁷

The CCM also led the K-12 curriculum project "Hilleman & Vaccines: Connecting Culture to Scientific Curiosity," which complements the exhibition. The curriculum promotes student learning through math, science, history, and critical thinking. Students are introduced to the life of Maurice Hilleman and the Montana history of infectious disease and vaccine development by learning about the work of Rocky Mountain Labs. The K-6 and 9-12 lessons were designed by a group of teachers from the elementary and high school level who piloted the curriculum in their classrooms in Ekalaka, Montana during May 2021. Content background was provided by Carter County Museum in consultation with Montana State University and Museum of the Rockies. The state's mandated "Indian-Education-For-All" curriculum was included for all ages to communicate the impact of pandemic diseases on Indigenous communities in Montana.

¹⁰⁶ Sabre Moore, "CCM Director's Report January 2021," January 2021.

¹⁰⁷ Sabre Moore, "CCM Director's Report January 2022," January 2022.

After participating in the curriculum pilot, some students in the Carter County Public School District informally shared that they felt kinship with Hilleman, realizing their backgrounds on ranches were valuable and they could make a difference, too, even if they were not from a big city. The curriculum was a featured project at the American Alliance of Museums 2021 Meeting and as a session at the Montana Federation of Public Employees and Association of Science and Technology Centers October 2021 conference.

Museum Exhibits Defined by the Community

The following two sections describe exhibits that showcase the power of place in community-centered programming at the CCM. First is the Tooke Bucking Horses collection, which grew from a conversation between the Tooke Family and Ken and Theresa Howie, filmmakers who were working on a documentary about Feek Tooke, who was an early resident of Ekalaka and became known as the Henry Ford of modern rodeo. The second is the story of the Carter County Heritage Orchard, which was constructed at the museum as the result of a conversation with Lloyd Carroll, an area rancher who was concerned about the preservation of an apple tree that had been planted by the first homesteaders on his place. In both cases, the museum responded to community needs by creating exhibits and supporting related projects such as the Feek's Vision Documentary and a series of tree care and grafting workshops. These actions built upon the museum's long history working with the community and resulted in collective impact that affects wider community change.¹⁰⁸

¹⁰⁸ Kadoyama, p. 21

The Tooke Bucking Horses Collection

Chandler Earl Tooke moved to Ekalaka in 1913 and began raising and training horses. On Memorial Day in 1931, the Tooke brothers held their first rodeo at the family ranch. Led by Tooke, known as Feek to his friends and family, the brothers went on to produce rodeos in Ekalaka, Baker and Miles City as well as across North and South Dakota. Their bucking horses were leased to other rodeo producers and soon their stock had appeared in arenas from Salt Lake City to Chicago to New York's Madison Square Garden. A lifelong equestrian, Feek came up with the idea to cross Shires with Thoroughbreds after purchasing Pat O'Kane's horses in 1936 and added King Larrygo to the herd in 1943. This union produced Prince, who later became known as "Rodeo's Bronc Patriarch." He stood seventeen hands tall and weighed 1,700 lbs. Together with the temperamental Arabian horse Snowflake, Prince sired a number of famous rodeo broncs: Major Reno (1968 & 1969 NFR Saddle Bronc of the year), Sheep Mountain (1967 Saddle Bronc of the Year) and Gray Wolf (Rodeo Hall of Fame, 2016). Feek's breeding program was the first of its kind and pioneered the bucking horse stock industry.¹⁰⁹ Over 6,000 bucking horses have been produced from Tooke stock, including 90 percent of the horses selected for the National Finals Rodeo.

In 2012, Toby Chandler Tooke, great-grandson to Feek Tooke began a Facebook page that aimed at raising awareness of the impact the Tooke bucking horses have on the Rodeo industry. Today, the page has over 36,000 followers. Filmmaker Ken Howie -- of Special Cowboy Moments on RFD-TV -- took notice and the documentary project "Feek's Vision" was

¹⁰⁹ Ernest Tooke, "Tooke Bucking Horses," in *Shifting Scenes, vol. I* (Ekalaka, MT: Carter County Geological Society, 1978), p. 878-880.

born. The museum signed on to the project in 2017 as the fiscal agent for the film at the request of the Tooke Family. As the fiscal sponsor, the museum receives tax-deductible charitable contributions for the implementation of the film project and a portion of those funds go to the Tooke Bucking Horses exhibition at the museum. Donated by the Tooke family, the collection contains plaques, Hall of Fame and other trophies, branding irons and the rubber flank cinch – a Feek Tooke invention that is still used for bucking horse stock today. Plans for the exhibit include the bones of Grey Wolf, an 1,800 pound, seventeen hand tall stallion that would go on to become one of the greatest breeding horses in United States rodeo history and a digital compilation of the genetics of the Tooke breeding line and how they connect to horses in rodeos today. CCM partnered with Ken Howie Studios and the Tooke Family for this project to tell this “remarkable, old west story of ingenuity and hard work so that others may learn Feek Tooke’s contribution to history and its roots in Ekalaka, Montana.”¹¹⁰

In the documentary, rodeo champions such as Larry Mahan, Deb Copenhaver, Clint Johnson, Dan Mortenson, Brad Gjermundson and Ty Murray share stories and historical details about the Tooke Bucking Horses and their profound impact on the sport of rodeo. Legendary stock contractors Harry Vold, Cotton Rosser, and Mel Potter (Rodeo, Inc.), Matt Burch (Burch Rodeo), Sparky Dreesen (J Bar J) and Powder River's Franzen family share their testaments to Tooke bred horses, many still winning titles today.¹¹¹

¹¹⁰ Sabre Moore and Theresa Howie, “Feek’s Vision Documentary Preview at Museum Dec. 19 and 20,” The Ekalaka Eagle (The Ekalaka Eagle, December 7, 2018), <https://www.ekalakaeagle.com/story/2018/12/07/local/feeks-vision-documentary-preview-at-museum-dec-19-and-20/1264.html>.

¹¹¹ Sabre Moore and Theresa Howie, “Geological Founder’s Day to Feature Feek’s Vision Updates at Events Center,” The Ekalaka Eagle (The Ekalaka Eagle, March 9, 2018),

The documentary involved many trips to the Las Vegas National Finals Rodeo and others made to interview many of the legends described above. One of the more memorable events of the filming was the creation of a 1940s corral on the Tooke Ranch near Ekalaka, where local Tooke horses and area bronc riders re-enacted a rodeo as it would have occurred during Feek's day. The corral was recreated by Howie, members of the Tooke family, and others, who used historic photos to create the half-moon shaped arena from woven wire, lodge poles, and other timber (Figure 9). The remainder of the corral "fence" was made up of cars that dated back to the 1940s, many owned by residents of Ekalaka. This event was open to the community, who were invited to dress in period-appropriate clothing and serve on set as extras for the film. People arrived at the Tooke Ranch and took a wagon to the film site. No electronics, including cellphones, were not allowed on set.¹¹²

The film experienced numerous delays. Through funding shortages, health, and disruptions caused by COVID-19, the Tooke Family and Howies persevered. Many of the interviewees, including Ernest Tooke, son of Feek who helped carry on the legacy, passed away during its production; the film records their stories for future generations.¹¹³ The documentary is set to premiere in Ekalaka on May 13, 2023.

<https://www.ekalakaeagle.com/story/2018/03/09/events/geological-founders-day-to-feature-feeks-vision-updates-at-events-center/779.html>.

¹¹² Eric Lovec, ed., "Rodeo Arena to Be Used as Film Set This Sunday," The Ekalaka Eagle (The Ekalaka Eagle, August 30, 2019), <https://www.ekalakaeagle.com/story/2019/08/30/local/rodeo-arena-to-be-used-as-film-set-this-sunday/1785.html>.

¹¹³ Toby Tooke, "Feek's Vision," March 22, 2023, <https://www.facebook.com/toby.tooke/posts/pfbid0uhNHnS5EkPeDWtL6NZHw9X6gHZrvqHhCxz3AJM4E3RX5XEWUAESGSBQcjfqPTE5l>.

The Tooke collection was donated at the project's outset and remains on permanent display at the museum (Figure 10). Portions of the collection have traveled to Las Vegas for the premiere of the Feek's Vision trailer in 2018 and to O'Fallon Historical Museum in 2019 for their fair and rodeo. In both instances, the exhibit served to widen awareness of the contributions of the Tooke family to the sport of rodeo through their bucking horse breeding program. The completion of the documentary and the resulting fund for the Tooke Bucking Horses exhibition in the CCM represents the commitment of the community to telling the story of an innovative agricultural breeding program, its foundation in Ekalaka, and the impact it continues to have on the sport of rodeo on an international scale. Many of the supporters of the documentary are stock contractors that do not live in Ekalaka but have nonetheless invested in the film and whose donations, in part, will be used to create the Tooke Bucking Horse exhibition in the museum's expansion. This contributes to the vitality of the CCM, but also to the telling of a previous silence in rodeo history, which did not prominently feature the Tooke story, if at all. It also showcases the community's longevity of the sport of rodeo, which continues in Ekalaka today and features Tooke broncs throughout the summer.

The Carter County Heritage Orchard

In 1930, two of the largest and best-known apple orchards in southeastern Montana were those of Jack Kinsey and R. C. Miller in Ekalaka. Having purchased his ranch from John T. Smith, Miller discovered the apples Smith had planted in early 1905 continued to bear fruit. Three varieties of apples were produced: Wealthy, Hibernial and Greening. Miller took first prize at the Ekalaka fair with an exhibit of these apples, then headed on to the Eastern Montana Fair in

Miles City, where he also earned first place. Miller was convinced fruit culture could be made a success in regions of southeastern Montana, and particularly in Carter County.

Today, apple trees from orchards throughout the county are exceedingly rare. They are a dwindling resource and evidence of a visible threat of the disappearance of these trees and the connection to those who planted them. Ranchers who have fond memories of eating apples from these orchards are interested in preserving this heritage and donate buds to the Carter County Museum, so that the trees may propagate through the practice of grafting and be cared for in a central community orchard accessible to and enjoyed by the public for future generations. Supported by a grant from the Montana History Foundation, staff, and volunteers from the CCM began the Carter County Heritage Orchard by planting rootstock in May 2021. Later that summer, Katrina Mendrey, then Orchard Program Manager for Montana State University's Western Agricultural Research Center, taught CCM staff and volunteers how to select grafts from homestead trees around the area (Figure 11). Back at the Orchard, volunteers and staff grafted buds from the Harmon Creek, Albert Fost, Margie Gundlach, Jack Kinsey homesteads onto ten rootstocks. Mendrey also took DNA samples and buds from the trees and grafted them onto rootstock in Hamilton, ensuring further preservation of these heritage resources.

In tandem with the orchard, staff at the CCM are also creating a book that contains the stories of the homesteaders that planted the trees. This has entailed working with the Carter County clerk and recorder's office to determine the historical ownership of the areas in which the trees are found. One exception is the Albert Fost orchard, which continues to be cared for by his grandson, Randy. Upon hearing about the orchard project in the Ekalaka Eagle newspaper, Randy called the museum and invited Mendrey and her team out to collect buds from his orchard

for grafting. The orchard, which spans about an acre, contains many trees that are over fifty years old, and several that are close to one hundred years old. The stories of each homesteader provide a snapshot of life as a colonial settler in the early history of Ekalaka.

The history of apple orchards in Montana stretches back to the late 1840s when Catholic priests Ravalli and DeSmet planted an orchard near Stevensville in the Bitterroot Valley.¹¹⁴ Other settlers in the area planted apple trees in the mid-1860s, including commercial-sized operations by brothers Thomas and Ben Harris and others. These early seeds were ordered by mail or purchased from traveling salespeople from nurseries in Oregon, Washington, Utah, and New York. While many were unsuccessful, some survived. In 1870 D.R. and W. E. Bass planted Pine Grove Farm near Stevensville, becoming the first to be successful in growing fruit trees on a large scale.¹¹⁵ They traveled the state, selling young trees from their orchards as well as apples to mining camps in Butte and Helena. The DNA testing of the trees local to Carter County is still underway, so it is difficult to be certain if these trees are descended from the Bitterroot orchards or if they were instead brought from eastern locales by the homesteaders who planted them.

Residents of Carter County continued to call CCM staff and volunteers with locations of more homesteader apple trees and in August 2022, local arborist Phil Cook, forester Scott Elmore, and gardener and museum receptionist Denise Elmore hosted a grafting workshop at the CCM where attendees learned the whip and bud grafting technique. From this workshop, two more trees, one each from the J. T. Smith (later R. C. Miller) and Ethan Carter homesteads, were

¹¹⁴ P. Rhodes, "Frank Lloyd Wright and the Apple Boom," *Ravalli Republican*, Sept. 17, 1997: 5.

¹¹⁵ W. B. Harlan, "Pioneer Fruit Growers of the Bitter Root," in "The Bitter Root Valley Illustrated" magazine supplement to *The Western New*. May 1, 1910: 10.

propagated for the museum orchard. Cook and the Elmore's have continued to travel the county, trimming homestead apple trees and teaching landowners how to care for their trees.

Conclusion

This chapter has focused on defining the historical through-line of the Carter County Museum as it was founded and developed in southeastern Montana. For over 80 years, the CCM has preserved more than ninety million years of history in the region of southeastern Montana and surrounding states. That mission has encompassed education, outreach, and collaboration with individuals and organizations from the local level all the way to international. Born of the desire to keep collections local, the CCM embraces an identity as an institution dedicated to science, history, and art. This includes an assemblage of collections of archaeological and paleontological nature that celebrate deep history and the convergence of humanity and the landscape. The museum's social location in which the museum acts as an instrument of economic regeneration by stimulating sustainable rural tourism and a learning instrument that uses collections to encourage learners of all ages to discover the lessons in their own backyard. This provides the necessary foundation for the following chapters, in which this history informs the three sides of the rural social space model: environment, demography and economy. It also sets the stage for the use of this model by other rural museums and by the field of American Studies to address the silences about rural America.

In a letter to the Carter County Geological Society dated January 4, 1937, Idella Kennedy quotes Dr. C. Stuart Gager: "A museum is an organic thing. Its germ is an idea. Its essential characteristics are activity and growth. It depends upon nourishment. It remains useful only as long as it continues to perform vital functions. Whenever it becomes merely a static exhibition of

labeled objects, it has become not a museum but a mausoleum.” Idella continues, “We can keep our museum alive and fulfill the purpose for which it is established only if the society keeps this statement of Gager’s in mind.” The CCM is proof that “while many museums choose to present the world to the individual, an equally powerful and perhaps more powerful pedagogy is for museums to represent local communities to themselves and to hope the world is listening to the conversation.”¹¹⁶

¹¹⁶ Utt, “A Sense of Place,” 302.

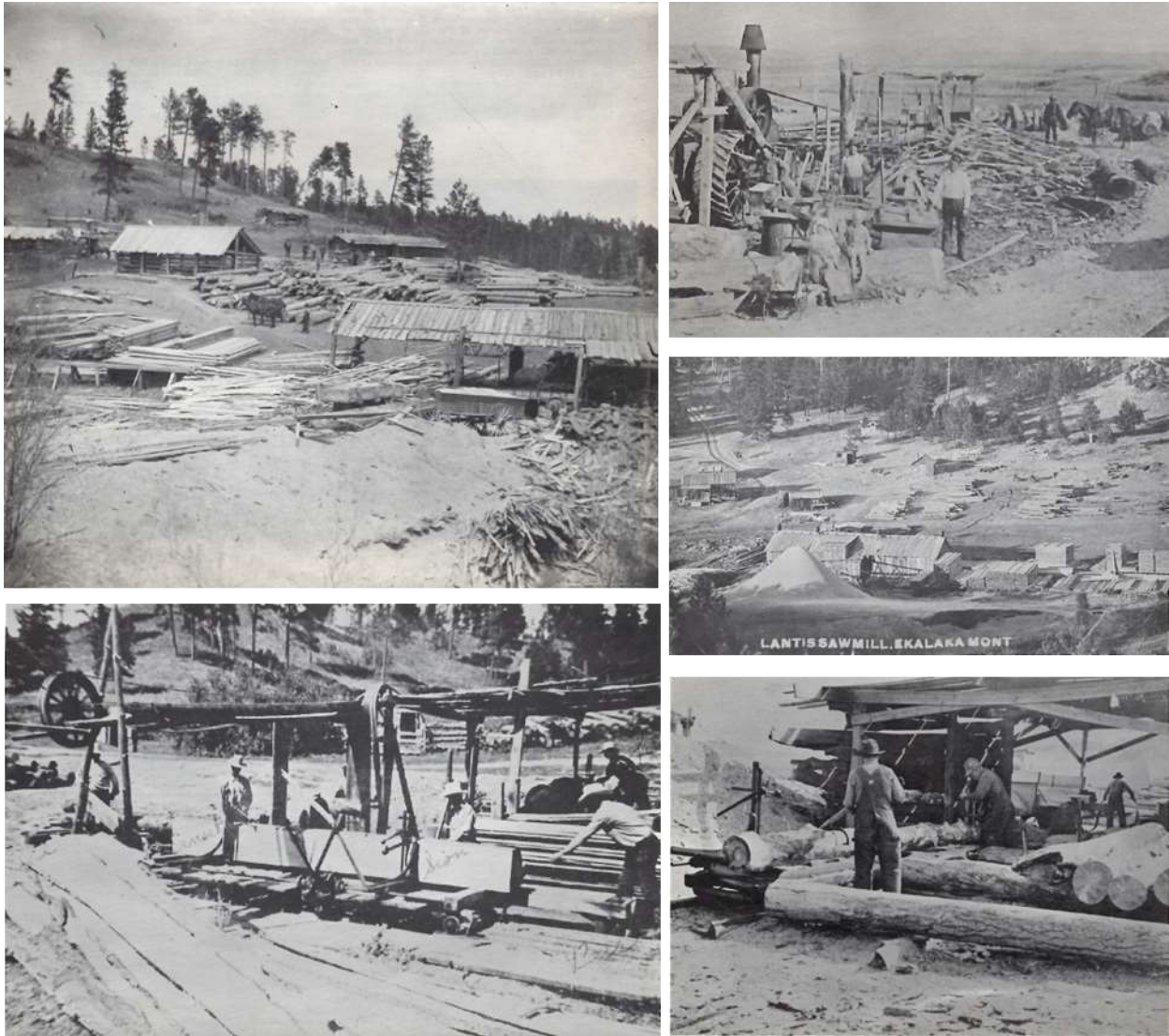


Figure 2. Sawmills in Carter County. Clockwise from left: Hall Sawmill (1905-06) glass plate negative by Septon Cady. Ed Conger's Sawmill (1911). Lantis Sawmill (undated). Glenn Brewster Sawmill, nine miles south of Ekalaka (undated). Ernest Brewer's Sawmill (1947).

"Q".No.28.



Next to our last Sunday at the camp B.M. (Bob) Renshaw and his family came out to see what we were doing. When he walked to the south side of the tent this is what he saw:- (see below)



This is the pile of fossil bones that we had back packed or carried over from the quarry. Mostly small, but what a bunch.

Figure 3. Page from the 1938 Safari (Limited) journal of the Edmontosaurus excavation kept by Walter H. Peck. This section shows one of the local visitors at the camp and the bones that had been dug up and plastered by the time of his visit.



Figure 4. Interior of the Carter County Geological Museum in the basement of the old high school in Ekalaka (1930s). Images courtesy Carter County Museum archives.



Figure 5. Digging out a Triceratops femur on Blacktail Creek, October 23, 1939. Pictured here: (1) Morris Renshaw and N.Y.A students (2) Frank Quas, (3) Vernon Parke, (4) Anna Lee Cleveland, and (5) Margaret Shelden. Image courtesy Carter County Museum archive.



Figure 6. Marshall Lambert and high school students Garth Quade and Norton Walker posing in front of the stone arches they helped construct in the new museum building. Image courtesy Carter County Museum archives.



Figure 7. Students surrounding the 1938 Edmontosaurus on display at the museum in the high school (1954). Images courtesy Carter County Museum archives.



Figure 8. Residents of Carter County engaged in fossil preparation and fieldwork. Photos by Ross Madden for Life Magazine (1954).



Figure 9. 1940s style corral constructed at the Tooke Ranch for the Feek's Vision Documentary film shoot. Photo by Mary Peters reprinted with permission.



Figure 10. Tooke Bucking Horses exhibit at Carter County Museum. Photo by Sabre Moore.



Figure 11. Volunteers harvesting buds from apple trees around Carter County, Montana. Photo by Stewart Cook.

CHAPTER THREE

CARTER COUNTY MUSEUM AS AN
EPICENTER OF PALEONTOLOGY

Thousands of letters between the founders of the Carter County Museum and paleontologists at larger museums in the U.S. enrich this narrative of exploration and extraction by providing first-hand accounts of a time during which the construction of railroads “was spilling dinosaur bones out of their primeval graves...[and] bringing back carloads of bones to New York, Philadelphia, and New Haven, and railroad money was helping to finance the bone rush and new museums.”¹¹⁷ These letters bear the names of legends of paleontology like Walter Granger, discoverer of *Velociraptor*, Childs Frick, vertebrate paleontologist and trustee of the American Museum of Natural History, and George Gaylord Simpson, perhaps the most influential paleontologist of the twentieth century. Others include Erling Dorf, professor of geology at Princeton who asserted that the earth was going through a period of warming, Roland W. Brown, stratigrapher, and research associate in the department of Geology at the U.S. National Museum, G. Lewis of Yale, and J. LeRoy Kay of the Carnegie Museum. Often, Walter Peck or Idella Kennedy would request the identification of specimens or further information on fossil preparation and care. Return letters include descriptions, photographs, and copies of relevant scientific papers. The letters help chronicle the growth of the CCM’s paleontological collections throughout the late 1930s and 1940s through the reference to myriad specimens. They also provide the background for many CCM collections objects, which are used for exhibitions

¹¹⁷ Mitchell, p. 144.

that are locally based, but with connections to wider histories such as the birth of paleontology in the United States and methodologies of exhibit design.

In this chapter, we will learn more about the central figures in early United States paleontology, the battle over fossil possession and history of public lands, and the responsibility of natural history museums to serve as a foundation for our understanding of the natural world.¹¹⁸ Underpinning this discussion is the Rural Social Space Model in which the geographic environment of a place serves as the catalyst for economic and demographic changes.

The Fossil History of the United States
through the Collections of
Carter County Museum

Rural museums like the CCM often have a closer connection to their communities than national museums in urban settings.¹¹⁹ This connection can be used to ensure a place-conscious approach to exhibition design and the incorporation of objects within their historical context. Stories of artifacts occur within local circumstances that involve specific actors and communities and that can be linked in a variety of ways to broader systems. In this section, I will explore three artifacts in the Carter County Museum collection and their connections to the history of paleontology in the United States using a relational approach to the framework of the Rural Social Space Model, which incorporates environment, economy, and demography. I will begin with demography through the story of the Mastodon Tooth from Big Bone Lick. Here it is important, following the Rural Social Space Model, to address the silences regarding the land

¹¹⁸ Sarah J. Chicone and Richard A. Kissel, *Dinosaurs and Dioramas: Creating Natural History Exhibitions* (Walnut Creek, CA: Left Coast Press, Inc, 2014).

¹¹⁹ Sheila Watson, *Museums and Their Communities* (New York: Routledge, 2007). p. 59.

and its settlement, so I will also explore two stories of previously silenced individuals: (1) the Abenaki hunters in the story of Big Bone Lick and (2) the African American sculptor of the Peale Mammoths exhibition. Next is economy, for which I have chosen the Marsh Pick, the museums, and characters it represents, and the story of fossil collections from the West that made a name for some of America's first natural history museums. Finally, the cycad and geography provide a lesson in the further development of public lands, their management in the United States, and the policies surrounding fossil collecting today.

The Mastodon Tooth: Big Bone Lick and Silenced Histories

In March 1941, the Carter County Museum received the third molar of a mastodon from Walter Granger of the American Museum of Natural History along with the note: "I have thought that a simple exhibit showing a mammoth tooth and a mastodon tooth side by side would be interesting as illustrating the striking difference in dentition between these two groups of proboscideans." However, this mastodon tooth was more than a simple addition to the museum's educational display strategy. It was from Big Bone Lick in Kentucky, which is the site of the beginning of the fossil story of the United States (Figure 12). In 1739, an Abenaki hunting party returned to their camp along the Ohio River with fresh venison to feed an army of French Canadians and American Indians. The hunters unloaded "an enormous, fossilized femur nearly as tall as a man, several huge teeth, and great ivory tusks darkened by time." Longueuil, who commanded the military expedition, brought the fossils down the Mississippi River to New Orleans, where they sailed with him to Paris in 1740. They were then placed in Louis XV's cabinet of curiosities and later became the first American fossils ever studied by scientists. In 1762, Louis Daubenton shared his findings regarding these bones with the French Royal

Academy and credited the anonymous group of American Indians with the discovery.¹²⁰

Despite this attribution, the discovery of fossils at Big Bone Lick has been popularly attributed to Longueuil, including on the interpretive panels at the Big Bone Lick State Park.¹²¹ This was due in large part to George Gaylord Simpson's active erasure of crediting American Indians with fossil finds, calling them casual and "without scientific sequel." This declaration by one of the founders of American paleontology "effectively ended the earlier conversations between Native Americans and Euro-American scientists about the fossil record."¹²² In the book *Fossil Legends of the First Americas*, geo-historian Adrienne Mayor seeks to remedy this silencing of Indigenous fossil discoveries by tracing the story back to the perspective of the American Indian fossil finders. Mayor identifies them as a group of Abenakis who set off in three canoes and traveled a good distance from the noisy encampment in search of food. Salt licks along the Ohio River, which attracted game, were an ideal hunting ground. These salty, sulfurous, boggy areas were full of "the impressive bones of Pleistocene mastodons and other very large mammals, extinct for about ten thousand years," and it was likely that the Abenaki hunters that came across them would have immediately recognized the ivory tusks as a precious commodity. This association was due to the Abenaki practice of collecting ivory whale teeth and trading with the Arctic people who collected mammoth ivory. European traders also regularly asked about ivory, therefore "Abenaki huntsmen would have taken tusks and teeth back to show Longueuil because they themselves valued ivory and because they knew that the Europeans were

¹²⁰ Adrienne Mayor, *Fossil Legends of the First Americas* (Princeton, N.J.: Princeton University Press, 2005). p. 2.

¹²¹ Ibid. p. 5.

¹²² Mayor, p. xxvi.

eager to obtain such things.”¹²³ This statement provides a clear example of economic motivations behind the collection of fossils as a profitable part of the landscape, a practice that would continue and grow in popularity as the United States expanded westward.¹²⁴

Thomas Jefferson took great interest in the mammoth bones from Big Bone Lick and used them to establish America’s “natural constitution” as equal or greater than that of the Old World.¹²⁵ This was based primarily on the abundant supply of bones from the New World, including, most notably, those of the *American incognitum*, or mammoth, which were much larger than those of the elephant of Europe.¹²⁶ This preoccupation with natural history earned Jefferson the title of the Mammoth President.¹²⁷ Shortly after his inauguration, Jefferson urged Congress to fund the Lewis and Clark Expedition, which carried a mandate to investigate Big Bone Lick and send fossil specimens back to Washington D. C. Jefferson stored this collection in the East Room of the White House, which came to be called the “bone room.” By 1808, he had enough bones to reconstruct the remains of a mammoth, which he sent to the Natural Institute in Paris to further demonstrate the “natural constitution of the American nation,” having noticed on a previous visit that the Cabinet of Natural History at Paris “was not very copious.”¹²⁸ It further served to inspire scientific discussions among the scientists of Europe and North America, who

¹²³ Mayor, p. 9.

¹²⁴ David K. Randall, *The Monster’s Bones: The Discovery of T. Rex and How It Shook Our World* (W. W. Norton & Company, 2022). p. 149.

¹²⁵ Mitchell, p. 112-113.

¹²⁶ Thomas Jefferson, *Notes on the State of Virginia*, Electronic Edition (1781; repr., Chapel Hill, NC: University of North Carolina, 2006), <https://docsouth.unc.edu/southlit/jefferson/jefferson.html#p24>. p. 43.

¹²⁷ Mitchell, p. 111-116.

¹²⁸ Mitchell, p. 116.

frequently discussed how elephant-like animals could have survived modern colder temperatures (when contemporary elephants were known to live in the tropics), as well as topics of their origins. Jefferson believed the mammoth was a non-extinct species—based on native stories that talked about living mammoths—and even asked Lewis and Clark to bring back evidence of the living animal, then was disappointed when this did not become the case. At the time, there was no theory of extinction, and Jefferson held an anti-evolutionist position in which the mammoth was made by the Creator and continued to live in the unexplored frozen north.¹²⁹

Through this association with the natural constitution and Jefferson, “the mammoth became, in short, the first symbolic ‘political animal’ of the United States.”¹³⁰ In *The Last Dinosaur Book*, author David Mitchell traces this symbol as an “emblem of Jefferson’s vision of an ever expanding continental empire of small farmers and artisans,” which ultimately came to symbolize the return of the mastodon, an “omen of a plague of death and destruction from the Indian point of view.”¹³¹ Jefferson’s vision of a continent of small farmers and independent artisans translated to policies, legal devices and ideological facades designed to get Indigenous peoples to give up their traditional economic system, national identity, customary laws, governmental structures, and most importantly, their land, which made Andrew Jackson’s Indian Removal Era possible.¹³²

Lewis and Clark brought other fossils back from their expedition, including a marine reptile from South Dakota and fish from the Midwest. While in present-day Montana near the

¹²⁹ Jefferson, p. 44.

¹³⁰ Mitchell, p. 119.

¹³¹ Mitchell, p. 119.

¹³² Mitchell, p. 123.

site of Pompey's Pillar, Clark discovered a rib bone of about three inches in circumference, which he believed to belong to a fish. Modern scientists now believe Clark was describing a *Hadrosaurus*, or duck-billed dinosaur, which would make it the first documented dinosaur found in North America.¹³³ Lewis and Clark's collections, along with American Indian artifacts and natural history specimens, went to Philadelphia, where they became part of placed in Charles Willson Peale's Cabinet of Curiosities, in the first example of a museum partnering with the federal government.¹³⁴

Charles Willson Peale had founded the Cabinet, one of America's first museums, in 1786. In 1799, he excavated the skeletons of two mastodons from southeastern New York and put them on display in 1801, shortly after the election of Thomas Jefferson as President of the United States. The mounts were constructed over a three-month period by Rembrandt, Peale's son, Moses Williams, a formerly enslaved man who worked with the Peales,¹³⁵ and William Rush, a well-known sculptor. Though there were enough bones to construct two mounts, neither was complete, so Rembrandt, Williams, and Rush sculpted the remaining elements based on their presence in the opposite skeleton.¹³⁶ With this display, Peale "hoped to create the first truly national and public museum in America, a place where the mammoth would serve as a monument."¹³⁷ Indeed, Peale's famous painting of himself holding the curtain back on his museum features the mounted mastodon and a collection of bones on the floor on the right side

¹³³ Randall, p. 149

¹³⁴ Liggett, p. 319.

¹³⁵ Ibid.

¹³⁶ Mitchell, p. 127.

¹³⁷ Jefferson, who had been inaugurated into the presidency that same year, financially supported the museum. (Mitchell, p. 117.)

of the canvas (Figure 13).

Until recently, Williams and the identities and contributions of other slaves have been silenced in the overall narrative of the national identity of the early republic of the United States.¹³⁸ In the article “Moses Williams, Cutter of Profiles,” Gwendolyn Dubois Shaw illuminates the subject of Moses Williams, who had previously been relegated to the shadow of the powerful (and well-documented) Peale family. Williams, who did the bulk of the work on the mastodon reconstruction,¹³⁹ was born to Scarborough and Lucy, who were enslaved in the home of Charles Willson Peale, in Philadelphia. The two were part of the small number people enslaved by the Peale family and had been given to Peale as payment for portraits by their previous enslavers. Charles Willson Peale emancipated Scarborough and Lucy in 1786. The state law, however, required that Moses, then eleven, continue in service to Peale’s family until his twenty-eighth birthday.¹⁴⁰ He was raised alongside the seventeen Peale children and received instruction in taxidermy, animal husbandry, object display, and eventually the physiognotrace (a silhouette-making machine). However, unlike the Peale children, Williams was deliberately not taught the “higher art of painting,” which “effectively removed him from any significant artistic and financial competition with the others.”¹⁴¹ This dichotomy is most apparent in the relationship

¹³⁸ Ellen Sacco, “Racial Theory, Museum Practice: The Colored World of Charles Willson Peale,” *Museum Anthropology* 20, no. 2 (September 1996): 25–32, <https://doi.org/10.1525/mua.1996.20.2.25>.

¹³⁹ Richard Conniff, “Mammoths and Mastodons: All American Monsters,” *Smithsonian Magazine*, 2010.

¹⁴⁰ Gwendolyn DuBois Shaw, “Moses Williams, Cutter of Profiles: Silhouettes and African American Identity in the Early Republic,” *Proceedings of the American Philosophical Society* 149, no. 1 (March 2005).

¹⁴¹ Shaw, p. 25.

of Rembrandt and Williams, as son and enslaved, “unequal peers in a peculiar family relationship.” A primary reference to this relationship comes from Rembrandt Peale’s Notes and Queries column, which was published in an issue of *The Crayon* in 1857:

The Physiognotrace was first put up in my father's Museum, and was long one of the attractive features of that institution, under the management of the well-known "Moses." [...] It is a curious fact that until the age of 27, Moses was entirely worthless: but on the invention of the Physiognotrace, he took a fancy to amuse himself in cutting out the rejected profiles made by the machine, and soon acquired such dexterity and accuracy, that the machine was confined to his custody with the privilege of retaining the fee for drawing and cutting. This soon became so profitable, that my father insisted upon giving him his freedom one year in advance. In a few years he amassed a fund sufficient to buy a two-story brick house, and actually married my father's white cook, who, during his bondage, would not permit him to eat at the same table with her.¹⁴²

Despite his success, Williams would continue to be “viewed as profoundly *other* within a public sphere of Philadelphia that defined American identity as decidedly white.”¹⁴³ For example, Williams was often dressed as an Indian and sent by Peale to hand out advertisements for the 1802 exhibit of the mastodon, and displayed as an exhibit at the far end of the Museum’s Long Room where he operated the Physiognotrace.¹⁴⁴ In fact, this exhibit would become so popular that roughly 8,000 attendees (80 percent of museum visitors) had their profiles made by Williams each year between 1802-1805. Thus, Williams “could therefore share in the aura of place as nationalist fame that Peale established, while remaining marginalized in the presentation and representation of the Museum’s history, as well as that of Peale’s.”¹⁴⁵ Revealing this narrative

¹⁴² Peale, 1857: 307-8.

¹⁴³ Shaw, p. 28.

¹⁴⁴ Sacco, p. 26.

¹⁴⁵ Sacco, p. 28.

alongside the contexts of museum display restores the histories of slavery and acknowledges a history of hybridity denied yet produced in America.¹⁴⁶

Charles Willson Peale died in 1827, leaving the museum to his sons, who struggled for years to seek financial support for the Philadelphia museum, as well as later ones opened in New York and Baltimore. In 1842, they sold the collections of the New York museum to Phineas Taylor (P.T.) Barnum. In 1845-46 and 1850, they sold the collections of the Baltimore and Philadelphia museums, respectively. The fish bone from the Lewis & Clark expedition was transferred to the Academy of Natural Sciences in Philadelphia, where it remains to this day.¹⁴⁷ The mastodons were put up for auction; one was purchased by Johan Jakob Kaup for the Dessichen Landesmuseum in Darmstadt, Germany, and the other by John C. Warren, who gave it to the American Museum of Natural History. In 2020-2021, the mastodon skeleton returned from Germany to the United States and was exhibited at the Smithsonian American Art Museum in Washington, D.C.¹⁴⁸

This story of the mammoth and its relationship to the early years of the foundation of the United States illustrates the desire for the new country to establish itself through a natural constitution as much as it did through a physical constitution. That the animal became the signature attraction of the nation's first museum is fitting, as is its position as an early symbol of the Republican party (which it continues to hold today). This section has further addressed the previous silences about the animal (1) that its original "discovery" was by Abenaki people and

¹⁴⁶ Sacco, p. 25.

¹⁴⁷ Liggett, p. 319.

¹⁴⁸ Bernard K. Means, "America's Founding Fossils: History, 3-D Visualization, and Sequential Art." *Cranium* 38, vol. 2 (2021) p. 65.

(2) that the mounting of the mammoth for exhibition at the Peale Museum was completed in large part by an African American artist named Moses Williams. This blends all three aspects of the Rural Social Space Model - geography, economics, and demographics, as well as the mandate to confront and address silences. The following section continues the story of the land and its settlement, with particular focus on the economics of the Great Bone Rush and the burgeoning natural history collections of what would become the largest, most notable museums in the United States. Interwoven are the stories of the relationships between Indigenous people and fossil hunters, as well as the finds in Montana, which make it the epicenter of dinosaur discovery.

The Marsh Pick: Economics and the Great Bone Rush

One of the most storied items in the Carter County Museum is the Marsh Pick, given by Barnum Brown to Ted Snyder (Figure 14). This object is the most sought after by visiting paleontologists, who are thrilled to pose with a piece of history that marks the CCM as an epicenter of the history of paleontology in the United States. During the last part of the nineteenth century, the American Museum in New York, the Carnegie Museum in Pittsburgh, the National Museum in Washington D. C., and the Field Museum in Chicago came to dominate paleontology during the “bone rush” that occurred alongside the gold rush in the western United States after the Civil War (1864-1889).¹⁴⁹ Thousands of fossils were excavated during this period and filled museums primarily in the East as prospectors “roamed freely, collecting fossils for wealthy scientists or for museums that could afford to fund their excavations or outright purchase

¹⁴⁹ Mitchell, p. 111.

them.”¹⁵⁰ The two most recognizable members of this era are Professor O. C. Marsh, who led the Yale paleontological expeditions after the Civil War, and his counterpart Edward Drinker Cope, a U.S. Geological surveyor from Philadelphia, who raced to collect as many fossils as possible for their respective institutions, engaged in a contest in naming, describing and classifying new species. This interest in American fossils was due to the Darwinian Revolution and the shifting position of dinosaurs from the class of reptiles to the class of birds by T. H. Huxley, “the first great Darwinist after Darwin himself.”¹⁵¹

Through the collection and scientific study of these and other bones, the science of paleontology developed alongside the expansion of the United States.¹⁵² After the Lewis and Clark Expedition, which explored the newly acquired Louisiana Purchase (1803), the United States annexed Texas in 1845 then added California, half of New Mexico, most of Arizona, Nevada, Utah, and parts of Wyoming and Colorado in 1848 following the Mexican-American War. The Department of the Interior was created in 1849, in part to manage public land, and authorized several independent surveys of the interior. Among these was Ferdinand Hayden, who discovered the first dinosaurs in Montana during his surveys between 1869-71. Paleontology was of significant value to the surveys as fossils indicate geologic age and can help stratigraphers arrange rocks into chronological sequence. Cope and Marsh used the surveys to their advantage; as the chief paleontologist during the Wheeler survey (1872-1879), Cope claimed he was on government business and borrowed supplies from the army, and Marsh got legislation passed

¹⁵⁰ Liggett, p. 317.

¹⁵¹ Mitchell, p. 137.

¹⁵² Liggett, p. 312.

that merged the surveys and declared that material collected under the surveys would become national property to be deposited at the Smithsonian National Museum of Natural History. This had the added advantage of forcing his rival to give much of his collections to the Smithsonian. The United States Geological Survey was formed in 1879 and Marsh was appointed chief paleontologist in 1882, making him the nation's first paid government paleontologist.¹⁵³

Fossil collectors were tolerated by the local Indigenous tribes, who decided that “the bone hunters, unlike the miners and the ranchers, were not attempting to take possession of their land.”¹⁵⁴ Indigenous peoples collected fossils for use as historical evidence, weapons, medicine, and as personal amulets,¹⁵⁵ for example, a mammoth bone fashioned into a necklace was found at the Mill Iron Site near Ekalaka, which dates back 10,000 years.¹⁵⁶ Acting in their capacities with the United States Government, Marsh and Cope befriended Chief Red Cloud and the Apsaalooke (Crow) Nation respectively, and their excavations were unimpeded in a time when battles between the U.S. and Indigenous nations happened frequently.¹⁵⁷ For example, Cope was excavating for fossils during the summer of 1876—in which the Battle for the Little Bighorn was fought—just 150 miles south of the area, on Apsaalooke land.¹⁵⁸

In November 1898, Andrew Carnegie saw a story about a colossal dinosaur on the front page of the New York Journal.¹⁵⁹ Upon reading the story, Carnegie sent a check for \$10,000 to

¹⁵³ Liggett, p. 317.

¹⁵⁴ Mitchell, p. 133.

¹⁵⁵ Mayor, p. xxxviii.

¹⁵⁶ Carl M Davis and Eric S Carlson, *Six Hundred Generations: An Archaeological History of Montana* (Helena, Montana: Riverbend Publishing, 2019). P. 76

¹⁵⁷ Mitchell, p. 134.

¹⁵⁸ Ibid.

¹⁵⁹ Liggett, p. 321.

William Jacob Holland, the director of his recently opened Carnegie Institute in Pittsburgh asking him to buy the fossil at once. Though the *Journal's* story was later proven to be a hoax, Holland used the check to fund a field excursion to Wyoming, where he saw the bones of sauropods that had inspired the story. By using bones from multiple sites on public land, Holland and his team were able to collect enough for a composite skeleton that was put together by John Bell Hatcher in 1901. Hatcher then published a description and illustration of the animal, naming it *Diplodocus carnegii*, after the Institute's founder and financier (Figure 15). King Edward VII saw the illustration and requested a copy of the specimen, to which Carnegie responded by financing the cast and mount of another full skeleton, which was put on display on May 12, 1905, at the British Museum, followed by others that he presented to heads of state in Germany, France, and Mexico. In this way, the specimen came to promote the wealth of American fossil beds and the wealth of its namesake.¹⁶⁰

The next time a sauropod would become a popular American symbol was Sinclair Oil's DINO, which has its roots in the conceptual link between dinosaurs and fossil fuels. In the early 1930s, the company released a series of advertisements featuring several dinosaurs, which they felt would further illustrate the prehistoric nature of crude oil. The public, familiar with sauropods due to the display of *Diplodocus carnegii*, responded most favorably to the peaceful *Brontosaurus* (later *Apatosaurus*). DINO was registered as a trademark in 1932 and appeared as a life-size model at the Century of Progress World's Fair in Chicago from 1933-34.

¹⁶⁰ Mitchell, p. 134.

Charles R. Knight's portrait of *Apatosaurus*, painted for the Field Museum in Chicago between 1926-1930, inspired the logo design (Figure 16). Born in 1874, Knight "established the canonical version of the dinosaur for at least half a century."¹⁶¹ He began his career under the direction of Cope, then worked for Henry Fairfield Osborn, president of the American Museum of Natural History from 1908-1933. His paleoart, set alongside the skeletal displays at the AMNH established the museum as the "premiere location for the modern dinosaur."¹⁶² Many people modeled his art, including local artists at the CCM (Figure 17). Knight's work helped establish the field of paleoart, or scientific illustration, which depicts an artist's rendition of what the bones may have looked like in life, and how the animal may have interacted with others and its surroundings. These pieces can also be read as cultural allegories, for example, Knight's work depicting the "survival of the fittest" in a battle between *T. rex* and *Triceratops*, is indicative of late nineteenth-century America, which is characterized by social Darwinism, and the "formation of giant corporate entities headed by gigantic individuals."¹⁶³

One such individual is Harry Sinclair, founder of Sinclair Oil, who met paleontologist Barnum Brown at the Chicago World's Fair in 1933 and partnered with him to add scientific legitimacy to the dinosaur symbolism behind his company. Brown wrote a series of booklets for the company to further disseminate its symbol to the public and connect it with scientific stature. In return, Sinclair Oil financed many of his expeditions. This would complete the "three-way relationship of big capital, mass culture, and big bones in the modern era."¹⁶⁴

¹⁶¹ Mitchell, p. 141.

¹⁶² Ibid.

¹⁶³ Mitchell, p. 142.

¹⁶⁴ Mitchell, p. 168.

As we know from Chapter Two, Barnum Brown often visited the CCM and discovered the first documented remains of *Tyrannosaurus rex* in 1902 outside of Hell Creek, Montana. He also served as the chief bone collector for the American Museum of Natural History and helped assemble the largest collection of dinosaur bones in the world in the period of 1900-1930.¹⁶⁵ All of these bones--predominantly from areas of Montana, the Dakotas and Wyoming--were deposited in the American Museum of Natural History. In a scrapbook kept by Walter Peck, an article from the October 19, 1934, edition of the Billings Gazette titled “Brown Winds Up Air Tour” describes the last chapter of a three-week expedition by Barnum Brown covering the area between Havre and Ekalaka, through the Black Hills and as far south as Cheyenne, Wyoming. This article and others are indicative of Brown’s mastery of publicity, not just for the American Museum of Natural History, but also for Sinclair Oil Company, whose name is prominently featured on the side of Brown’s airplane in association with the AMNH expedition (Figure 18).¹⁶⁶ This serves as a prime example of the “dissemination of the dinosaur beyond the museum as a staple of popular culture,¹⁶⁷ and the association with fossil fuels, which are a modern form of buried treasure.¹⁶⁸

The October 19, 1934, edition of the Ekalaka Eagle confirms that Brown landed in Ekalaka as part of this serial dinosaur hunt by air:

Dr. Barnum Brown, world famous fossil hunter, curator of reptiles in the American Museum of Natural History in New York City, and head of the American Museum-Sinclair Dinosaur expedition arrived here Friday morning to visit the local fossil fields. [...] The group visited the museum of the Carter County Geological Society

¹⁶⁵ Mitchell, p.166.

¹⁶⁶ Mitchell, p. 168.

¹⁶⁷ Ibid.

¹⁶⁸ Mitchell, p. 88.

at the local high school. They were particularly interested in the fossil remains of the *Tyrannosaurus rex*, the largest carnivorous dinosaur known to have existed in the past ages. The local museum is one of five in the country having specimens of his bones. A fragment of jawbone of an early mammal with three teeth intact also drew Dr. Brown's attention. This specimen will be sent to the American Museum to be described and named as it is a new species.

The article further underscores the relationship between the museum and visiting paleontologists, in which members of the Carter County Geological Society learned all they could to ensure a professional level of fossil collection, preservation, and display. In describing the jawbone of the early mammal, it also references the exchange of fossils between the CCM and others, primarily with the return of casts in their place. The mention of *Tyrannosaurus rex* remains on display is significant in that it represents one of only a handful of displays of *Tyrannosaurus rex* outside of the exhibit at the American Museum of Natural History.¹⁶⁹ It is also evidence of the first-time dinosaur remains were displayed at a public museum in Montana (Figure 19).

A document in the Carter County Geological Society Founder's Archive describes the museum's fossil displays in greater detail:

In the first case along this display, we find the gigantic leg, and foot of the huge *Tyrannosaurus rex*, the hugest Carnivorous animal ever known to have roamed the earth. This animal is computed to have stood from 12 to 20 feet high at the hips and to have been from 26 to 40 feet long. A tiny desert lizard, mounted in life-like attitude stands beside the huge bones [...] illustrating that evolution often works downward as well as upward. There are also numerous fossils remains of the huge three horned dinosaur *Triceratops*, which must have been very prevalent in this region since his remains are very common.

¹⁶⁹ The first public display of T. rex debuted December 29, 1906, at the American Museum of Natural History in New York City. It consisted of the feet, legs, and lower pelvis found by Brown in 1902 near Jordan, Montana. Brown excavated a more complete specimen from the Hell Creek Formation in 1908, which went on display at the museum in 1915.

CCM accession records show most of the left leg and foot of the *Tyrannosaurus rex* was collected, along with some elements from the right foot, and put on display in 1934. This excerpt describes the display as it was in the first-floor location of the new high school in 1935. The triceratops is the same one that Brown mentions wanting to see in a letter to Idella Kennedy, CCGS librarian, in 1935. These timelines show that small, rural museums had scientifically backed displays of fossil animals much earlier than the accounts of larger museums would lead one to believe. For example, *Tyrannosaurus rex, the Tyrant King*, edited by Peter L. Larson and Kenneth Carpenter (2008) lists the first 100 years of the dinosaur on display, but has a noted gap between 1908 — the first display of elements of a *T. rex* excavated by Brown at the American Museum of Natural History — and the specimen MOR 008, which was excavated by the Museum of the Rockies in 1967.¹⁷⁰ The record of displays at CCM helps fill this gap in research.

Beginning with the Marsh Pick, which was given by Barnum Brown to CCM volunteer Ted Snyder, we have journeyed through a story thick with economics, from the literal bone rush to the stories of financier Andrew Carnegie and Harry Sinclair who used sauropods as symbols of their colossal business ventures. We finished with the story of Barnum Brown, who collected the fossil bones for the AMNH and established himself as a father of the field of paleontology in the United States. His relationship with the CCM, as evidenced by articles in the Ekalaka Eagle and numerous letters with the founders detailed in earlier sections and Chapter Two, underscore the CCM's position as an institution that embodied the importance of amateur scientists for the

¹⁷⁰ Peter L Larson and Kenneth Carpenter, *Tyrannosaurus Rex, the Tyrant King* (Bloomington: Indiana University Press, Cop, 2008).

advancement of scientific knowledge, particularly as it pertains to paleontology in the early United States.

The Cycad: Fossil Ownership, Public
Lands, and Private Property

In Chapter Two, we learned the story of the *Edmontosaurus* that was collected in Carter County in 1938 and remains on display at the museum today. However, some of the fossils at the museum are casts, or representations, of original fossils that were collected by other institutions in Carter County or by members of the Geological Society, and which were taken, given, or sold to larger museums in urban areas for display. This practice provides an opportunity to connect the history of fossil extraction during the early part of the twentieth century to the continued growth of collections at other museums and address the silencing of the communities from which they came. It also provides a model for the third side of the Rural Social Space model: Geography.

The Hell Creek Formation, and the region of Carter County in particular, are known for bearing some of the United States' more notable dinosaur fossils, including famous *Tyrannosaurus rexes* such as Thomas (Los Angeles County Natural History Museum), Jane (Burpee Museum), Wyrex (Houston Museum of Nature and Science), Tristan (on tour in Berlin), and the Cleveland Skull (Cleveland Museum of Natural History). Alazadasaurus, a *Styxosaurus*, or marine reptile named for the town of Alzada in Carter County near where it was found, resides in the Chicago Field Museum, and Nancy, an *Edmontosaurus* also from Carter County is on display at the North Carolina Museum of Natural History. Significant *triceratops* from the region includes Homer at Burpee Museum, a complete skull at the Field Museum in Chicago, and Horridus, a nearly complete *triceratops horridus*, which became a centerpiece of the Melbourne

Museum in Australia in 2022. In many of these institutions, the specimens are listed as being from Montana at most (Figure 20), with the noted exception of the Burpee Museum, which continues to operate a field program in the Ekalaka area and has dedicated displays to their excavations in the region (Figure 21).

Most of these specimens were collected on Bureau of Land Management lands, though some were excavated on private property with the permission of the landowner. The BLM oversees 248.3 million acres of surface land and seven hundred million acres of subsurface minerals (Figure 22). From the early sixteenth to the late nineteenth century, Indigenous nations fought colonial powers in an era of warfare that shaped the history of North America. While this period is often categorized by the narrative of an inevitable series of losses and a final win by the United States, *Indigenous Continent* by Pekka Hämäläinen reveals the narrative to be one of an Indigenous America, rather than a colonial one, that “was only slowly and unevenly becoming colonial.”¹⁷¹ During this mass, state-sponsored genocide and forced removal of thousands of Indigenous peoples to reservations, the United States government tried a number of different ways to sell land to its citizens. These included promising land as payment to soldiers, the sale land to wealthy speculators (Public Land Act of 1796), and a system in which the federal government could extend credit to purchasers (Land Act of 1800).

In 1862, the Homestead Act opened public land to settlers who were required to apply for a patent to the land, improve it through their own labor for five years, and pay associated fees. While this sounds simple enough, it proved to be difficult in practice due to the harsh

¹⁷¹ Pekka Hämäläinen, *Indigenous Continent: A New History of America* (New York, Ny: Liveright Publishing Company, A Division of W.W. Norton & Company, 2022). p. ix.

environment; of the more than 1.3 million homestead entries filed prior to 1900, less than half went to patent. Individuals and companies were also able to apply for mining claims on public lands. With the passage of the Morrill Act in 1862, Congress granted 30,000 acres of federal public land to each state to create land grant college campuses along with research farms to generate funds to support education. States that did not already have public land were granted 160-acre increments elsewhere which could be sold to raise funds for state colleges. Finally, sections of each township were given to states to support education. Montana State University in Bozeman is one of these land grant institutions. Of these claims, there are two examples which involve fossil collecting: (1) the homestead claim which became Fossil Cycad Monument and (2) a mining claim contemplated in the quest for *Diplodocus carnegii*.¹⁷²

The CCM has a tie to the former example, in which a homestead claim was applied for by George Wieland, who worked with Marsh at Yale. Wieland spent his career studying cycads—palmlike plants of tropical and subtropical regions that were especially prominent during the Triassic and Jurassic eras—predominantly from the Lower Cretaceous Lakota Formation in the Black Hills area of South Dakota (Figure 23). Wieland and Marsh excavated hundreds of cycads from the area for Yale and in 1919, Wieland filed a homestead claim on land hoping that it would protect the area for future study. This became a reality when President Warren G. Harding

¹⁷² Fossils have long been considered part of the surface estate in the United States because they are not mined like minerals and are rather excavated through a process that is directly linked to and influenced by the surface of the property. In May 2020, the Montana Supreme Court upheld this determination in *Murray v. BEJ Minerals, LLC*, stating that “dinosaur fossils are not considered rare and valuable because of their mineral properties; rather, fossils are valuable because of characteristics other than mineral composition.”

Laurie McKinnon, Mary Ann Murray and Lige M. Murray v. BEJ Minerals, LLC, and RTWF LLC (Supreme Court of the State of Montana May 20, 2020).

signed a proclamation establishing Fossil Cycad National Monument in 1922, making it the third national monument created to recognize its fossil resources, after the Petrified Forest in 1905 (now a National Park) and Dinosaur National Monument in 1915, which was created to protect Carnegie Quarry.¹⁷³ To make way for this act, Wieland renounced his patent claim.

In the years that followed, the National Park Service failed to develop the area and exposed fossils continued to be carried off until none were left. This was primarily due to negligence and mismanagement by the National Park Service, which oversaw the monument through nearby Wind Cave National Park. Day to day surveillance of Fossil Cycad National Monument was left to area ranchers, with only sporadic visits by park officials in the 1920s. Indeed, the first superintendent's annual report to mention the park was in 1933. Otherwise, there were no dedicated staff or development of facilities at the park. In 1935, Wieland took a crew of 13 Civilian Conservation Corps workers to the site and opened six to eight excavation pits, which yielded over a ton of specimens, which were collected and stored at Wind Cave National Park (then later sent to Yale). Despite this success, the park service questioned the value of the monument because there was nothing to be seen on the surface, only below.

Years of arguments ensued, primarily between Wieland and Carrol Wegemann, the regional geologist who mapped the stratigraphy of the monument and declared it lacking in good exposures and wished for a display at Wind Cave, rather than one in-situ at the monument. Overall, many in the government believed the area to be without current value since so many of

¹⁷³ Carnegie Quarry was established by paleontologist Earl Douglass, who was on a mission from the Carnegie Museum in Pittsburgh to find intact dinosaur bones and send them back to the museum for display. His discovery in Jensen Utah, would yield 350 tons of fossils and became one of the most significant paleontological finds of the 20th century.

the specimens had been removed, that fossil cycads, unlike dinosaurs, did not have broad appeal, that the scenery of the area was “neither impressive nor is it unusual; the geological interest, other than its palaeobotanical relations, is not phenomenal; the area is too small for wildlife preservation; [and] the terrain does not lend itself well to recreational development.”¹⁷⁴ and therefore could not justify any spending on a visitor center. By 1957, the monument was returned to general federal land management under the BLM.

This history of fossil excavation and extraction beyond the monument is a clear example of the mismanagement of fossils on public lands. Today, the BLM is working with the National Park Service to preserve the historic record of the monument. Therefore, the collections of these cycads at Yale, Carter County Museum, and others add to that story.

Fossil Sales. Now that we have covered the history of the bone rush as well as an introduction to how land was settled and purchased under United States Law, it is time to turn to a discussion of the economics of fossil excavation in the United States, which is not complete without the acknowledgement of fossil sales and the place that museums have in this debate. After the Pearl Harbor bombing on December 7, 1941, New York, among other cities, prepared for what seemed like an inevitable invasion. The American Museum of Natural History drew up plans to turn its buildings into a public shelter and packed up collections that were easy to transport in the case of an emergency. The dinosaur collections, which were too heavy for such a task, were left alone. However, in the interest of keeping at least one specimen preserved should

¹⁷⁴ Vincent L. Santucci and John M. Ghist, “Fossil Cycad National Monument: A History from Discovery to Deauthorization,” in *Proceedings of the 10th Conference on Fossil Resources*, vol. 6 (Rapid City, SD, 2014), 82–93, <https://irma.nps.gov/DataStore/DownloadFile/639954>.

New York be bombed, fifteen boxes were packed with the bones of the first *T. rex* discovered by Brown and shipped to the Carnegie Museum in Pittsburgh, which had purchased the specimen for \$100,000 in today's dollars.¹⁷⁵

While this is the first time a nearly complete *Tyrannosaurus rex* specimen was sold to another museum, it would not be the last. On October 4, 1997, Sue, the most complete *Tyrannosaurus rex* ever excavated from South Dakota was up for auction at Sotheby's in Manhattan. While fossils had been sold in the past, none had sold for more than \$600,000, yet Sotheby's estimated the fossil was worth more than \$1 million. To allow for fundraising so that it may go to a public museum, the winning bidder would have up to three years to complete payment, but it was not guaranteed that it would go to a public museum. Sue was discovered in 1990 by Sue Hendrickson, an intern at Black Hills Institute, which is a commercial fossil dealership operating out of Hill City, South Dakota. The Institute paid Maurice Williams, a Sioux Indian who owned the property on which Sue was found, \$5,000 for the right to excavate, remove, and retain ownership of the bones. However, in 1994, Williams was named the rightful owner of the fossil after a legal battle in which the Black Hills Institute was charged with stealing the fossil by not obtaining the necessary permissions before excavating on land within an Indian reservation. Sotheby's sold the specimen on William's behalf for \$7.6 million to the Field Museum in Chicago that wanted an iconic specimen for their museum.¹⁷⁶ Auction house fees brought the grand total to \$8.36 million. This sale reinvigorated the strike it rich mentality

¹⁷⁵ Randall, pp. 216-217.

¹⁷⁶ The Field Museum was backed by both McDonalds and the Walt Disney Company, who made it possible for the museum to purchase the specimen.

for rural landowners who were now eager to find and sell their own “million-dollar dinosaur.”¹⁷⁷

In 2020, another *Tyrannosaurus rex* by the name of Stan sold at Christies for \$31.8 million to a private bidder, despite the fact that the sale did not include intellectual property rights. These rights are necessary to cast the specimen to sell copies, or for scientific research purposes. These were retained by Black Hills Institute, and elements from Stan continue to make up many of the skulls in public museums today.

Some museums in the United States find themselves in the particularly challenging position of being used as showcases for private specimens while others have the capital to pay for them outright. However, all public museums have the advantage of making the specimens available for scientific research, which must be replicable to advance the field. In their Code of Ethics, the Society of Vertebrate Paleontology states the following:

Fossil vertebrates are usually unique or rare, nonrenewable scientific and educational resources that, along with their accompanying contextual data, constitute part of our natural heritage. They provide data by which the history of vertebrate life on earth may be reconstructed and are one of the primary means of studying evolutionary patterns and processes as well as environmental change. [...]

Section 6. Commercial sale or trade

The barter, sale or purchase of scientifically significant vertebrate fossils is not condoned, unless it brings them into, or keeps them within, a public trust. Any other trade or commerce in scientifically significant vertebrate fossils is inconsistent with the foregoing, in that it deprives both the public and professionals of important specimens, which are part of our natural heritage.

Many museums, including the CCM and all the facilities along the Montana Dinosaur Trail, adhere to this code. Further, Montana Code, Title 1, Chapter 1, Part 5, Section 1-1-509,

¹⁷⁷ Randall, p. 231.

which designates *Maiasaura peeblesorum* as the official Montana state fossil characterizes the value of dinosaur fossils through their ability to contribute to scientific understanding:

WHEREAS, dinosaur sites in Montana contain fossilized eggs, embryonic bone, babies, juveniles, and adults of several different types of dinosaurs . . . ; and WHEREAS, the Montana discoveries have tremendous scientific value and will continue to receive widespread publicity in national and international journals, as well as in popular literature and television and radio programs; and WHEREAS, naming a dinosaur as the state fossil will increase awareness that Montana is one of the best places in the world for the occurrence of important dinosaur discoveries and will have real economic value in terms of tourist promotion.¹⁷⁸

This value was reaffirmed in a May 2020 Montana Supreme Court case in which fossils were designated as belonging to the owner of the surface estate. This finding is in line with the federal designation of fossils under the 2009 Paleontological Resources Protection Act. Under this act, federal land agencies are required to steward paleontological resources on federal lands according to scientific standards and expertise. Paleontologists looking to collect fossil specimens from public lands must apply for a permit, be qualified to conduct the activity (i.e., surface collection or excavation) and must have an agreement with a designated repository which will preserve and make available the fossils for the public and scientific community. In the state of Montana, there are only two such repositories: the Museum of the Rockies in Bozeman, and the CCM in Ekalaka. Under this model, the Department of the Interior retains ownership of the specimens, which are managed by the Non-Department of Interior designated repositories. These institutions must adhere to a high level of collections stewardship and preservation (as promoted

¹⁷⁸ Laurie McKinnon, Mary Ann Murray and Lige M. Murray v. BEJ Minerals, LLC, and RTWF LLC (Supreme Court of the State of Montana May 20, 2020). P. 7.

by the American Alliance of Museums), as well as have fire suppression and security systems in place.

According to a 2018 article, the Interior Department partners with almost nine hundred non-federal facilities which hold more than twenty-five million objects from federal lands in the public trust. Under this designation, CCM has both a legacy collection, which was collected historically and newly discovered as federal material, and new, active collections, which are being made under permit by professional staff. Two recent examples of this are the plesiosaur Pinto and the mosasaur Vickie.

The Mystery Skull: Museums and Fostering Understanding of the Scientific Process

An undated letter in the CCM archives shows the organization of exhibits in the early museum:

The museum occupies the entire west half of the first floor of the high school building. There are more than 4,000 cubic feet of standard museum cases, glassed in and indirectly lighted. These cases were all made in the N. Y. A. [National Youth Association] classes in the high school from material purchased by the Society. They are arranged along the walls and in four rows down the center of the display room [...] so that the museum is able to present to the student, a comprehensive picture in the study of Evolution.

Today, exhibits in the Lambert dinosaur hall are constantly updated and rearranged according to developments in the field of paleontology. This frequently takes the form of replacing names as understanding of fossils and their place within the larger classifications of dinosaur changes. A prime example of this developing process is the “Mystery Skull,” which is on display at the Carter County Museum, accompanied by images of the letters to Walter Peck from the Smithsonian National Museum of Natural History and the American Museum of

Natural History (Figures 24-25), who, realizing the significance of the specimen, wanted the skull for their collections.

In 1940, local rancher William Winkley discovered a skull that had “just rolled right out of the hill” (Figure 26). After telling Peck about the find, CCM volunteers went to collect it and immediately knew they had something special, even though they could not tell what it was; thus, it gained the name “Mystery Skull.” Peck mentioned that he would like to see the skull go to the Smithsonian National Museum of Natural History to be studied and that it could be part of their collection in exchange for a cast. However, members of the American Museum of Natural History also visited the museum later that same summer, headed by Brown, who understood the significance of the specimen at once and quickly struck a deal with the Carter County Geological Society Board of Trustees. The skull went to the American Museum of Natural History for further study and description (Figure 27), where it remains to this day as one of the largest and most complete *Pachycephalosaurus* skulls ever found.

A series of letters exchanged between Peck and Walter Granger of the AMNH chronicle the early study of this specimen. In these letters, Granger describes the processes of casting and researching the fossil in detail, keeping Peck updated on the progress of the specimen as fall moves into winter and spring. In a letter dated December 4, 1940, Granger states,

Don't be frightened but the enclosed photograph is of your precious dinosaur skull in its present condition! It looks as if it had been dropped, but as a matter of fact it was taken apart very carefully by Falkenbach and along already established cracks. Falkenbach found it necessary to do this in order to clean out the cracks and get the proper adjustment. Also, he hoped that one of the cracks would run through the brain case, and it did, dividing the case into upper and lower halves.

This letter depicts early techniques of fossil preparation for museum display. Otto Falkenbach was a famous preparator at the American Museum of Natural History who made

many casts, including a *Palaeoscinus*, *Styracosaurus*, and *Paraceratherium*, among others. His name often appears in scientific papers alongside Barnum Brown's that describe the specimens on which they worked. This brain case would prove to be a difficult project and required the careful removal of several iron nodules from the skull of the specimen, a task that took several weeks (Figure 28). This was just the fourth such brain case model ever made for the AMNH, but one that Granger called "worth the while because the skull is unique."¹⁷⁹ Several letters from Granger show the process of comparing the skull to known parts of other dinosaurs as more of it is uncovered during the preparation process. In a letter dated April 28, 1941, Granger relates the following:

Falkenbach has been working recently of a life-size restoration of the head and neck of the new fellow. The head is easy of course, but the lower jaw and the neck is a bit of guess work. The guess is as to whether the jaw was covered with bony knobs as the skull is and also as to whether the skin of the neck supported dermal ossicles. When we first opened up the skull last fall, Falkenbach took off, in plaster, a series of small bony plates, which lay directly over the throat – just where such skin plates lie in *Stegosaurus* and *Ankylosaurus*.

Here we can see the scientific process in action as it takes place to answer the question posed by the existence of the Mystery Skull.¹⁸⁰

That summer, the papier-mâché model of the left half of the skull was completed and shipped to the CCM accompanied by a letter explaining that "this will serve to give you a good idea of what the beast looked like on the outside and inside."¹⁸¹ Granger ends the letter with a short description of the academic process of describing a skull: "Erich Schlaikjer is busy now on

¹⁷⁹ Walter Granger and Walter Peck, letter correspondence February 12, 1941.

¹⁸⁰ Chicone, Location 468.

¹⁸¹ Walter Peck and Walter Granger, letter correspondence July 21, 1941.

the description of the Ekalaka skull and is delving deeply into the literature on this and allied forms. The first thing to do in a job of this kind is to find out what has already been written on the subject and that, frequently, is quite a task.”¹⁸² This shows the gathering of data in the paleontological community that is available and observable and comparing it to the Mystery Skull. Through the course of this research, Granger, and Brown, among others, believed the skull to represent a new, unique genus of *Troodon*, a small, bird-like dinosaur with a toothy snout.¹⁸³ *Troodon formosus* was one of the first dinosaurs discovered from North America and is from the Judith River Formation in Montana. It was described from a single tooth, which is like the premaxillary teeth present in the Mystery Skull (Figure 29). Upon receiving this news -- and the completed cast of the skull -- Peck responds:

Hurrah, and again--hurrah. Yesterday we received an air mail letter from Dr. Brown, and on the same mail-truck arrived the cast of the Troodon skull. A wonderful piece of work, and it arrived in excellent condition.

The “hurrah” of course is for the news from Dr. Brown that the skull is undoubtedly of a new genus, so that is why we can give two, and yes; three HURRAHS for the news and the receiving of the cast. My lord, man; it has cost the AMNH a lot of money not only to prepare this skull, but your society has spent what is to us, a considerable sum in providing us with the casts and other things. How can we ever thank you? I don’t know. But you must realize we certainly appreciate it to the limit.¹⁸⁴

However, scientists continue to re-examine conclusions using the same observations and data, then adding to it.¹⁸⁵ For example, in 1943, Brown and Schlaikjer used the skull to establish the genus *Pachycephalosaurus*, in which they named two species, *Pachycephalosaurus*

¹⁸² Ibid.

¹⁸³ Barnum Brown and Walter Peck, letter correspondence August 21, 1941

¹⁸⁴ Walter Peck and Walter Granger, letter correspondence August 26, 1941.

¹⁸⁵ Chicone, location 458.

*grangeri*¹⁸⁶ (after the Carter County skull) and *Pachycephalosaurus reinheimeri*, and referred to an earlier species, *Troodon wyomingensis* to the genus. *P. grangeri* was the type species, or the species name with which a genus or subgenus is permanently taxonomically associated. In 1983, the skulls were re-examined and declared synonymous with *Pachycephalosaurus wyomingensis*, which had been discovered in Wyoming in 1890, thus becoming the new type species. This renaming of dinosaurs is common in paleontology; for example, *Brontosaurus*, the widely recognized sauropod of Sinclair Oil fame was renamed to the species *Apatosaurus*. The skull from Carter County remains to this day as the most complete on display. An additional cast made of the skull was given to the Smithsonian Museum of Natural History. The others remain on display at the CCM.

This section has communicated how the museum engages in the scientific process through the excavation and display of its specimens. The following sections explore how the CCM helped create programs that facilitate understanding of these concepts beyond the building, both internationally with the *Our Home, Our World* curriculum, and locally through the Annual Dino Shindig.

¹⁸⁶ Brown and Schlaikjer named the new genus for Walter Granger, who died on September 7, 1941, in Lusk, Wyoming, not long after the cast of the mystery skull was received by the Carter County Geological Society. He had planned to visit the site of the skull and see if more of the animal had eroded out in recent rains, a trip that was made instead by Brown. This news shook the paleontological community.

Connecting Natural History
Museums and School Classrooms

In 2016, the CCM partnered with other institutions in the Kumamoto Montana Natural Science Museum Association (KMNSMA) to create a curriculum that communicates the concepts of evolution and the scientific process. Funded by the Japan Foundation for Global Partnerships and the Museum of the Rockies, this curriculum for 5-6th grades in the U. S. and Japan promotes learning through the sciences of paleontology, geology, and astronomy. As with other curricula created by the CCM, *Our Home, Our World*, is rooted in place -- in this case Montana, USA, and Kumamoto, Japan. Students begin with “Our World,” by learning about Montana and Kumamoto and their sister-state relationship to gain a global perspective and build an understanding of the world around them. In this section, the museum members of KMNSMA are recognized, and students view videos of elementary schools in Montana and Kumamoto and watch a day in the lives of students as it takes place in Japan and the U. S.

From here, teachers may choose to teach the following sections individually or together, beginning with Astronomy, then Geology and Paleontology, and finishing with the closing lesson, “Our World,” which focuses on the concept that while people and cultures are influenced by their landscapes, the similarities that they share can bring people together. These similarities are discussed in each of the preceding sections -- in the Astronomy section, for example, students learn about the star stories from the Apsaalooke (Crow) and Niitsitapi (Blackfoot) Indigenous nations alongside Japanese star stories that surround the same constellations: the Big Dipper, the Pleiades, and Orion. In the Geology section, students learn about volcanoes in Kumamoto (Aso) and Montana (Yellowstone), natural disasters such as earthquakes that have hit both areas, and the underlying sedimentology of both areas.

These lessons build the foundation for understanding the Paleontology section that follows. In the Paleontology section, students begin by learning the practices of paleontology, beginning with discovering a fossil and how museums must first ask for permission. From there they explore excavation, transportation, preparation, and display and how they compare in Montana and Japan. This section is best taught with the participation of a local museum, which can provide a tour of its collections and go into greater detail for these processes. The second lesson in this section uses the fossil record to teach students about the Earth's environments and climates over millions of years. For this story, students need both Montana and Kumamoto to understand the concepts of Geologic Time as different fossils from different time periods are found in each place. The third lesson in the section instructs students about evolution, or the changes that organisms undergo as a result of changes in physical or behavioral traits that are passed down through generations, which can also be the results of transformations in the environment.

The lessons were written and designed to be used in classrooms in both Montana and Kumamoto, as well as in museums. It was piloted in Kumamoto, Japan, and Montana in 2018. In both places, local museum members of KMNSMA participated, such as Mifune Museum hosting classes in Kumamoto City, and Museum of the Rockies hosting a family day in Bozeman, which featured the lessons. In Ekalaka, students learned the lessons in their classroom and journeyed to the CCM to tour the collections and participate in fossil preparation. During the pilot, paleontologists, geologists, astronomers, and museum educators from Japan and Montana were present to answer questions about their fields and their hometowns, which helped facilitate cross-cultural connections.

Partnerships between museums were also created in addition to the increased learning and engagement with local communities during this project. For example, Museum of the Rockies became an official sister institution to Aso Volcano Museum in Kumamoto Prefecture, and Carter County Museum began discussions on forming a sister relationship with Goshoura Cretaceous Museum in Amakusa in southeastern Kumamoto Prefecture. The communities of Ekalaka, Montana, and Goshoura, Amakusa, are both rural, isolated, and located near geologically significant formations. Carter County, Montana, is composed primarily of the Fort Union, Hell Creek, Pierre Shale, and Mowry formations, enabling a comprehensive look at 100 million years of history within the region. Similarly, Goshoura Island is known as “Dinosaur Island” or “Fossil Island” for its abundance of fossils deposited during the Cretaceous and Paleogene Periods (100-23 million years ago). Both communities host museums with focuses in science, with particular emphasis on collections that were collected locally and within the surrounding region. The future sister relationship between both institutions will foster continued collaboration between museum staff, as well as joint-research projects and the sharing of knowledge in local communities.

The Annual Dino Shindig: Contributing to Rural Economic and Community Vitality

As an institution responsible for the stewardship of BLM fossils in the public trust, and as a natural history museum, the Carter County Museum has a responsibility not just to the fossils in its care, but to the community where it resides. As such, CCM operates several programs to increase and disseminate knowledge about fossil remains in the region. A primary example is the Annual Dino Shindig, which has the added value of providing a platform for visiting

paleontologists from institutions working on public lands in the region to share their finds, as well as for others from around the world to share their research on related subjects in paleontology. Since its first year in 2013, the educational event has reached a total of 4,109. Beginning in 2016, more thorough details of the event were recorded in internal museum documents (Figure 30). In this data, we can see an increase in visitation for the week of the event increasing steadily from 2016-2019, when the museum hit a high of 841 attendees. The 2020 COVID 19 pandemic resulted in attendance of 385 for the week, as the museum pivoted to a social distancing model, restricting crowds, holding all kid's activities outside, and encouraging mask wearing indoors. The Dino Shindig also had virtual components in 2020 and 2021, with some speakers joining via Zoom and interacting with visitors in a private Facebook group. In keeping with the themes of the Shindig, those years the virtual components were known as Shindig Island and Shindig Planet, respectively. In 2022, the museum returned to a fully in-person event, mostly due to staffing restraints that prohibited a virtual component when the Dino Shindig was operating as usual. Attendance in 2022 exceeded 2016 levels and income approached 2019 levels, mostly due to the availability of recovery grant funds from the Montana Department of Commerce Tourism Recovery Grant Program.

The year 2017 marked the fifth Annual Dino Shindig and the first year of the Science & Cultural History Gathering at Medicine Rocks State Park, which is conducted in conjunction with the Shindig. The first year of this event celebrated the 2017 induction of the Park into the National Register of Historic Places. In 2020, staff at the museum added the first Dinosaurs & Dark Skies event, which took place ahead of the designation of Medicine Rocks State Park as an International Dark Sky Sanctuary. A 2017 economic analysis of the Shindig indicated that the

event has significantly increased overnight stays in the park, as well as tripled monthly income. Similarly, all campsites for that weekend are consistently booked, which did not occur prior to 2016. The report further found that business income doubled the week of the Shindig across all restaurant establishments, and an increase of 20 percent in sales at the local grocery store. In 2022 for the occasion of the 10th Annual Dino Shindig, the CCM commissioned the Institute for Tourism & Recreation Research to conduct a survey kit of the event, which showed a continuation of this trend (Appendix B). A total of eighty-four surveys collected on site and through a post-event website were obtained out of a total of 328 attendees. Results showed that the Annual Dino Shindig was the primary reason (87 percent) why out-of-county attendees were in the area. The event attracted 36 percent out-of-county Montana residents, 46 percent out-of-state, and 18 percent local. These are consistent with Shindig averages since 2016, which reinforce this survey as an accurate snapshot of the event. Out-of-county residents spent an average of five nights away from home, with three of those in Ekalaka. Respondents reported spending a total of \$27,873 in the Carter County area, primarily in retail goods (\$7,005), restaurant/bar (\$5,797), and groceries (\$4,245). A total of 70 percent of respondents were in group sizes of at least two or more people, with an average of 3.30. A total of 17 percent of respondents had kids under the age of eighteen in their travel group. The majority of respondents (47 percent) planned their trip six months in advance of the event, which would indicate that they were likely also participants in the 2022 Fossil Field Expedition portion of the event.¹⁸⁷ Finally, the majority of respondents (79 percent) indicated that they would attend in 2023 and the

¹⁸⁷ Tickets for this portion of the event sold out in a two-day period in January 2022.

remaining 21 percent said they would return to the Dino Shindig within 5 years. Regarding improvements, attendees cited the need for more bathrooms at the talk site, more events like the Shindig throughout the year, and more opportunities for dinosaur digs.

These documents show a sustained, marked increase in economic vitality which the CCM brings to the community through the Annual Dino Shindig, that in turn contributes to the status of the museum as the primary tourism driver to the area.¹⁸⁸ Qualitative results from the 2022 survey further illustrate the social impact of the Annual Dino Shindig:

I knew we would love the Shindig, but I had no idea just how much we would love it. We can't stop talking about everything we learned and how moved we were by the lectures, the street dance, the people, and the DIG! 5 individual triceratops! Are you kidding me!?! The Dino Shindig is bucket list level. I was very intimidated to be with PHDs and experts and Sabre and Nate made the experience welcoming and engaging and now we are obsessed.

This quote is one example of many that reference the accessibility of content at the Dino Shindig, as well as the variety of activities available. This helps connect to areas of social impact including continued learning and engagement and strengthening relationships. As noted in Chapter Two, the Shindig is designed with a place-attentive approach that emphasizes the local history of the area in relation to global subjects. In 2022, lectures included early primate ancestors from Montana, Cretaceous paleoclimates, fossil biomolecules and the history of life on earth and beyond, and “Why Did Only Avian Dinosaurs Survive the End Cretaceous Mass Extinction?” Each of these connected to Montana, and speakers often highlighted their connections to Ekalaka, whether they were there for the 10th time in the case of Dr. Thomas Holtz Jr., professor at the University of Maryland, or their first, like Dr. Daigo Yamamura, a

¹⁸⁸ Knapp, p. 31.

Montana State University paleontology graduate who is now a science instructor at Miles City Community College.

Another quote from the survey illustrates the impact of the event on intellectual well-being: “We came because my 11-year-old wants to be a paleontologist. He loved it. Especially the dig. And the lectures were fascinating to me.” With its tenth anniversary, it is possible to trace the careers of several paleontologists at the Shindig. Some begin as attendees, transition to students of paleontology at the college level, then come to volunteer at the CCM, going on to pursue careers in fossil preparation, collections care, and museum education at other institutions. Others can be seen in the speakers themselves as they move from PhD student to postgraduate to running their own labs and departments across the country.

Through the Annual Dino Shindig, the CCM addresses the silences of rural communities and their contributions to the study of paleontology, particularly in the western plains. It provides a platform for facilitating conversations between paleontologists, local landowners, and visitors, as well as economic and social impact for the region. Recently, other museums have adopted this model, which is itself built upon PaleoFest at Burpee Museum in Rockford, Illinois.¹⁸⁹ Finally, the Dino Shindig encourages responsible citizen science by facilitating relationships between locals, visitors, paleontologists, and museums.

¹⁸⁹ See the example of Museum of the Rockies Dinosaurs & MOR event, which was established in 2022. The first iteration of this event featured speakers who had graduated from Montana State University, done research or studied at the museum and thus provided a history of the museum’s impact on paleontology as well as a review of current paleontological trends.

Contested Representations: Cultural
Narratives and Creation Museums

As demonstrated in earlier sections of this dissertation, dinosaurs are a primary driver of attendance to natural history museums and were established as symbols of prestige and power at several of America's leading institutions. This position of dinosaurs as objects of both natural and cultural history presents us with an opportunity to examine the subject within scientific and cultural contexts.¹⁹⁰ As a natural history museum, the CCM follows the model of the Smithsonian to increase and diffuse knowledge and presents its natural history collections in the context of the Nature of Science, which combines the narrative of natural processes, including evolution, and adaptations of exhibits according to the latest in scientific understanding. However, there are other museums that focus instead on a cultural narrative, particularly when presenting dinosaurs. These include creationist-focused museums, which date back to 1976 when the Creation and Earth History Museum opened on the Christian Heritage College campus in El Cajon, California. Since then, more than thirty creationist-based museums have opened to the public in the United States.

In Montana, the creationist museum manifests in the form of the Glendive Dinosaur and Fossil Museum. Located just off the interstate in a building with a *Tyrannosaurus rex* coming out of the wall, it does not show that it is a creationist museum at first glance and is often confused with the Frontier Gateway Museum that sits next door. The latter museum is on the Montana Dinosaur Trail, while the GDFM is not due to its lack of scientific rigor and status as a private museum. The GDFM opened its doors in 2009 to considerable derision from members of the

¹⁹⁰ Mitchell, p. 205.

paleontological community in Bozeman with a narrative that focuses on young-Earth creationism. The museum's website (creationtruth.org) advertises twenty-four full size dinosaur mounts but fails to mention that all of those are casts, primarily purchased from the Black Hills Institute in South Dakota.¹⁹¹ All of their dinosaur exhibits are presented in the context of Biblical history. Their mission reads:

The mission of the Foundation Advancing Creation Truth (FACT) and its related ministries is to glorify God as Creator and Sustainer, emphasize man's accountability to Him, affirm God's revealed and inspired Word as the preeminent source of truth and authority, and to challenge mankind to think through the assumptions and consequences of the humanistic concept of evolution and its underlying premise that the earth is billions of years old.

This statement is indicative of the Young Earth Creationist philosophy that science inherently requires a biblical worldview and that anything that undermines biblical authority (such as secular museums and evolution) should be rejected as invalid science. To this end, all their exhibits are extensively footnoted with creation-based science that lends a sense of academic credibility to the Genesis creation narrative and a 6,000-year-old earth. This “combination of the authority of science as viewed through the lens of creation science alongside the authoritative nature of museums works to promote the assertion that a literal interpretation of

¹⁹¹ The Gianforte Family Foundation, founded by Montana Governor Greg Gianforte, is a significant donor to the Glendive Dinosaur and Fossil Museum. For the museum's opening, the Foundation donated both the cast of Stan the *T. rex* and the *acrocantosaur* exhibit in the museum's main display hall. According to a 2009 Billings Gazette article, this was the largest donation the museum received for a specific exhibit. (Kristen Inbody, “Dinosaurs, the Bible and a Glendive Museum,” Great Falls Tribune, April 29, 2016, <https://www.greatfalls Tribune.com/story/life/my-montana/2016/04/28/dinosaurs-bible-glendive-museum/83681042/>).

the Bible is all you truly need to understand the world around you.”¹⁹² Indeed, visitors can enter the museum’s theater and watch documentaries refuting evolution and describing tenets of Young Earth Creationism. The website further states the beliefs of the Glendive Dinosaur and Fossil Museum:

We believe that:

- All things were supernaturally created by the Triune God – Father, Son and Holy Spirit.
- The Bible is the divinely inspired revelation of the Creator, completely free from error in the original manuscripts.
- Each type of plant and animal was specifically created “after its kind” by God; none came from chance or natural processes, nor did any develop from some other plant or animal.
- The first humans, Adam, and Eve, were specifically created by God; all others are their descendants.
- In Adam, mankind was given dominion over all other creatures and the earth itself.
- Marriage is ordained by God and is only between one man and one woman.
- The creation of all things occurred in six natural days and was originally “very good.”

¹⁹² Lindsay M. Barone, “Bringing Creation to a Museum near You,” in *Anthropological Perspectives on the Religious Uses of Mobile Apps*, vol. Chapter 10 (London, United Kingdom: Palgrave Macmillan, 2019), 20, https://doi.org/10.1007/978-3-030-26376-8_10.

- The entrance of sin into the world, through Adam, brought God’s curse on all creation, culminating in death and separation from God. No suffering or death existed prior to this.
- The Biblical record of the beginning of the world is authentic history. This includes the recent creation of all things, the fall, the curse, the global flood, and the dispersion of nations at Babel.
- Evidences in the earth’s crust and in human legends are to be interpreted in light of this true history.
- The separation of man from God can only be remedied by the Creator Himself, who became man in the person of Jesus Christ – virgin born and sinless.
- His substitutionary death paid the price of man’s redemption and His bodily resurrection proved His victory over death.¹⁹³

Upon entering the museum and paying the \$8 admission, visitors are told that the exhibits are presented as Biblical truth and one is encouraged to keep an open mind. During my visit, volunteers followed me throughout the museum and every time I paused at an exhibit, would quickly approach me, and ask if I had any questions, or start talking about the links in the exhibit to the beliefs stated on the webpage. Dinosaur mounts are accompanied by human mannequins, most often depicted as Cro-Magnon type cave people, riding the backs of *Triceratops* or doing battle with *Tyrannosaurus rex*. All dinosaurs are lumped together, with distinction only in the environments in which they lived. This further supports the narrative that all the animals were

¹⁹³ Glendive Dinosaur and Fossil Museum, “About Us – Glendive Dinosaur & Fossil Museum,” Creationtruth.org, 2023, <https://creationtruth.org/about/>.

created at the same time. On the upper level of the museum is a scale model of Noah's Ark, which is the primary object communicating the destruction of the dinosaurs through God's worldwide flood, which occurred around 4,000 years ago, according to the Young Earth timeline. Through a side room there is a display of biblical history, with examples of the Book of Kells and the Gutenberg Printing Press, among others. This latter exhibit ties in the textual elements and history of the scripture that has been on display throughout the museum as well as grounds the museum's interpretive strategy within the context of the Bible itself.

The Glendive Dinosaur and Fossil Museum is 107 miles from Ekalaka and Visitors to the CCM sometimes comment on their visits to the GDFM, usually in the context of trying to find the museum on the Montana Dinosaur Trail (Frontier Gateway Museum) and happening upon GDFM instead. For the CCM's part, staff are working to create exhibits that serve as counterweights to faith-based exhibits, but do not explicitly mention the GDFM, such as exhibits that discuss how the timeline of the fossil record is determined.

Creationist museums like the GDFM originated in response to an inability to teach creationism in public schools. They borrow the status of museums as trusted sources of information to "become a reputable educational forum in which the creation message can take center stage both through the promotion of Young Earth Creationism ideology and the construction of doubt about evolution as a viable scientific concept."¹⁹⁴ They use the model of natural history museums and seek to borrow their status as educational institutions to enhance their credibility and appeal to families. This is primarily accomplished through the choice of a

¹⁹⁴ Barone, p. 202.

dinosaur to attract children and illustrate the validity of Young Earth Creationism.¹⁹⁵ It is widely documented that most (but not all) children are fascinated by dinosaurs, and that dinosaur study helps children achieve many learning goals in order to build skills and make sense of the natural world.¹⁹⁶ In the earlier examples, and indeed, in the example of CCM, dinosaurs and the history of fossils, skeletons and taxidermy on display help visitors, and school children in particular, understand the history of evolution. In many creationist museums, the dinosaur displays are accompanied by quotes from the Bible, particularly the first eleven chapters of Genesis, and employ a “rhetorical strategy [that] invites visitors to grant the same authority and credibility to the Creation Museum that they would to any other museum of natural history, the implication being that what is presented has met rigorous standards of scientific review and can be accepted as demonstrated fact.”¹⁹⁷

In 2018 and 2019, the Ekalaka Bible Church hosted a creationist speaker series, “Science & Scripture Seminar,” that took place during the Annual Dino Shindig (mostly on the Sunday of the Shindig to bring in local townspeople). This event, created in response to the success of the Annual Dino Shindig, provides an example of an outreach program that follows a similar model to the Creation Museum. The first event featured keynote speaker Richard Stepanek on the subject of “Dinosaurs and Bible.” Richard Stepanek is a speaker from the Alpha Omega Institute, which is an “educational organization dedicated to teaching the Biblical and scientific evidence

¹⁹⁵ Brent Hege, “Contesting Faith, Truth, and Religious Language at the Creation Museum: A Historical-Theological Reflection,” *Theology and Science* 12, no. 2 (April 3, 2014): 142–63, <https://doi.org/10.1080/14746700.2014.894730>.

¹⁹⁶ Mitchell, 234 and 238.

¹⁹⁷ Hege, p. 143.

of creation throughout the world.”¹⁹⁸ The second event, held in 2019, featured Dr. Tommy Mitchell of Answers in Genesis in what the Ekalaka Bible Church characterized as a challenge “to stick to the foundation we have in the book of Genesis!”¹⁹⁹ According to their webpage, Answers in Genesis is “an apologetics ministry, dedicated to helping Christians defend their faith and proclaim the [Christian gospel] good news of Jesus Christ effectively. We focus on providing answers to questions about the Bible—particularly the book of Genesis—regarding key issues such as creation, evolution, science, and the age of the earth.”²⁰⁰ This organization is directly connected to the Creation Museum and its Ark Encounter in Williamstown, Kentucky, which is also affiliated with the Glendive Dinosaur and Fossil Museum in Montana.²⁰¹ This event was widely condemned by the local community who saw the event as one that would contribute to making the visitors to the Shindig feel unwelcome and threaten the economic impact of the Shindig in Ekalaka.²⁰² The event has not been held since 2019.

Conclusion

As a case study for rural museums and their contributions to community vitality, the Carter County Museum shows that local natural history museums are well-positioned to “help a growing population not only understand the Earth, but also help preserve it and make educated

¹⁹⁸ Alpha Omega Institute, “About Alpha Omega Institute» Alpha Omega Institute,” Alpha Omega Institute, 2021, <https://www.discovercreation.org/about/>.

¹⁹⁹ Ekalaka Bible Church, “Thank you to the First Baptist Church for Partnering in this Science & Scripture ministry!” July 29, 2019. Facebook. <https://www.facebook.com/profile/100069760346757/search/?q=science%20%26%20scripture>.

²⁰⁰ Ken Ham, “Answers in Genesis,” Answers in Genesis, 2019, <https://answersingenesis.org/>.

²⁰¹ Creation Museum, “Explore an Authentic Dinosaur Dig This Summer,” June 24, 2021, <https://creationmuseum.org/blog/2021/06/24/explore-authentic-dinosaur-dig-this-summer/>.

²⁰² Anecdotal information gathered informally during the 2018 and 2019 Dino Shindigs.

decisions regarding its future and the sustainability of its resources.”²⁰³ As we have seen in this chapter, interpretive strategies that incorporate the Nature of Science can be used to increase scientific literacy and address the tendency of larger museums to silence the rural areas from which significant collections were sourced, as well as communicate wider histories within a local context. By using the framework of the Rural Social Space model, we have journeyed back to the beginning of paleontology in North America and examined the CCM’s place as an epicenter of that history, as well as its continued status as an economic driver to the area. The next chapter will delve deeper into Indigenous histories of place and continue to confront the silences about the land and its settlement.



Figure 12. Mastodon Tooth from Big Bone Lick, Kentucky. Carter County Museum collections.

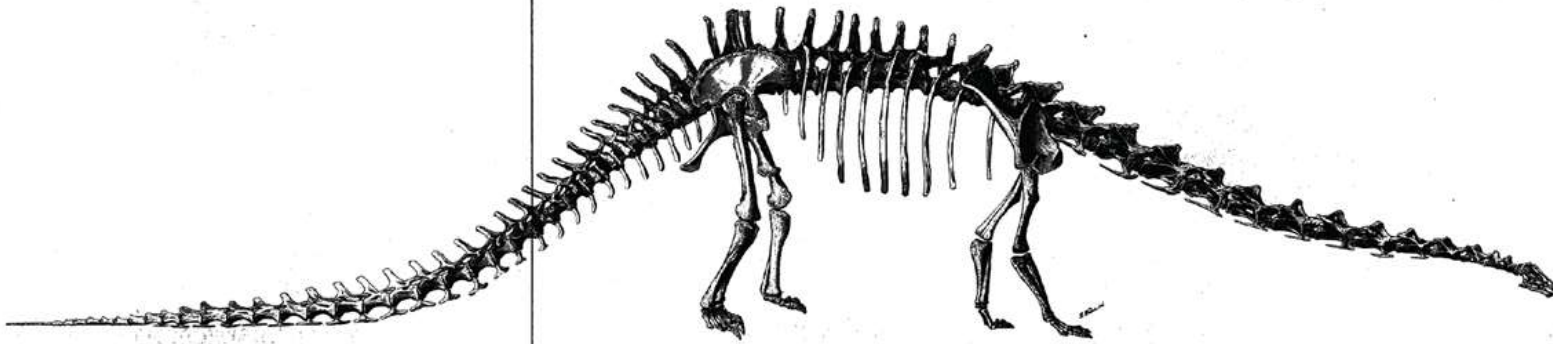
²⁰³ Chicone, Location 212.



Figure 13. The Artist in His Museum. By Charles Willson Peale - www.vcdh.virginia.edu, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=175516>.



Figure 14. Paleontologist Dr. Tyler Lyson, Associate Curator of Vertebrate Paleontology, Denver Museum of Nature and Science) posing with the Marsh Pick given to Ted Snyder by Dr. Barnum Brown. Lyson was an Annual Dino Shindig Speaker from 2013 - 2017. Tintype photo by Tom Fowlks, courtesy Carter County Museum (2017).



RESTORATION OF THE SKELETON OF *DIPLODOCUS CARNEGII* HATCHER. $\frac{1}{4}$ NATURAL SIZE.

Figure 15. *Diplodocus Carnegii* (Hatcher, 1901).

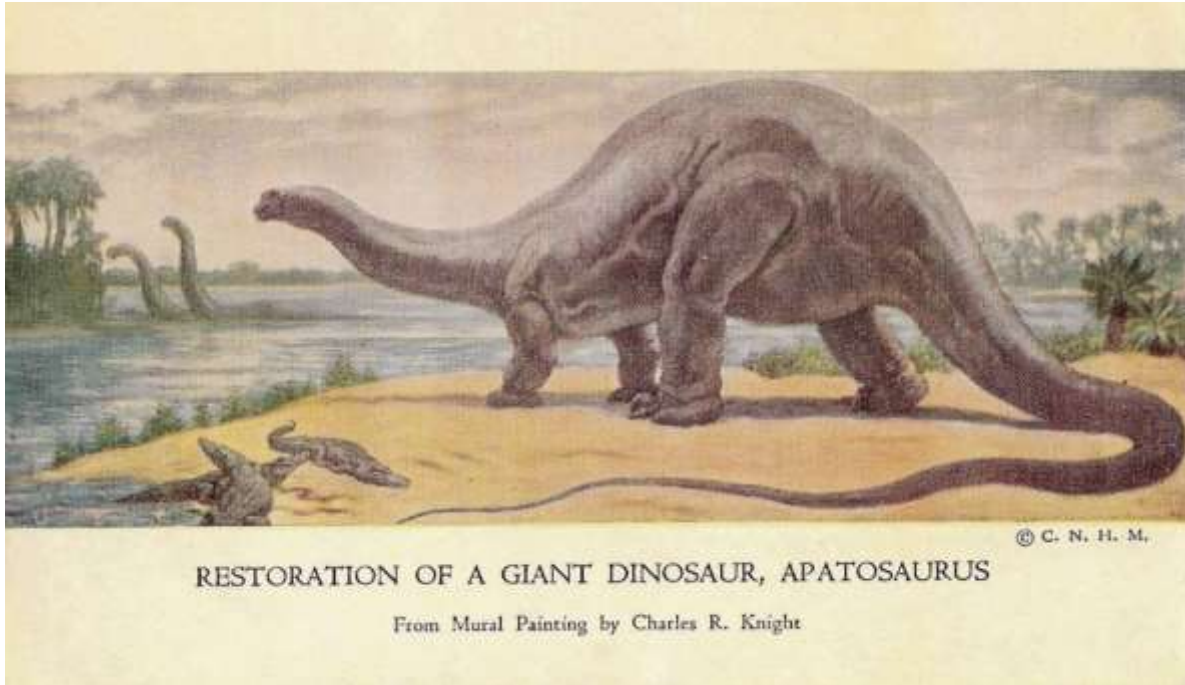


Figure 16. Postcard: Restoration of a Giant Dinosaur Apatosaurus by Charles R. Knight. Chicago Field Museum. Chuckman's collection of Chicago postcards, uploaded February 2015.



Figure 17. Artist Ethel Frye painted a mural in the style of Charles Knight at Carter County Museum (1980s). Image courtesy Carter County Museum archives.



Figure 18. Barnum Brown of the American Museum of Natural History, ready to depart on a bone hunting expedition in 1934 (Spence, 1966).



Figure 19. First mounted dinosaur specimens in Carter County Geological Museum at the old high school building (1934). Triceratops horns at bottom right. Left leg of *Tyrannosaurus rex* also on display, though not pictured. Photo by Reverend R. T. Loesch, courtesy



Figure 20. Screenshot from the online exhibit regarding the Triceratops “Horridus” showing the origin of the fossil. Note that it appears to come from western Montana (rather than the eastern corner where it was found) and does not address any further information.

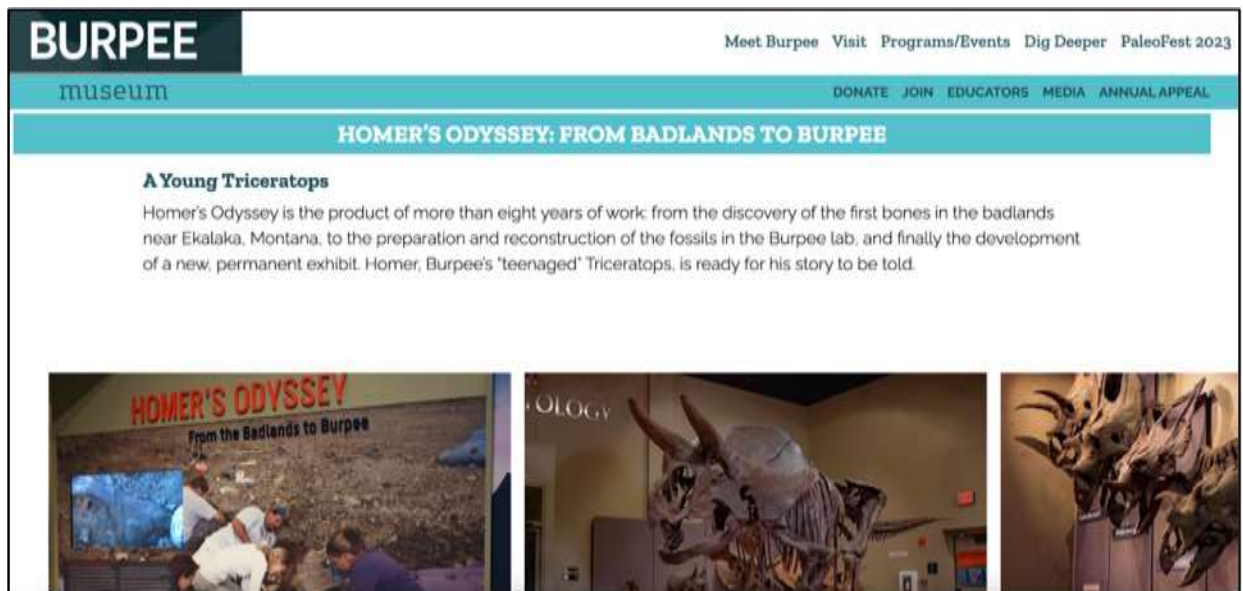


Figure 21. Screenshot of the “Homer” Triceratops containing detailed information about the origin of the fossil.

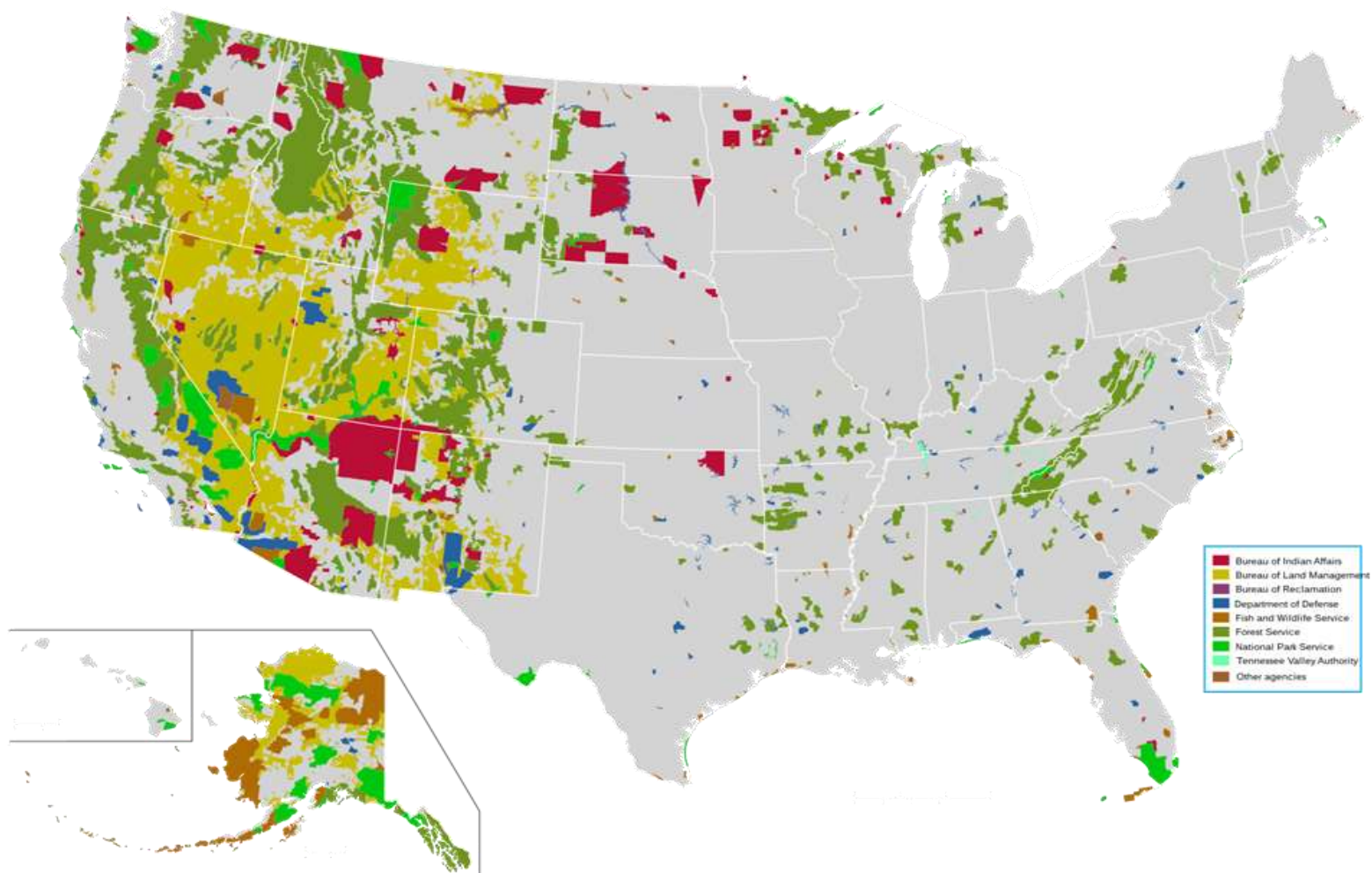


Figure 22. Map showing public lands in the United States and their associated Federal Agencies. Image courtesy National



Figure 23. Paleontologist Dr. Kirk Johnson, Sant Director of the National Museum of Natural History, Washington, D. C. holding the fossil cycad from the Carter County Museum collections. Johnson was an Annual Dino Shindig Speaker in 2014, 2016, 2017, and 2020. Tintype photo by Tom Fowlks, courtesy Carter County Museum.

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
WASHINGTON, D. C.

October 8, 1940

Mr. W. H. Peck,
Ekalaka,
Montana

Dear Mr. Peck:

Dr. R. W. Brown of the U. S. Geological Survey has recently directed my attention to a dinosaur skull which you have in your possession. He also tells me that you are willing to present this to the National Museum if it is of interest and provided we send you a good cast in return. From what I can see in the rather indistinct photos of the specimen, it is of scientific interest and the Museum would deeply appreciate having the fossil and would be more than glad to send you a good cast.

Acting on this information, I am enclosing a government bill of lading for its shipment. If you will be kind enough to see that the specimen is carefully packed we will be glad to reimburse you for any expense involved.

After shipping be sure and return the white copy of the bill of lading in the envelop enclosed.

With kindest regards and deepest appreciation for your interest in the National Museum, I remain

Sincerely yours,

C. W. Gilmore

Curator,
Division, Vertebrate Paleontology

Figure 24. Letter dated October 8, 1940, from Charles Gilmore regarding the mystery skull specimen at Carter County Museum. Image courtesy Carter County Geological Society Founder's Archive at Carter County Museum.

Director.

Oct. 13, 1940.

Dr. C. W. Gilmore,
Smithsonian Institution,
Washington, D.C.

Dear Dr. Gilmore:

Your letter of the 8th., with B. of L.,
papers received.

I am sorry to dissappoint you in this matter, although
it is true that I made an offer to Dr. Brown when here, for
you to receive the (to us) mystery skull that may be new to
science.

But the Board of Trustees of our little society has
made a different deal; they allowed members of the AMNH
expedition that flitted us just a short time ago to take t
the specimen with them to N.Y., and are to prepare, describe,
and return the skull to us if we so desire. I told the
Board of the offer I had made to Dr. Brown, but they thought
this offer was better, and as I am just the Director, and not
a member of the Board, I simply had to abide by their decision.

The AMNH members seemed to think that this skull was an
entirely new species, and plan if it is, to not only prepare
and describe, but to make casts of same. If their surmise is
correct you can no doubt in the course of time, get a cast
of the skull.

We certainly enjoyed the visit of Dr. Brown when he was
here and wish that he might have stayed with us longer. I
will write him today and tell him of the action of the Board.

One of these days we hope to be able to send you a nice
specimen from this section. I have read many of your art-
icles, describing the different kinds of fossils that you
have excavated in our state. All of which helps to unravel
the past life of this part of the U.S.A. The cooperation of
your institution has been greatly appreciated by me, if not
by the Board, and I am duly thankful to you and Dr. Brown.

Sincerely,

Figure 25. Walter Peck's response to Gilmore's letter, dated October 13, 1940. Image courtesy Carter County Geological Society Founder's Archive at Carter County Museum.



Figure 26. Mystery skull as it was found by Winkley, 1940. Photos by Walter H. Peck, courtesy Carter County Museum.

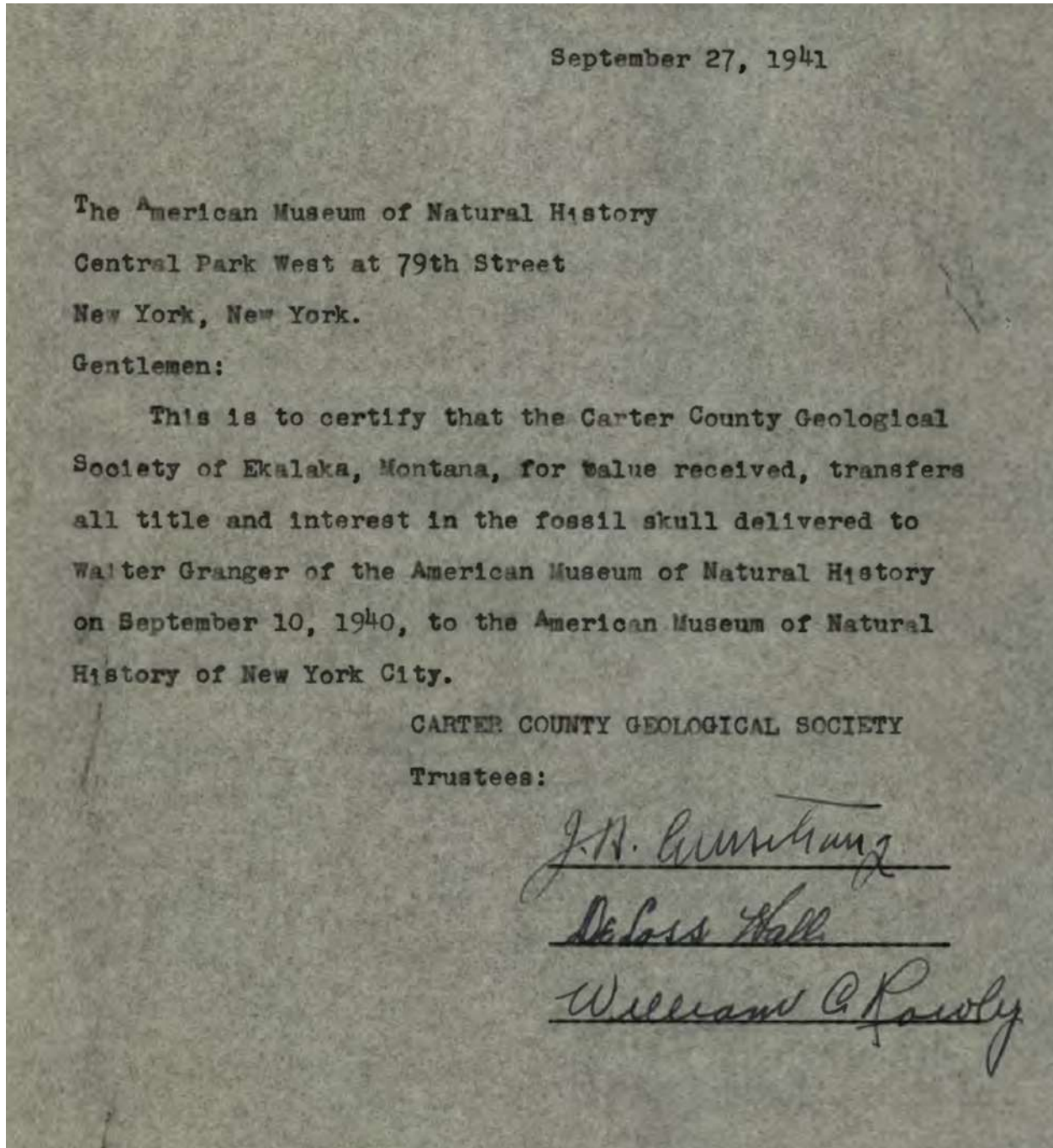


Figure 27. AMNH Accession page. Image courtesy Carter County Geological Society Founder's Archive at Carter County Museum.



Figure 28. Photograph of the mystery skull as it appeared on December 4, 1940, at the laboratory of the American Museum of Natural History in New York City. The skull is being prepared by Mr. Falkenbach of the AMNH. Photo sent to Walter Peck by Dr. Walter Granger Granger in December 1940. Image courtesy Carter County Geological Society Founder's Archive at Carter County Museum.

THE AMERICAN MUSEUM OF NATURAL HISTORY

CENTRAL PARK WEST AT 79TH STREET

NEW YORK, N. Y.

DEPARTMENT OF PALAEONTOLOGY

WALTER GRANGER, D.Sc., CURATOR OF FOSSIL MAMMALS
 BARNUM BROWN, Sc.D., CURATOR OF FOSSIL REPTILES
 G. G. SIMPSON, Ph.D., ASSOCIATE CURATOR OF VERTEBRATE PALAEONTOLOGY
 EDWIN H. COLBERT, Ph.D., ASSISTANT CURATOR OF VERTEBRATE PALAEONTOLOGY
 HAROLD E. VORRES, Ph.D., ASSISTANT CURATOR OF INVERTEBRATE PALAEONTOLOGY
 RACHEL HUSBAND NICHOLS, A.M., STAFF ASSISTANT
 WILLIAM K. GREGORY, Ph.D., D.Sc., RESEARCH ASSOCIATE
 CHARLES C. MOOK, Ph.D., RESEARCH ASSOCIATE
 OTTO H. HAAS, Ph.D., LL.D., RESEARCH ASSOCIATE IN PALAEONTOLOGY

July the twenty-first
 Nineteen hundred and forty-one

Mr. Walter Peck,
 Ekalaka,
 Montana.

Dear Mr. Peck:

There is going forward to you this week, by prepaid express to Baker, the papier-mache model of the left half of the Troodon skull.

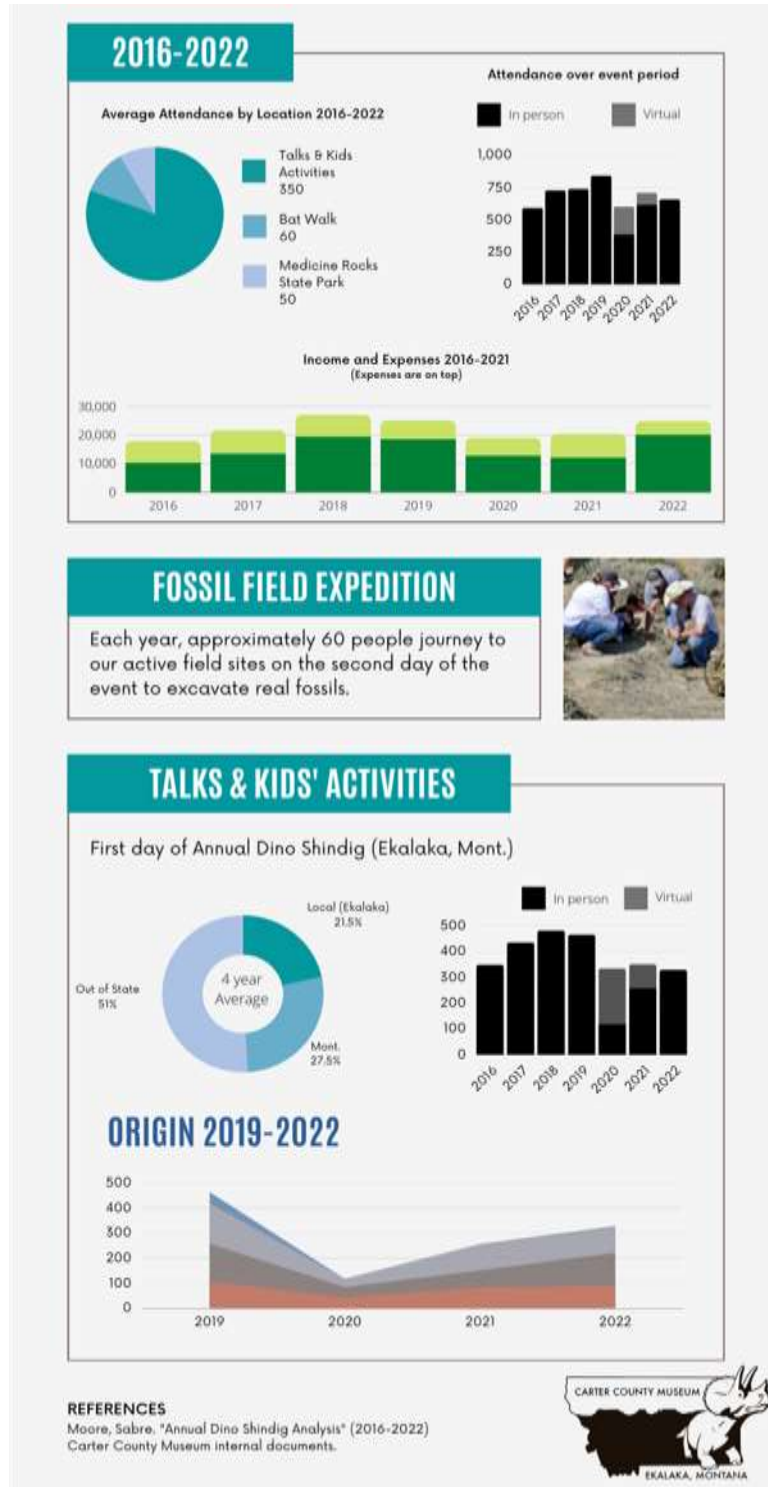
This will serve to give you a good idea of what the beast looked like both on the outside and inside. The cast of the skull has been delayed again because after the top of the skull had been cast and a plaster "model" made of the palate and basi-occipital region Falkenbach decided that he could do a better job at cleaning up the tooth rows than he had done formerly. He got so much more out of it with careful preparation that it seemed best to recast the tooth rows and replace the tooth rows on the "model". This has been done and the final casting will, I understand, be completed this week. The coloring will be done by Mrs. Germann as soon as the casts come up from the plaster room.

A good many more teeth have shown up now - many of them unerupted teeth which are visible through the little windows on the inside of the tooth row, such as are present in the Ceratopsians.

I plan now to leave Friday and expect to be in Scenic on Sunday evening. I shall probably go down to Laramie for a short time directly afterwards, but shall be back in Scenic again and ready to carry on with Thomson and Colbert for the rest of the season. We are all hoping to join the Society of Vertebrate Paleontology on its field session at Scotts Bluff on Sept. 1st and I go on to Lincoln on the 3rd. I still hope you can at least make the western Nebraska part of the meeting. You would be most welcome at our place in Scenic either on your way down or returning - or both. I think I told you that our permanent address is always c/o Max Poznansky, Rapid City, S. D.

Erich Schlaikjer is busy now on the description of the Ekalaka skull and is delving deeply into the literature on this and allied forms. The first thing to do in a job of this kind is to find out what has already been written on the subject and that, frequently, is quite a task.

Figure 29. Letter regarding the teeth of the mystery skull and their resemblance to Troodon. Image courtesy Carter County Geological Society Founder's Archive at Carter County Museum.



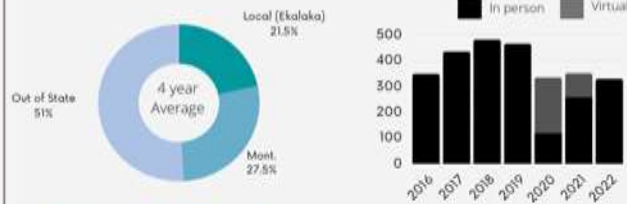
FOSSIL FIELD EXPEDITION

Each year, approximately 60 people journey to our active field sites on the second day of the event to excavate real fossils.

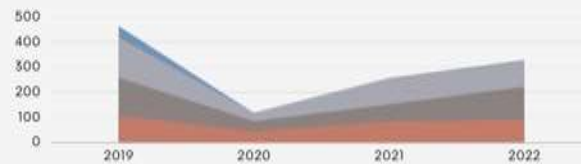


TALKS & KIDS' ACTIVITIES

First day of Annual Dino Shindig (Ekalaka, Mont.)



ORIGIN 2019-2022



REFERENCES

Moore, Sabre. "Annual Dino Shindig Analysis" (2016-2022)
Carter County Museum internal documents.



Figure 30. Annual Dino Shindig data compiled from the Annual Dino Shindig Analysis (2016-2022).

CHAPTER FOUR

CONFRONTING THE USUAL SILENCES
INDIGENOUS HISTORIES OF PLACE

A key component in taking historical perspective when using the Rural Social Space Model is addressing the usual silences about the land and its settlement. This includes considering understanding about and engagement with Indigenous culture, histories, and demography.²⁰⁴ The usual story of Ekalaka starts with the colonial settlement of the area, beginning with the Homestead Act, then transitioning to the cattle drive era and railroad expansion. This frontier narrative follows the pattern of settler colonialism by silencing the violence of conquest and colonization, contributing to the erasure of Indigenous histories from the first-level consciousness of many white Americans who live in the American West.²⁰⁵ This chapter will confront those silences by foregrounding the Indigenous presence in the area represented by Carter County Museum (hereafter CCM) by acknowledging Indigenous histories of place, fossil dispossession on Indigenous lands, and reframing the narrative of conquest to one of resilience and adaptation. Other rural museums may choose to follow this model to confront similar silences in their exhibits about the land and its settlement and explore the ways that power is exercised in practices of place. Similarly, they may choose to follow the example of the CCM in addressing compliance with the Native American Graves Protection and Repatriation Act (NAGPRA) and collaborate with tribes on strategies of decolonization such as shared exhibit

²⁰⁴ Reid, et. al. "Regenerating rural social space?" (2010), p. 269.

²⁰⁵ Margaret D Jacobs, *White Mother to a Dark Race: Settler Colonialism, Maternalism, and the Removal of Indigenous Children in the American West and Australia, 1880-1940* (Lincoln: University of Nebraska Press, 2011), 4.

design and stewardship of fossil resources. Where possible, I have used Indigenous place names and tribal identifiers, particularly in reference to the Indigenous tribes of the area represented by the CCM.

Written & Archaeological Histories of Place

Historical maps indicate that Carter County, Montana resides on the ancestral lands of the Lakota (Sioux), Tsistsistas and So'taa'ee'o (Northern Cheyenne), Apsaalooke (Crow), Minnetaree (Hidatsa), Sahnish (Arikara) and Mandan Indigenous nations, who considered this area to be a common hunting ground. Chapter seven of the “Northern Cheyenne Tribe and Its Reservation,” a report prepared by the tribe for the Montana Department of Natural Resources and Conservation, notes that the Tsistsistas and So'taa'ee'o recognize the Chalk Buttes and Medicine Rocks areas of Carter County as a powerful spiritual area for the tribe.²⁰⁶ In 1994, the Northern Cheyenne Cultural Commission initiated a study with the Custer National Forest Service to conduct a cultural assessment of the Blue Hills Area of Southeastern Montana, today known as the Chalk Buttes. According to the history in the assessment, the Blue Earth Hills became strongly associated with the Tsistsistas, So'taa'ee'o, Lakota, and Apsaalooke nations after 1830, when they were pushed westward by European invasion and conflicts with other tribal nations. Elder Bill Tallbull served as the project leader for the assessment. He characterized the area as “having much history for us in coming into the battle of the Little Bighorn” and “as a powerful spiritual place of historical significance for the Northern Cheyenne and their Sioux allies.”

²⁰⁶ “Chapter 7: Northern Cheyenne Cultural Resources.” *The Northern Cheyenne Tribe and its Reservation 2002: A Report to the U. S. Bureau of Land Management and the State of Montana Department of Natural Resources and Conservation*. Northern Cheyenne Tribe. (2002).

We call it ‘where the white stone stands.’ In the past the roaming bands of people have camped in the area for many generations. During those times my people would go there for vision questing and camp on both the west and east side of the buttes. Blue clay was obtained here. Vision quest and eagle trapping sites are still there. Wild horse spirits guard the east slopes.²⁰⁷

During the study, Northern Cheyenne and Lakota elders visited and camped in the area, reconnecting and sharing their stories. This included engagement in traditional activities, such as fasting/vision questing, plant collecting, visiting sites, making offerings, sweats, and blessing ceremonies.

One of the sandstone towers has been in our history. [This is] where long ago a young married woman sang a song and danced backwards off of a high sandstone rock and fell to her death. Her young man had been killed in battle. She was buried beneath the towering stone. When I visited the stone tower, a woman appeared on the top of this stone. She watched me approach; I stopped and she disappeared. I had reconnected myself with this powerful place.²⁰⁸

These sources are the only written histories that explicitly mention the Indigenous presence in what is now Carter County.

Archaeological investigations of the area represented by the CCM indicate that it has been occupied throughout the last 10,000 years, primarily because of the diverse animal, bird and plant life supported by the many high buttes made of sandstone and limestone, marked by vertical cliffs, ponderosa pine covered slopes, and rolling grasslands.²⁰⁹ The Mill Iron Site, which is a Paleo-Indian archaeological site dating back to 10,450 years ago, provides the earliest

²⁰⁷ Tallbull “A New Way to Study Cultural Landscapes” (1996) p. 126.

²⁰⁸ Ibid.

²⁰⁹ Bill Tallbull, Sherri Deaver, and Halcyon La Point, “A New Way to Study Cultural Landscapes: The Blue Earth Hills Assessment,” *Landscape and Urban Planning* 36, no. 2 (1996) p. 127.

archaeological evidence of human habitation in the area.²¹⁰ Discovered in 1983 by Jerry Clark, a BLM archaeologist from Miles City, this site was excavated by George C. Frison of the University of Wyoming and several local volunteers from the Carter County Geological Society and museum (Figure 31). Excavation revealed a Paleoindian camp and a bison butchering site, the last of which revealed the bones of twenty-nine *bison antiquus* — an ancestor of modern bison — thirty-one projectile points, and forty-one other tools. Pleistocene hunters would have used a modified arroyo trap to capture and kill the *bison antiquus*, with a combination of spears thrown by hand and by a spear thrower, or atlatl, remains of which were also found at the site. The discovery of the Mill Iron site yielded more evidence for the cultural classification of the Goshen Point as a separate transitional style between Clovis and Folsom, the type of point which takes its name from Goshen County, Wyoming, where it was found (Figure 32). Little more is known about the people who used this site, but the archaeological evidence suggests a rich story to tell about the relationship between people, the animals, and the landscape.

Collections at the CCM reflect the Goshen and other archaeological cultures between 11,000 years ago and present day, as well as pottery, textiles, mortar, and pestle, and other elements. These show a considerable amount of human activity in what is now Carter County between 11,000-7,700 years ago and a gradual shift in tool-making techniques as the area continued into a warming period after the Ice Age, characterized by tall grass species and large herbivores including bison. Archaeological collections in the museum and the presence of bison jumps and traps throughout the area show that between this time and A.D. 1750 that bison

²¹⁰ Michael R. Waters and Thomas W. Stafford. “Redating the Mill Iron Site, Montana: A Reexamination of Goshen Complex Chronology.” *American Antiquity* 79, no. 3 (2014): 541–48.

hunting remained a primary activity. As early as A. D. 900, people from the Missouri Trench of South Dakota used the area as a hunting and temporary living area, where they created pottery.²¹¹ This archaeological record reinforces oral narratives from Indigenous tribes that describe their people as living in the area from time immemorial, suggesting a deep history of human presence.

Indigenous Geomythology

Two stories in Chapter Three addressed the usual silences in relationship to paleontology: (1) the description of the fossil discoveries at Big Bone Lick, and (2) the recognition of Moses Williams' construction of the mastodon skeletons for Charles Willson Peale's Cabinet of Curiosities. In focusing on the first example, Indigenous stories of fossil collections were revealed to have been silenced primarily by the declaration of George Gaylord Simpson that Indigenous fossil finds were out of idle curiosity, with no concrete knowledge of their relationship to science or the story of the land. Another reason is that many Indigenous histories are primarily oral, and non-Indigenous (read: white) cultures discredit the validity of such histories. Instead, these narratives are labeled as "myths or legends," rather than histories, and archaeological data is used in their stead as evidence of the existence of peoples in a particular place.²¹²

Today, Indigenous scientists and others recognize that these historical narratives represent a wealth of pre-Darwinian knowledge "that at times corroborates the archaeological,

²¹¹ Gerald R. Clark. "An Overview of Carter County Prehistory" in *Shifting Scenes Volume III*. Carter County Geological Society (1978), pp. 321-323.

²¹² Ronald Ignace, "Our Oral Histories Are Our Iron Posts: Secwepemc Stories and Historical Consciousness" (PhD Thesis, 2008), <https://apps.cer-rec.gc.ca/REGDOCS/File/Download/3718520>. P. 54.

paleo-environmental, linguistic and geological record; beyond that, it grounds the lessons learned in the above silences in our homelands, and the lessons of our ancestors.”²¹³ These texts include the PhD thesis written by Ronald Ignace, a Secwépemc historian and professor at Simon Fraser University, which grounds the ancient oral histories of the Secwépemc people within their ancestral lands; “Defining the Middle Period (3500 BP to 1500 BP) in Tsimshian History through a Comparison of Archaeological and Oral Records” by Andrew Martindale and Susan Marsden, which compares archaeological data for the cultural history of the Tsimshian people with their oral histories; and “Ancient History in the New World: Integrating Oral Traditions and the Archaeological Record in Deep Time” by Roger C. Echo-Hawk, which provides a framework for scholars to evaluate the historicity in verbal records of the ancient past, particularly as it pertains to the Arikara narrative and homeland in North Dakota and the establishment of NAGPRA cultural affiliation.

One of the most cited Indigenous texts regarding the prehistory of the North American continent is *Red Earth, White Lies* by Vine Deloria, Jr., an author, historian, and member of the Standing Rock Sioux tribe. This text confronts commonly held Western scientific beliefs such as the Bering Land Bridge theory and overkill hypothesis, which proposes that Paleo-Indians are responsible for the extinction of North American megafauna during the Pleistocene, among others, as scientific myths motivated by racist worldviews. He further argues for the reading of Indigenous creation narratives as history.

²¹³ Ignace, p. 55.

Since the book's publication, the Bering Land Bridge theory has been called into question by Indigenous and western scientists, including the 2022 publication *Origin: A Genetic History of the Americas*, in which Jennifer Raff, an anthropologist and geneticist in the Indigenous Studies department at the University of Kansas, joins the now popular argument for coastal migration from across the ocean. This dovetails with archaeological and genetic evidence that the first peoples reached the Americas as early as 18,000 years ago as well as oral narratives like Montana's Blackfoot tribe and the Hopi of Arizona, which mention crossing an ocean before their arrival in their ancestral lands.²¹⁴

In 2000, Adrienne Mayor published *The First Fossil Hunters: Dinosaurs, Mammoths, and Myths in Greek and Roman Times*, which delves into the relationship between the prehistoric fossil record and Greek and Roman mythology. Known as *geomythology*, this term was coined by Dorothy Vitaliano, a geologist who published *Legends of the Earth* in 1973 and who sought to link specific myths and legends with geologic events. This practice, argues Deloria Jr., "would also verify the historical basis of the legend, take it out of the category of folklore, and give it some real status."²¹⁵ *The First Fossil Hunters* catapulted geomythology onto a global stage and natural history museums across the globe launched exhibitions drawing on its concepts, including displays of *Protoceratops* and griffins and mammoths and cyclops.²¹⁶ In 2007, Mayor published *Fossil Legends of the First Americas*, which reviews Native American fossil

²¹⁴ Cecily Hilleary, "Native Americans Call for Rethink of Bering Strait Theory," VOA News, June 19, 2017, <https://www.voanews.com/a/native-americans-call-for-rethink-of-bering-strait-theory/3901792.html>.

²¹⁵ Deloria Jr., p. 169.

²¹⁶ Adrienne Mayor. *First Fossil Hunters: Dinosaurs, Mammoths, and Myths in Greek and Roman Times*, Princeton University Press. 2000. Kindle Location 244.

knowledge gathered from interviews conducted with tribal members across the United States and references from figures in scientific history including Georges Cuvier—the father of modern paleontology—Benjamin Franklin and Thomas Jefferson. *Fossil Legends* seeks to answer the question of whether narratives like the Thunder Bird from the Lakota tradition and others were based on dinosaur and other skeletons eroding onto their local landscapes. While Mayor is careful to draw connections between these narratives and their fossil counterparts, as well as note their origins in ancestral lands, she regularly describes Indigenous narratives as “myths,” “legends,” and “folklore,” which lends itself to a distinctly Western interpretation.²¹⁷ That said, *Fossil Legends* remains the most comprehensive text about geomythology in North America. Raff’s *Origin*, which is also written by a Western author, also provides the following notation:

At the same time as we discuss the results and models from Western scientific approaches, it is important to acknowledge that Indigenous peoples of the Americas have diverse oral histories of their own origins. These traditional knowledges—like the Tlingit’s understanding of their origin and their relationship to Shuka Kaa—convey important lessons about the emergence of their identities as a people and their ties to the land; they may or may not agree with the models presented in this book.²¹⁸

In recognition of this bias, I have chosen to refer to Indigenous stories as narratives and histories, rather than folklore or legends (except where I am directly quoting from Mayor). This is an effort to follow the methodology of Indigenous story work, in which four key principles place the responsibility on the researcher to “listen to Indigenous peoples’ stories with respect, develop story relationships in a responsible manner, treat story knowledge with reverence, and strengthen

²¹⁷ Deloria Jr., p. 167,

²¹⁸ Jennifer Raff, *Origin: A Genetic History of the Americas* (New York: Twelve, Hachette Book Group, 2022).

storied impact through reciprocity.”²¹⁹ Therefore, in the following section, I present an Indigenous narrative from Mayor’s work that illustrates the connections between a fossil, the landscape, and the local people in tandem with a potential counterpart on display in the CCM. This section is then followed by others that seek to decolonize museum practices: (1) the recognition of fossil dispossession from Indigenous lands and treaty lands in particular, (2) the dispossession of ancestral lands from Indigenous peoples, and (3) the forced assimilation of Indigenous peoples through the Federal Indian Boarding School system. In each section, I mention an example of how these histories are interwoven into the region represented by the CCM and how the museum may develop relationships by first unsilencing these histories and second through reciprocity, such as active participation in repatriation of Indigenous human remains.

Indigenous Fossil Histories

The earliest documented fossil narratives in America are preserved in the writing of the Spanish explorers in the 16th century. However, American Indian histories of fossil bones date back well before the time of European contact.²²⁰ In many of these oral narratives, fossils were considered taboo and largely left untouched, associated with memories of famine and war, relics of the destruction of the enemies of the American Indians and the Creator’s protection of them from extermination.²²¹ This contributed to the ideas of fossils as medicine, and some, like the

²¹⁹ Jo-Ann Archibald et al., *Decolonizing Research: Indigenous Storywork as Methodology* (London: Zed Books Ltd, 2019). p.

²²⁰ Mayor, *Fossil Legends of the First Americas*, p. xxxii

²²¹ Mitchell, *The Last Dinosaur Book*, p. 131.

mammoth bone at the Mill Iron Site, were collected and placed into medicine pouches for this reason. Mayor's research revealed that the "sheer range of geological ages represented by fossils in different regions and the diversity of cultures in the New World preclude a single conceptual picture" and emphasized the many ways that Indigenous peoples interpreted the observed evidence of the fossil records in the various landscapes throughout North America.

Colonists from the sixteenth to the eighteenth century recorded Indigenous oral fossil narratives but did so less in the nineteenth and twentieth centuries, even as paleontologists began discovering dinosaurs in the West and bringing them back to museums in the East. This has to do partly with the condemnation by Simpson related above, but also with the deliberate shift of attitude by colonial settlers as Indigenous peoples were dehumanized, dispossessed, erased, and recast as "murderable" by the United States Government as a tactic driving settler colonialism.²²² As this dissertation focuses primarily on the region of the western Great Plains, we will begin with these traditions, which were a particular focus of Mayor's work in recognition of this silence. Due to their relationship with the land, these narratives feature marine reptiles and fish from the time of the Western Interior Seaway and large mammals from the Pleistocene, which are found primarily in this area. Telling these stories and considering their context for Indigenous ways of understanding science and history is a key facet of decolonizing museums²²³ and something that the CCM and other rural museums can use in their exhibition practice.²²⁴ These

²²² Joanne Barker, *The Red Scare the State's Indigenous Terrorist* (Oakland, California University of California Press, 2021), 27–30.

²²³ The decolonization of museums involves dismantling racism by presenting the history of colonization, providing space to support healing, and including a narrative of resilience.

²²⁴ Amy Lonetree, *Decolonizing Museums: Representing Native America in National and Tribal Museums* (Chapel Hill: University of North Carolina Press, 2012), p. 170.

geomythologies can be incorporated into the American Indian displays at the museum, particularly where they involve the Mill Iron site and Paleoindian archaeological collections. To use the example of the mammoth bone pendant, a display may use the Rural Social Space Model to tell the “economic” story of collecting mammoth ivory among tribes for trading, the “demographic” story of fossils as medicines, and the “geographic” connections of geomythologies with the understanding of deep histories of the landscape as evidenced by Indigenous fossil finds.

Mayor begins the chapter about the High Plains with the Lakota tale of the wars between Thunderbirds and the Water Monster:

According to the Sioux creation myth, the first creatures were insects and reptiles, under the domain of Unktehi, the Water Monster. In the days before humans, there were many kinds of reptiles, those with legs and tails, those without legs, and those with armored shells, and many varieties of each kind. All became cold-blooded, ravenous monsters, devouring every living thing on land and in water, and finally had to be destroyed for natural balance to be restored. In the first of the four great ages—the age of Rock—the Water Monsters were blasted into stone by Thunder Birds’ bolts of lightning. The earthly bodies of Thunder Beings, like the Unktehi, were also buried in the ground.²²⁵

The notion of *Unktehi* as a water monster draws from the regular presence of the bones in bodies or areas of water. In 1852, a Dakota-English dictionary defined the word as “a fabled monster of the deep ... an extinct animal, the bones of which are said to be sometimes found by the Indians, probably the mastodon.”²²⁶ Today, mammoth remains are often found in areas where water has eroded their bones from the bank. A primary example of this from the CCM is the Randall Mammoth, which was discovered by an individual who was walking down the Powder

²²⁵ Mayor, *Fossil Legends of the First Americas*, p. 221

²²⁶ Mayor, *Fossil Legends of the First Americas*, p. 235

River and came across a large femur. They reported the bone to the Museum of the Rockies who called paleontologist Nathan Carroll at the CCM. Carroll then found that ownership of the fossil belonged to the owner of the bank from which it was embedded and received permission from the landowner to excavate. This dig was unique in that it required a sump-pump to draw the water down and the construction of a small levy to redirect the water from the site (Figure 33). It also had to be completed quickly as the proximity of a fast river was dangerous both to the fossil and the field crew. On the final day of excavation, a skull was discovered, and the landowner helped to lift the fossil in its jacket from the site into the back of a pickup truck for transport back to the museum (Figure 34).

When the Lakota people moved west to Pahá Sapá (the Black Hills), they saw the fossil skeletons of large marine reptiles and their interpretation of Unkethi shifted to that of an immense reptile or serpent with legs.²²⁷ In the CCM, the bodies of these animals are fossil bones that are on display in the Lambert Dinosaur Hall. In 2016 and 2019, the field crew at the museum began excavating a *plesiosaur* and a *mosasaur* from southern and northern parts of the region, respectively (Figures 35-36). Both are marine animals that could certainly be considered monsters—the *mosasaur* has a large crocodile-like head with a toothy snout and the *plesiosaur* has a small head on the end of a long skinny neck, like a serpent. Often in oral narratives, the water monster Unktehi is engaged in combat with Thunder Birds, or Wakinayan, a flying animal with a long beak and many jointed wings. In the corner of the Lambert Hall at the CCM is a *Quetzalcoatlus*, a flying reptile that would have had a wingspan up to thirty-six feet, as large as a

²²⁷ Mayor, *Fossil Legends of the First Americas*, p. 237.

modern-day Cessna 172 airplane. Like the description in the Lakota oral narrative, these flying reptiles had long beaks and jointed wings that opened as they took off, propelling them into the air (Figure 37).

These fossils, like many others, were revealed through the process of erosion onto the landscape and discovered by people walking by who saw them and reported them to the museums. Mayor relates a similar tale from a Lakota holy man known as Lamé Deer, who discovered the bones of Unktehi in the early 1900s alongside fossilized seashells after a thunderstorm, which led him to make the comparison that the bones were from a time when the sea covered the land.²²⁸ Also present in the museum are baculites, or cylindrical shaped fossils with fractal patterns. The Blackfeet, Cheyenne and other tribes thought some of these resembled buffalo and used them as *Iniskim*, or Buffalo-calling stones (Figure 38). Rubbed with red ochre, these sacred pieces would call bison over cliff jumps and were kept for luck, healing, and other uses.²²⁹ Again, the presence of these fossils on the land reinforced the Indigenous narrative that the area had once been covered by water and inhabited by sea creatures and marine plant life; Western paleontologists were not the first to figure this out.

Paleontological Dispossession on Indigenous Lands

As noted in Chapter Three, fossil collection in the American West often took place alongside the expansion of railroad tracks and during geological surveys. Despite the presence of treaty agreements with tribes, many paleontologists, including those working for the United

²²⁸ Mayor, *Fossil Legends of the First Americas*, p. 224.

²²⁹ Mayor, *Fossil Legends of the First Americas*, p. 228.

States Government, continued to collect fossils from Native American reservations. This continued well into the twentieth century as the American Museum of Natural History, South Dakota School of Mines, and Princeton University field expeditions, among others, extracted fossils from allotted, recently dispossessed, and even reservation lands belonging to the Lakota and other tribes.²³⁰ These collections from Indigenous lands significantly enhanced the collections at those institutions and their origins have been silenced. Recent scholarship by Lawrence W. Bradley has shed light on paleontological resource dispossession from Lakota Sioux lands, which is a crucial step further in building a model to help future paleontology efforts by tribes on their reservations.

In 1846, Hiram Prout, a medical doctor, published a document that described fossils from the Badlands area, which had been given to him by fur traders. This text described a *titanotheres*, which resembles modern rhinoceros and became extinct thirty-four million years ago.

Titanotheres are members of the *Brontotherium* family, meaning “Thunder Beast.” This name was chosen by Marsh to honor Lakota legends about “Thunder Horses.” In fact, *Titanotheres* are an early relative of the horse.²³¹ In 1851, the United States recognized the area from which the fossil was found as belonging to the Lakota nation, however, government-funded geological surveys continued in the area and fossils were collected by Ferdinand V. Hayden, a geological surveyor, and others. Hayden, who is now regarded as being a leading surveyor of the United States western frontier, conducted a total of eight expeditions, some federally sponsored,

²³⁰ Lawrence W. Bradley, *Dinosaurs and Indians: Paleontology Resource Dispossession from Sioux Lands* (Outskirts Press, 2014), p. 3.

²³¹ Mayor, *Fossil Legends of the First Americas*, p. 241.

between 1853 and 1866, primarily in the Black Hills and Badlands of the White River region, both of which were in unceded Indian Territory inhabited by the Lakota.

The fossils Hayden excavated during these expeditions were recorded in detail, along with their exact collection dates and locations, in paleontologist Joseph Leidy's 1869 publication "The Extinct Mammalian Fauna of Dakota and Nebraska."²³² Many of the fossils Hayden excavated were sent to the Smithsonian and comprised a significant collection of specimens from the Pliocene age.²³³ The 1857 expedition in particular, which was ordered by the War Department, therefore "demonstrates the role of the federal government, including federal military authorities, in facilitating the removal of fossils from Indian lands, and the reciprocal role of the paleontologists and other scientists in furthering military goals."²³⁴

Over the next century, fossil collectors from Yale, Princeton, and the AMNH made trips to harvest fossil mammals from the land in the reservation.²³⁵ They collected these fossils without consulting the Lakota nation, which shows a blatant disregard for their rights as a sovereign nation. The fossils' relationship with the land and the Lakota history is omitted from cataloging and exhibition information.²³⁶ As was argued in Chapter Three regarding the acknowledgment of fossil origin from rural areas, so too is it important to acknowledge the

²³² Joseph Leidy, "The Extinct Mammalian Fauna of Dakota and Nebraska," *Journal of the Academy of Natural Sciences, Philadelphia* Vol. 7, no. 2 (1869): 1–472, <https://www.biodiversitylibrary.org/page/18322086>.

²³³ Bradley, p. 30.

²³⁴ Allison M. Dussias, "Science, Sovereignty, and the Sacred Text: Paleontological Resources and Native American Rights," *Maryland Law Review* 55, no. 1 (1996), <https://digitalcommons.law.umaryland.edu/mlr/vol55/iss1/5>. P. 113.

²³⁵ Bradley, p. 11-12.

²³⁶ Bradley, p. 23.

origin of fossils from sovereign Indigenous Nations. Many of these fossils were taken at a time in which the U.S. government sponsored systematic genocide against the Lakota and other Indigenous peoples during periods of removal and assimilation described in previous sections of this chapter. Bradley argues that paleontology should follow the model of cultural resource management and require that fossils from Indigenous lands be reported and that moving forward, museums and paleontologists work with the Tribal Historic Preservation Officer regarding permitting and excavations on reservation lands. This can help mitigate potential issues in areas which have cultural importance to the tribe and increase collaboration between both parties, which is an essential step in decolonization. This can lay the groundwork for the end goal of creating stewardship programs that would help tribal communities manage their own paleontological resources.²³⁷

For an example of this model, one can turn to the Standing Rock Sioux Tribe, which, on August 2, 2007, became the first tribe to adopt a resolution on fossil management. Known as the Title 38 Paleontological Resource Code, this twenty-three-page document outlines the protection and development of paleontological resources, establishes the tribe's authority over fossils within their reservation, defines the coordination of the tribe with the Bureau of Indian Affairs in regards to paleontological resources, and describes the authorities responsible for handling legal cases involving fossil theft, among others. At this time, the Standing Rock Institute of Natural History was also founded by the tribe with the mission to "educate visitors about the fossil resources of the Standing Rock Indian Reservation and the relationship between Native

²³⁷ Bradley, p. 246

Americans and fossils.²³⁸ The Institute began within the library of Sitting Bull College and staff were recruited from local Tribal members and trained as paleontologists.²³⁹ Since opening in 2007, the Institute has collected more than 12,000 fossils, including dinosaur skin impressions and fossils belonging to *Mosasaur* and *Edmontosaurus* specimens.²⁴⁰ In June of 2016, the Institute opened the Standing Rock Institute of Natural History Museum at Fort Yates, North Dakota, with exhibits that included the display of a juvenile *Tyrannosaurus rex*, *mosasaurs*, and *triceratops* mounts, interactive exhibits, and a fossil preparation laboratory.²⁴¹ Unfortunately, the museum closed in 2019 due to a lack of funding and the fact that paleontology has not been deemed a vital program for the tribe, according to Sonya White Mountain, who was the director of the museum at the time of its closing.²⁴²

Moving forward, the key may be collaboration with groups outside of the tribe.²⁴³ This model also exists, in the designation of fossil repositories under the control of the Department of the Interior. In this way, a tribe may choose to work with a nearby institution to help house fossils that would still be owned by the tribe. One example is the collaboration between the

²³⁸ Standing Rock Institute of Natural History, “About Us,” srinstituteofnaturalhistory.com, 2016, <https://srinstituteofnaturalhistory.com/about-us/>.

²³⁹ Standing Rock Institute of Natural History, “About Us,” srinstituteofnaturalhistory.com, 2016, <https://srinstituteofnaturalhistory.com/about-us/>.

²⁴⁰ PBS, “Examining the History of Fossil Collection from Native American Lands | Stops | Prehistoric Road Trip,” WTTW Chicago, June 7, 2020, <https://interactive.wttw.com/prehistoric-road-trip/stops/examining-the-history-of-fossil-collection-from-native-american-lands>.

²⁴¹ Kerry M. Libby, “Standing Rock Institute of Natural History- Paleontology Program,” In-Person (Tribal and State Relations Committee Hearing, September 28, 2015), https://www.ndlegis.gov/files/committees/64-2014%20appendices/17_5043_03000appendixi.pdf.

²⁴² PBS, “Examining the History of Fossil Collection from Native American Lands | Stops | Prehistoric Road Trip.”

²⁴³ Ibid.

Oglala Sioux Tribe and the South Dakota School of Mines, which involved inviting the tribe to bless their new fossil repository building and working to catalog fossils that may have come from tribal land.²⁴⁴

For CCM and other rural institutions, a start can be made in reviewing fossil collections that may have come from reservation lands. This can include adding a note to the catalog record denoting its origin, so that the institution may have a foundation on which to work with tribes in the future. For example, the CCM has a number of specimens from the White River Badlands, which, according to the Fort Laramie Treaty of 1868, is historically part of the Great Sioux Reservation.²⁴⁵ This area of inquiry will require more research, but could represent a step forward in acknowledging the dispossession of these fossils from Indigenous lands and set a precedent for other museums to do the same.

The Land and its Settlement

Having addressed the silences in Indigenous histories of place and the dispossession of fossil resources, it is now time to address the silencing of Indigenous histories of the land and its settlement by colonists. This is a necessary precursor to understanding the responsibility of museums in this age of erasure. In *White Mother to a Dark Race: Settler Colonialism, Maternalism, and the Removal of Indigenous Children in the American West and Australia, 1880-1940*, Margaret D. Jacobs defines the term “white” as a category that “settlers developed over time to distinguish themselves from Indigenous peoples and some other immigrants.

²⁴⁴ PBS, “Examining the History of Fossil Collection from Native American Lands | Stops | Prehistoric Road Trip.”

²⁴⁵ White River Badlands Bulletin, p. 46

Whiteness, a fluid racial designation, came to signify entitlement to land, authority to govern, and a set of cultural and social privileges denied to those deemed nonwhite.”²⁴⁶ This definition underlies the establishment of settler colonies in the American West through the displacement of Indigenous peoples from their land and replacing them with the settler population. After the Louisiana purchase in 1803, enormous territorial transfers became commonplace in the burgeoning United States. As the new governor of the Upper Louisiana Territory, Meriwether Lewis negotiated a land transfer with Pawhuska, an Osage leader, who ceded eighty thousand square miles between the Missouri and Arkansas Rivers to the U. S. The U.S. government then chose to remove approximately one thousand Cherokees to the Arkansas Territory against their will in what would become the first state-sponsored Indian removal.²⁴⁷ This was followed by several more as Andrew Jackson instituted the systematic removals of Indigenous people in what would become known as the Indian Removal Era (1814-1858).

In 1823, the Supreme Court declared the Indian right of occupancy to be subordinate to the U.S. right of discovery and that, therefore, Indians could occupy lands within the U. S. but could not hold title to those lands.²⁴⁸ In 1830, President Andrew Jackson pushed the Indian Removal Act through both houses of Congress. This act gave the president the power to negotiate removal treaties with tribes east of the Mississippi, who would give up their lands in exchange for others to the west in the newly designated “Indian Territory.”

²⁴⁶ Jacobs, p. xviii.

²⁴⁷ Pekka Hämäläinen, *Indigenous Continent: A New History of America* (New York, Ny: Liveright Publishing Company, A Division of W.W. Norton & Company, 2022). P. 388.

²⁴⁸ Marshall, John, and Supreme Court of The United States. *U.S. Reports: Johnson v. McIntosh*, 21 U.S. 8 *Wheat*. 543. 1823. Periodical. <https://www.loc.gov/item/usrep021543/>.

Many southeastern Indigenous nations resisted removal, resulting in a series of wars between the U.S. and the Seminole and Creek nations. A minority of the Choctaw tribe were the first to sign a removal treaty in September of 1830. The Chickasaw signed a treaty in 1832 and moved to their western allotment in 1837-38. The U.S. government often failed to uphold their end of the treaties and the removal operation was under planned and with little of the promised protection. This absence of government oversight resulted in the deaths of thousands of Choctaws, Muscogeas, and others, as well as the rape and murder of Native women by white settlers and officials.²⁴⁹

In 1833, a small group of Cherokee signed a removal agreement with the U. S., but this treaty was declared illegitimate by the recognized leaders of the tribe. Despite this, the Supreme Court ratified the treaty in 1836 and the Cherokee were given two years to migrate voluntarily. In 1838, the U.S. government forced the removal of the remaining 16,000 Cherokee in what would become known as the Trail of Tears, in which 4,000 Cherokee died of cold, hunger and disease on their way west.²⁵⁰ By the 1840s, 100,000 Native Americans from southern and northern tribes in the Eastern U.S. were removed to the Indian Territory (west of the ninety-fifth meridian), creating a new Indigenous world west of the Mississippi.²⁵¹

Beginning in the 1830s, the Lakota nation responded to the call of Ptesánwīŋ (White Buffalo Calf Woman) and expanded their homelands in a shift to the West to reclaim the birthplace of the Lakota people -- Pahá Sapá (the Black Hills).²⁵² This resulted in clashes with

²⁴⁹ Hämäläinen, *Indigenous Continent*, p. 396.

²⁵⁰ PBS, "Indian Removal," Pbs.org, 2018, <https://www.pbs.org/wgbh/aia/part4/4p2959.html>.

²⁵¹ Hämäläinen, *Indigenous Continent*, p. 408.

²⁵² Hämäläinen, *Indigenous Continent*, p. 400.

several horse tribes, including the Kiowa, Crow, and Shoshone. Through their alliances with the Cheyenne and Arapaho, which had existed for generations, the Lakota were able to push out the Kiowa, Crow, and Shoshone and make Pahá Sapa the center of their kinetic empire.²⁵³ This then served as their base of command of the “political, social, and economic life in the North American interior.”²⁵⁴ From this center, the Lakota began amassing a vast herd of horses, both from raids and from the capture of feral horses and cemented their position as an emerging power. In 1832, the United States government, to build good will with the Lakota, vaccinated nine hundred of the tribe for smallpox during an epidemic. While the Lakota suffered a few deaths, the unvaccinated Pawnee lost four thousand people. In 1837, another epidemic occurred, further affecting the Pawnee, and the Lakota pressed their advantage, destroying the last grand Pawnee village, resulting in their gaining total control over the central Great Plains.²⁵⁵

Lakota life revolved around horses and bison hunting, “dispersing along protective river valleys in the cold season,” then gathering food and raising horses in the spring and summer.²⁵⁶ This cycle culminated in the Sun Dance, which was a ceremony that “restored balance in the universe and reaffirmed the unity of the Lakota people as single kindred,”²⁵⁷ and became an annual event in the 1830s. The Lakota continued to expand their territory throughout the 1830s and 40s, coming to dominate the fur trade along the Upper Missouri and Platte Valleys and

²⁵³ Pekka Hämäläinen, *Lakota America: A New History of Indigenous Power* (Durham, NC: YALE UNIV Press, 2020). P. 250.

²⁵⁴ Ibid. pp 2-3.

²⁵⁵ Hämäläinen, *Indigenous Continent*, p. 402.

²⁵⁶ Ibid.

²⁵⁷ Hämäläinen, *Indigenous Continent*, p. 403.

extending their borders far to the south. Through all this expansion, it became important to keep power centralized, and the nation again turned to Ptesáŋwiy:

The pipe laid the foundation of the Lakota nation by reaffirming the centrality of kinship as the essence of social order. Smoking it was an act of humility and submission, an acceptance of the pervasive relatedness of all living things, but out of that submission remarkable rewards would arise. The White Buffalo Calf Woman herself was the smoke, a conduit between humans and Wakháŋ Thánka, [the Great Spirit/Great Mystery] and the first smoking of the pipe established kinship and prayer. When Lakotas smoked and prayed, they created a compact with Wakháŋ Thánka, who would look after their needs by sending buffalo. The pipe created a compact also between the different tribes of humankind for it turned enemies into allies and strangers into kin.²⁵⁸

There are seven Lakota tribes or *oyates* (related and allied peoples): Hunkpapas (“head of camp circle entrance”), Minneconjous (“plant by water”), Oglalas (“scatter one’s own”), Sans Arcs (“without bows”), Sicangus (“burned thighs”), Sihasapas (“Blackfeet”), and Two Kettles (“two boilings”).²⁵⁹ Within this system, the Lakota created two leadership positions: leaders who specialized in oyate-wide affairs, and “shirt wearers” who formed an administrative committee that sustained the warrior ethos. This “helped establish a more centralized governing system that could sustain an empire.”²⁶⁰

In 1849, twenty-seven thousand colonial settlers bound for Oregon crossed the central plains along the Platte River, angering the Lakota and bringing cholera. The disease killed every seventh Lakota, even while the tribe distanced themselves from the settlers. This contributed to the Lakota attitude of considering white Americans to be a separate category of human.²⁶¹ The

²⁵⁸ Hämäläinen, *Lakota America*, p. 200.

²⁵⁹ Ibid. Kindle Location 104.

²⁶⁰ Hämäläinen, *Indigenous Continent*, p. 405.

²⁶¹ Hämäläinen, *Indigenous Continent*, p. 406.

U.S. responded with a peace conference at Fort Laramie in 1851, where the Lakota demanded the area of the central plains south to the Arkansas River (Figure 39). This culminated in the 1851 Fort Laramie Treaty, where the area that is now Carter County, Montana was designated a part of the Lakota Sioux Territory. Following Red Cloud's War (1866-67) in which the Lakota defeated the U. S. along the Bozeman Trail, this territory was reaffirmed as Unceded Indian Territory in the Fort Laramie Treaty of 1868.²⁶²

In 1870 and 1872 Red Cloud journeyed to Washington D. C. to negotiate with the U. S., with whom the Lakota had realized they would eventually have to coexist. This philosophy grew out of a meeting held in the Powder River Country in 1869 and was designed to bring the U. S. and its resources closer to the Lakota Nation. This peace lasted until the discovery of gold in the Black Hills by a U. S. Army expedition led by George Armstrong Custer in 1874, which set off a rush, and the "Americans pressured the Lakotas to either sell or lease the hills, threatening to cancel their annuities and demanding them to perform labor."²⁶³ The Lakota and their allies responded by going to war to protect Pahá Sápa, their sovereignty, and their rights. This lasted for more than a decade, primarily under the leadership of Crazy Horse who served as a tactician, the spiritual leader Sitting Bull, and Red Cloud, who refrained from battle but continued to keep negotiations open.²⁶⁴

In what is now southeastern Montana, the Lakota won the Battle of Rosebud early in 1876. The area of the Blue Earth Hills served as a camp for Sitting Bull's people (Hunkpapas),

²⁶² Hämäläinen, *Indigenous Continent*, p. 440.

²⁶³ Hämäläinen, *Indigenous Continent*, p. 448.

²⁶⁴ Hämäläinen, *Indigenous Continent*, p. 449.

who were joined by Crazy Horse in April of 1876. The camp, which included the Oglala, Cheyenne, Minneconjous, Hunkpapas, Sans Arc, Santees, Brules, Arapaho and Blackfoot, moved westward toward Powder River country and onto the Little Bighorn.²⁶⁵ This culminated in a battle in which the Lakota and their allies won a decisive victory that humiliated the United States in the very year of their Centennial. The U. S. responded by violating the Treaty of Fort Laramie, seizing Pahá Sápa and using the transcontinental railroad to move military supplies and to aid in the state-sponsored decimation of bison herds. By 1877, the U.S. had won the war.²⁶⁶

The Indian Office criminalized the Sun Dance in 1882, leaving a spiritual void that was filled by the Ghost Dance, which “seemed to offer Indians the tools to survive in a rapidly changing world.”²⁶⁷ In the Lakota Territory, this worried U. S. agents, who reported the movement as an anti-White conspiracy, sparking military action at Wounded Knee Creek in December of 1890. Here, Custer’s former regiment fired on a camp of Lakota, killing 270 people, including 170 women and children, in what would become known as the Wounded Knee Massacre.²⁶⁸

Colonialism failed to fully extinguish Native sovereignty within the United States; there are currently 566 federally recognized Indian tribes in the United States, 325 American Indian reservations, and a total of 618 legal and statistical areas for Indigenous peoples. The largest

²⁶⁵ Tallbull, “A New Way to Study Cultural Landscapes” (1996) p. 129.

²⁶⁶ Hämäläinen, *Indigenous Continent*, p. 452.

²⁶⁷ Hämäläinen, *Indigenous Continent*, p. 458.

²⁶⁸ Hämäläinen, *Indigenous Continent*, p. 459.

reservations are in the western part of the U. S. and serve as a testament to the generations of resistance of those nations to protect their lands and sovereignty.²⁶⁹

Lulu Harmon: A Local Indigenous
Narrative of Homesteading

During this era of settlement two Indigenous women settled in Carter County with their white husbands. Their stories, recorded in the context of their husbands' narratives, provide a local connection to wider discussions of the resilience of Indigenous peoples during this time of great social, economic, and environmental change. One story is that of Lulu Harmon, whose mother was a mediator and cultural transmitter between the Lakota people and the U. S. government during the treaty era. These stories of Indigenous women are often silenced in narratives about colonial settlement.²⁷⁰

Lulu Harmon was born in 1846 at Fort Pierre in the Dakota Territory. Her father was Honoré Picotte, a French fur trapper, and her mother was Wanǂlí Ayútepiwīŋ (Eagle Woman That All Look At). Born in 1820, Ayútepiwīŋ was the daughter of Two Lance, a chief of the Two Kettle band of the Teton Lakota and Rosy Light of Dawn of the Hunkpapa. Ayútepiwīŋ married Picotte in 1838 and bore him two daughters, including Lulu. Picotte retired in 1848 and moved to St. Louis, leaving Ayútepiwīŋ behind with their daughters. Ayútepiwīŋ then married Charles Galpin in 1850 under the name Matilda Picotte Galpin. She was appointed as an interpreter for the Great Sioux Reservation in 1868 and made it her life's mission to help her

²⁶⁹ Barker, Kindle location 77.

²⁷⁰ Michael Lansing, "Plains Indian Women and Interracial Marriage in the Upper Missouri Trade, 1804-1868," *The Western Historical Quarterly* 31, no. 4 (2000): 413, <https://doi.org/10.2307/970101>.

people adapt to new ways of life on the reservation. She often traveled among several camps and diplomatically negotiated nonviolent solutions to racial and other conflicts, becoming known among Lakotas and whites as a woman of honor and peace.²⁷¹

Lulu was educated at the Sacred Heart convent in St. Louis, and was fluent in French, English and Lakota. She moved with her mother and Charles Galpin to Grand River Agency on the Lakota reservation in 1868, where the family opened a trading post. In 1869, Major James A. Hearn was installed as the new agent at the post, along with Lieutenant William Harmon as first officer. Harmon and Lulu married on July 25, 1870, in Sioux City and he resigned his commission from the agency on December 31, 1870. In 1883-84, they moved to the Ekalaka area and began building up a ranch four or five miles north and east from Russell and Ijkalaka. The Harmons filed on the homestead in 1887. Lulu often spent time with her neighbor, Ijkalaka, who could not speak English, and conversed often in their shared Lakota language.²⁷²

After the death of her husband Charles in 1869, Ayútepiwīŋ took over the trading post and became the first woman merchant among the Lakota.²⁷³ She was recognized as a chief of the Standing Rock Tribe during an 1875 commission regarding the cession of the Black Hills and other unceded territory. When the agency moved to Standing Rock in 1873, she moved her trading post and helped open the first Indian school at Standing Rock on January 15, 1876. After Custer's defeat, Congress sent a commission among the Lakota with the ultimatum to sign away

²⁷¹ John Gray, "The Story of Mrs. Picotte-Galpin, a Sioux Heroine: Eagle Woman Becomes a Trader and Counsels for Peace, 1868-1888," *Montana the Magazine of Western History*, Summer, 1986, Vol. 36, No. 3, 1986, <https://www.jstor.org/stable/4518988>.

²⁷² Castleberry, p. 752.

²⁷³ Gray, p. 8.

the Black Hills and the unceded territory or starve. When the commission reached Standing Rock, Ayútepiwīŋ attended the councils but did not sign the document.²⁷⁴ Ultimately, this paper did not gain the required three-fourths of adult Lakota male signatures required for land cessions by the 1868 Fort Laramie Treaty, however, Congress ratified the agreement in 1877 anyway, signifying that the Black Hills now belonged to the United States.²⁷⁵

In 1974, the Indian Claims Commission found that this 1877 government takeover had been in violation of the 1868 treaty and the Fifth Amendment and awarded the Lakota \$122 million. This decision was upheld by the Supreme Court in 1980, “in a landmark ruling that underscored Native Americans’ inviolate rights to land.”²⁷⁶ The Lakota refused to take the money and continued to fight to recover Paha Sapá, making a “stance for treaty rights, religious integrity, and larger Indigenous struggle for sovereignty.”²⁷⁷

The Russell Family and the Pierre Indian School

Another Indigenous story from Ekalaka that characterizes this period of erasure of Indigenous identity is that of Ijkalaka Russell’s sons, who attended an Indian boarding school in Pierre, South Dakota. In 1894, Ijkalaka and her younger children went to the Cheyenne River Indian Reservation for the winter. Her older sons, Ben, and John were already at the Pierre Indian School, a boarding school in Pierre, South Dakota. After that winter, their siblings, James, Will, and Kate joined them at the school. According to one local history, Ben “attended school at

²⁷⁴ Gray, p. 18.

²⁷⁵ Hämäläinen, *Lakota America*, p. 372.

²⁷⁶ Hämäläinen, *Lakota America*, p. 389

²⁷⁷ Ibid.

Pierre but became so homesick that he coaxed his brother, Jim, to run away from school and return home. This they did and they crossed the Missouri River in a boat then walked all of three hundred miles to their home in Montana. This took them nine days.”²⁷⁸

To better understand the social meanings of rural space, it is important to historicize the relationship between Ben’s experience and the Federal Indian boarding school system.²⁷⁹ Founded in 1891, the Pierre Indian School is included among the list of 408 federal Indian boarding schools that provided on-site or overnight lodging, formal academic or vocational training, received federal government funds and was operational before 1969. It was one of thirty-one schools identified as having operated in South Dakota (Figure 40). At the time Ben Russell attended the school, it consisted of separate dormitories for boys and girls and other buildings on a 20-acre tract of land. Initial enrollment was five students. Later, the school purchased an additional 160 acres.²⁸⁰ The entry on the school in the *Investigative Report* is short, however, a dissertation by Edward Keith Welch illuminates the early history of the Pierre Indian School as related through interviews with former student Oscar Howe.²⁸¹ The Pierre Indian School, Welch relates, “operated on a military basis with a curriculum designed to teach American Indian children the English language and basic industrial skills in an education system created to completely wipe away American Indian cultural identity.”²⁸²

²⁷⁸ Vivian Castleberry. “David Harrison and Ijkalaka Russell.” *Shifting Scenes Volume II*. (Carter County Geological Society, 1978), p. 756.

²⁷⁹ B. Green and J.-A Reid, “Rural Social Space: A Conceptual-Analytical Framework” (2021) p. 34.

²⁸⁰ Ibid, Appendix B.

²⁸¹ Edward Keith Welch, “Distinctly Oscar Howe: Life, Art, Stories” (dissertation, University of Arizona, 2011).

²⁸² Ibid., p. 52.

In 1926, Hubert Work, a medical doctor and then secretary of the interior, initiated informal talks regarding the possibility of the Institute for Government Research undertaking an independent survey of Indian affairs, “embracing particularly the educational, industrial, social, and medical activities maintained among the Indians, their property rights, and their general economic condition.”²⁸³ In 1928, this survey, published as the *Meriam Report*, found that “the main disruption to the Indian family and Tribal relations had come from the Federal Indian boarding school system.”²⁸⁴ This report sparked changes in the Indian education system, including the addition of more culturally relevant curricula. At Pierre, this involved the publication of the school newsletter *Wontana Waste* and the introduction of informal art education programs, which included beadwork, drawing and other courses.²⁸⁵

In 1972, the Bureau of Indian Education reexamined the Pierre Indian School and renamed it the Pierre Learning Center. This involved consultation and input from the fifteen Indian tribes and communities serviced by the school, which served to change its purpose to meet the needs of Indian students who were homeless, identified as socially maladjusted, or academically behind with high rates of absenteeism and truancy. This transformation of the Pierre Indian School to the Pierre Learning Center is one of a handful of boarding schools that remains in operation.²⁸⁶

²⁸³ Meriam Lewis and Hubert Work. *The Problem of Indian Administration: Report of a Survey Made at the Request of Honorable Hubert Work Secretary of the Interior and Submitted to Him February 21, 1928*. (Baltimore: Johns Hopkins Press, 1928), p. 56.

²⁸⁴ Bryan Newland, “Federal Indian Boarding School Initiative Investigative Report,” May 2022, https://www.bia.gov/sites/default/files/dup/inline-files/bsi_investigative_report_may_2022_508.pdf. p. 42.

²⁸⁵ Welch, “Distinctly Oscar Howe” (2011) p. 57.

²⁸⁶ Pierre Indian Learning Center (2022). “About PILC.”

These two stories provide a local connection of wider issues to Carter County, which could be told in a future redesign of the Indigenous exhibits at the CCM to continue the process of decolonization at the museum and a way to open the door to addressing the silences about the land and its settlement. These methods of decolonization will be discussed in more detail in the following sections of this chapter.

Modern Museum Methods to Address Decolonization

The Carter County Museum, in its capacity as a Non-Department of Interior Repository for Bureau of Land Management fossils and as a county museum, is subject to the Native American Graves Protection and Repatriation Act. Passed in 1990, this federal law provides a process for museums and federal agencies to return certain Native American cultural items such as human remains, funerary objects, sacred objects, or objects of cultural patrimony to lineal descendants and culturally affiliated Indian tribes and Native Hawaiian organizations. As a result, the CCM conducted a full inventory in 2013 and published a notification in the federal register. Reviewing the Native American collections at the museum also provided an opportunity to reassess their status as important parts of cultural heritage and inspire a more inclusive manner of display.²⁸⁷

Prior to this redesign, displays of Native American ethnographic material at CCM followed the “natural history approach,” which was common at major museums like the

²⁸⁷Amy K. Levin and Joshua G. Adair, “Why Local Museums Matter,” in *Defining Memory: Local Museums and the Construction of History in America's Changing Communities* (Lanham, MD: Rowman & Littlefield, 2017), pp. 12-13.

American Museum of Natural History, Smithsonian National Museum of Natural History, and the Chicago Field Museum -- all of which served as professional models for the CCM — and continues to be a method of display in many museums today. In this model, the exhibits “presented material culture as ‘specimens’ and Native people as ‘parts of nature like the flora and fauna,’ and therefore their arts and crafts were to be classified and presented according to similarity of form, evolutionary stage of development, or geographical origin.”²⁸⁸ For example, the exhibits at the CCM placed Native American cultural objects with flora and fauna, such as the placement of beaded moccasins alongside a partial bison skull in a pile of sand. This technique further expressed the notion of American Indians as a vanishing or dying race and reinforced the view of cultures that were static and unchanging.²⁸⁹

In redesigning the exhibit, CCM staff focused on the relationship between peoples and landscapes and consulted with professors in the Native American Studies Department at Montana State University and with Marena Mahto, a student intern who is enrolled in the Mandan/Hidatsa nation, to ensure a collaborative process in which Native people were actively involved in determining exhibition content. This relationship of shared authority is becoming increasingly commonplace in many museums and is a result of larger movements of self-determination and cultural sovereignty.²⁹⁰ As a result of this collaboration, the exhibits now focus on Indigenous lifeways, particularly as the narratives concern trade networks, flint-

²⁸⁸ Lonetree, p. 15.

²⁸⁹ Lonetree, p. 14.

²⁹⁰ Lonetree, p. 1.

knapping, art, and the ways that the tribes interacted with the landscape. This redesign was completed in 2013.

In 2018, the museum staff and board chose to work with a firm that specializes in NAGPRA issues and consult more directly with tribes with ancestral lands from which human remains were taken. During this process, the museum created an updated inventory that was published on the federal register on March 22, 2018, which described remains representing fifteen individuals of native descent that were part of the museum collection and which were from the ancestral lands of nineteen tribes. Some of these remains had been collected by museum staff and volunteers and others were donated by landowners primarily between 1939 and 1989. During this time, the museum directors (Walter Peck and Marshall Lambert) were recognized as the foremost anthropologists of the area and often consulted on such remains. One example is a 1941 article in the *Ekalaka Eagle* which references human remains that were unearthed by individuals working for the Works Progress Administration and given to Peck for analysis.²⁹¹ Another example is the 1947 letter associated with the human remains that belong to the Yuma tribe of Arizona:

Found amongst numerous others, between the 50- and 60-foot level in a mine shaft composed of sand, clay, and gravel, at foot of the mountain. An old trail of the Spanish explorers runs along this particular range of mountains and crosses the spot where the skull was found. It might be the remains of one of them, but this is doubtful (50 ft. under the surface). According to information given, my surmise is that it is the skull of early Yuma Indian, probably a slave of the Spanish who made them work in the gold and silver mines down there.

²⁹¹ Oscar Dahl, "Human Skeleton Is Found in Cave," *Ekalaka Eagle*, July 4, 1941, <http://montananewspapers.org/lccn/sn85053092/1941-07-04/ed-1/seq-1/>.

These instances set the stage for future finds going to the CCM for scientific analysis for the next fifty years. This study of human remains was influenced by early nineteenth century ideas of race, particularly in reference to phrenology and craniology, and the fact that other museums, including the Smithsonian, had actively collected the remains of Indigenous peoples for study. The studies conducted by Peck and Lambert followed the trends of others published during that time. In the 1930s and 40s, Peck described the remains, paying particular attention to identifying age, sex, and race where possible. In the 1950s and 60s, this study included development and growth, then shifted to analysis based on paleodemography.²⁹² By the mid twentieth century, and particularly in the West, this continued collection and study of remains had another reason: “Scholars, politicians, and young men were all contributors in “creating” the new American nation by imposing their versions of Indian history and culture onto American history.”²⁹³ This included a preoccupation with a deep, grounded history that granted “primal, deep meaning to place(s) in a timescape prior to the speeches, signings, and other nation-building acts of more recent national memory.”²⁹⁴ As evidenced by the Yuma letter above, Peck was preoccupied with time, particularly as it helped to define prehistory in the Ekalaka area.

In 1986 an osteological examination of the human remains held by the museum was conducted by Bonnie Hogan on behalf of the Miles City Bureau of Land Management Office, which included radiocarbon dating of the remains and determination of Native American ancestry. This study dated the oldest set of remains to 1,390 years B.P. and the youngest to two

²⁹² Devon Abbott Mihesuah, *Repatriation Reader* (University of Nebraska Press, 2000), p. 83.

²⁹³ Mihesuah, p. 3.

²⁹⁴ Mihesuah, p. 43.

hundred years ago.²⁹⁵ The remains collected after the 1986 analysis had associated funerary objects, such as projectile points, which helped determine Native American ancestry. In total, the human remains represented fifteen individuals of Native American descent and nineteen objects were described as related to the burial sites.²⁹⁶ However, these funerary objects did not result in an established relationship with any one tribal group, meaning that the remains and associated objects are classified as “culturally unidentifiable,” except for the Yuma individual. This determination is often used by institutions as a loophole that allows them to keep Native American remains and has resulted in 210,000 remains listed on the NAGPRA register that have yet to be repatriated under the law, including 1,938 at the American Museum of Natural History and 2,970 held by the Department of the Interior.²⁹⁷

After publishing the inventory, staff continued to consult with all nineteen tribes that had ancestral claims to the area through treaties and circulated a disposition agreement based on geographic location that stated the following:

In compliance with 25 U.S.C. 3001 et seq. the Native American Graves Protection and Repatriation Act (NAGPRA) and implementing Regulation 43 CFR 10.11, the Carter County Museum agrees to transfer control to the Indian tribes whose aboriginal territory, as the term is defined in the CUI Rule, includes Carter and Fallon Counties, MT that request disposition, jointly, of any and all Native American human remains and associated funerary objects removed from the:

- Arthur Walker Site, Carter County, MT;
- Beach Site, Carter County, MT;
- Jardee Site, Carter County, MT;
- Turbiville Site, Carter County, MT;

²⁹⁵ In this instance, B. P. stands for “Before Present,” which is defined in archaeological terms as the year 1950.

²⁹⁶ This includes the remains from the WPA and Yuma sites.

²⁹⁷ Ash Ngu and Andrea Suozzo, “Does Your Local Museum or University Still Have Native American Remains?,” ProPublica, January 11, 2023, <https://projects.propublica.org/repatriation-nagpra-database/>.

- WPA Crew Site, Carter County, MT;
- Medicine Rocks Site, Carter County, MT;
- Chalk Buttes area, Carter County, MT; and
- Frank Sparks Site, Fallon County, MT (hereafter referred to as The Sites).

They are described in the Carter County Museum Native American Graves Protection and Repatriation Act Inventory – Carter and Fallon Counties, MT., (dated March 22, 2018).

During this consultation, one tribe requested disposition of the remains -- the Oglala Sioux -- in December of 2018. In 2019, the museum contacted the NAGPRA office and updated the Notice of Inventory Completion with this added information and began the repatriation process after the required 30-day post publication waiting period was completed. This process was slowed down by the government closure, which resulted in delays at the NAGPRA office, and then further interrupted by the COVID-19 pandemic. Now, in 2023, the museum is eager to resume conversations with the Oglala Sioux Tribe and finish the repatriation process of fourteen of the human remains. The fifteenth set of human remains is from the area of the Yuma Tribe in Arizona and while they are also available for repatriation, there has been no return contact from the tribe at this time.

In Montana, more than 100 Native American remains have been listed on the NAGPRA register and only 68 percent have been made available for return to the tribes (Figure 41).²⁹⁸ Of those institutions located in Montana that reported Native American remains, the CCM is the only institution that has made 100 percent of Native American remains available for return to the tribes. This is a direct result of repatriation being an institutional priority for the CCM and a

²⁹⁸ Aislin Tweedy and Andy Tallman, “The Stolen Peoples,” Montana Kaimin: The Last Best College News (Montana Kaimin, February 9, 2023), http://www.montanakaimin.com/features/the-stolen-peoples/article_dc6de3b8-a831-11ed-bc2f-93a92f4dc3f1.html.

prime example of the decolonization of a museum, a practice that involves addressing the legacy of historical silences about colonialism and has the goal of creating spaces for healing and understanding.²⁹⁹

Conclusion

This chapter foregrounds Indigenous histories of place to show a model for confronting the silences about the land and its settlement. To date, the Carter County Museum has followed this model in the policies of the board and forward actions through repatriation. However, as with all museums, there is much left to cover, including the incorporation of these histories into exhibit text and work to collaborate with tribes local to the area. This work shows that rural museums can also join the movement for decolonization and be successful.

²⁹⁹ Lonetree, p. 4.



Figure 31. Carter County Museum volunteers at Mill Iron Dig, early 1980s. George Frison in center, Marshall Lambert at top left. Image courtesy of Carter County Museum archives.



Figure 32. Replica of a Goshen point found at the Mill Iron Site in the early 1980s held by Carter County Museum. Image by Sabre Moore.



Figure 33. Randall Mammoth dig in the Powder River area of Southeastern Montana. Note the sump pump hose in the upper part of the image, the skull in the middle and the additional tusk. Image courtesy Carter County Museum.



Figure 34. A local landowner lifts a mammoth skull from the Powder River to the back of a pickup for transport back to Carter County Museum. Note the field jacket around the bone constructed of plaster and burlap. Photo by Sabre Moore.



Figure 35. A series of vertebrae from the Pinto Plesiosaur dig. Photo by Stewart Cook, courtesy of Carter County Museum Archives.

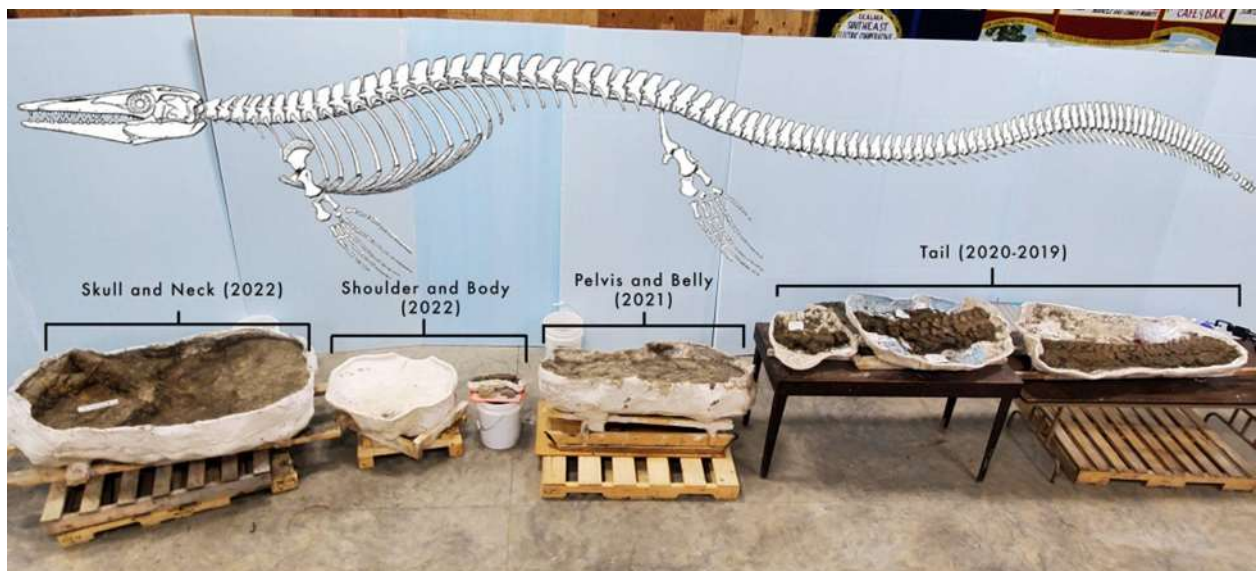


Figure 36. Skeletal remains of Vickie the mosasaur in fossil jackets in the Carter County Museum collection. Note the image on top which shows the full skeleton. Image by Nathan Carroll, courtesy Carter County Museum.



Figure 37. Quetzalcoatlus on display at left at the Carter County Museum. Image by Sabre Moore.



Figure 38. Local fossil find -- an ammonite that resembles an Iniskim or buffalo stone.

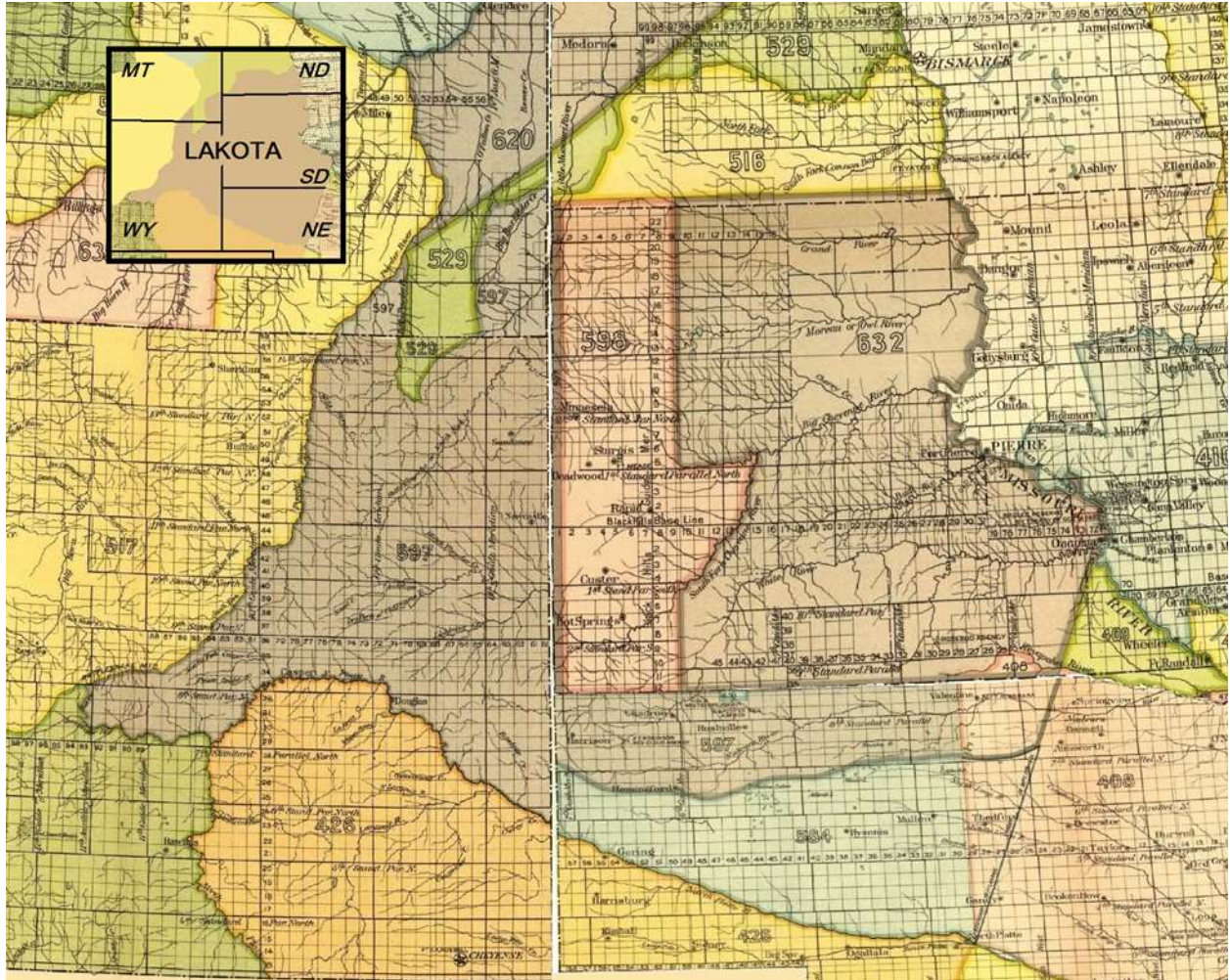
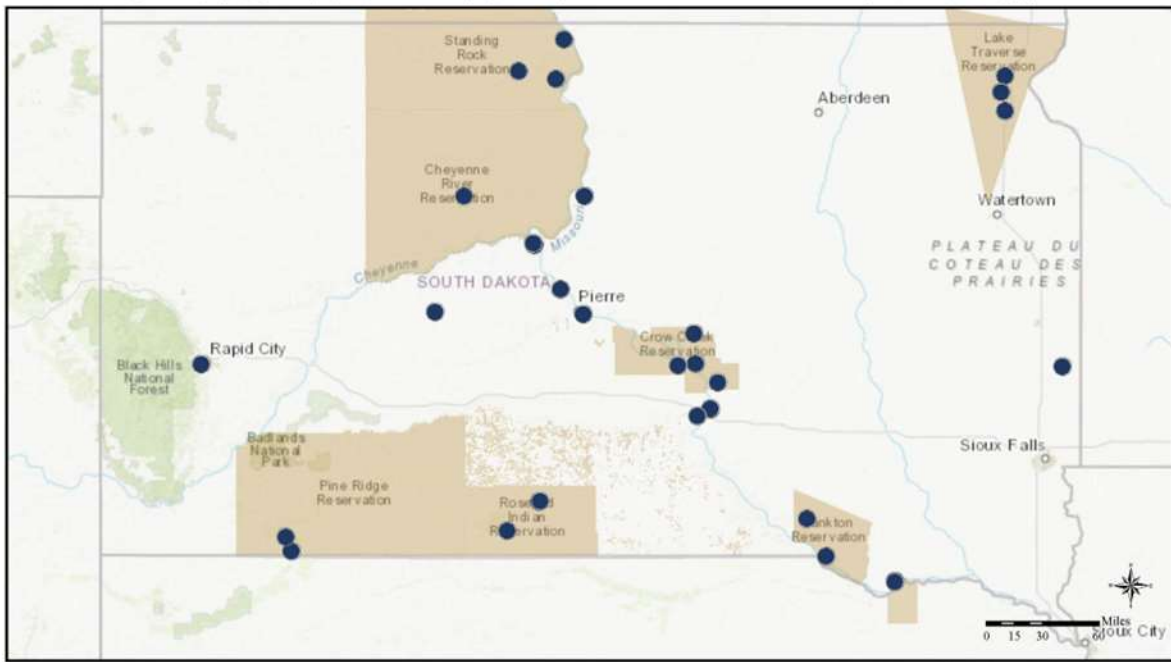


Figure 39. Lakota Territory 1851 Fort Laramie Treaty. Green shaded lands (529) are Arikara, Hidatsa and Mandan, Yellow are Crow. Government Printing Office, 1899, Public domain, via Wikimedia Commons.

Federal Indian Boarding School Sites Identified In South Dakota

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U.S. Department of the Interior
Federal Indian Boarding School Initiative

**Number of Federal Indian
Boarding School Sites - 31**

Note: An individual federal Indian boarding school may account for multiple sites as some schools changed locations over time. This map represents federal Indian boarding school sites identified as of April 1, 2022.

Service Layer Credits: The National Geospatial Data Asset by the U.S. Census Bureau is displayed with American Indian Reservations, Federally Recognized Tribal Entities, and Alaska Native Villages, and other data by Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBC, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

Figure 40. Map of Federal Indian Boarding School sites in South Dakota. Pierre Indian School is located at the dot on the city of Pierre.³⁰⁰

³⁰⁰ Bryan Newland, “Federal Indian Boarding School Initiative Investigative Report,” May 2022, https://www.bia.gov/sites/default/files/dup/inline-files/bsi_investigative_report_may_2022_508.pdf.

There are seven institutions located in Montana that reported Native American remains taken from across the country.

Institution	Remains Not Made Available for Return ↓	Remains Made Available for Return	% of Remains Made Available for Return
University of Montana	25	42	63%
Montana Historical Society	16	0	0%
Montana State University, Museum of the Rockies	14	4	22%
Montana State University, Bozeman, Department of Sociology	11	0	0%
U.S. Department of Agriculture	1	3	75%
U.S. Department of the Interior	1	6	86%
Carter County Museum	0	15	100%

Figure 41. Table showing the institutions in Montana that have Native American remains in their collections. Note Carter County Museum at the bottom.³⁰¹

³⁰¹ Ash Ngu and Andrea Suozzo, “Montana Repatriation Records — the Repatriation Project,” ProPublica, December 9, 2022, <https://projects.propublica.org/repatriation-nagpra-database/state/montana/>.

CHAPTER FIVE

“SHOTS FELT ‘ROUND THE WORLD’: MUSEUMS
AND RURAL COMMUNITY VITALITY

As a museum that focuses on local history as well as natural history, the Carter County Museum (hereafter CCM) takes a place-attentive approach in its stewardship of collections and the ways it represents the community. This strategy results in “letting the place speak to the innovation and diversity of voices to be heard in and for place,” thus inviting visitors to best know the place. When constructing a narrative for a museum exhibition, it is essential to consider the histories that are being included as well as the value of community and place so that local knowledge and diverse perspectives are highlighted and connected to others.³⁰² The earlier chapters illuminate the usual silences of the local Indigenous histories of the area as well as aspects of the predominant narrative of non-native settlement in southeastern Montana. In both sections, we can see how histories local to Carter County tie into wider conversations happening in the United States today, including debates surrounding fossil ownership, investigations of the Indian boarding school system, and shifts in economic industries in rural areas.

A third challenging conversation that permeates rural communities revolves around vaccination and vaccination against COVID-19. On December 9, 2022, a federal court ruled that Montana’s law barring discrimination based on vaccine status is unconstitutional and preempted by federal law as it applies to healthcare settings.³⁰³ This case involved a lawsuit against Montana House

³⁰² S. White and J. Downey, “Introduction” (2021) p. 13-14.

³⁰³ Mara Silvers, “Federal Judge Strikes down Montana Vaccine Choice Law in Health Settings,” *Montana Free Press*, December 9, 2022.

Bill 702, which was passed during the 2021 Montana State Legislature amid debate about businesses and COVID-19 vaccine mandates.³⁰⁴ Despite the COVID-19 context of its inception, the bill does not distinguish between vaccines, which worried hospital administrators, employees, and patients in regards to enforcing policies that mandate vaccination against other diseases (such as measles, mumps, rubella, varicella, tuberculosis, diphtheria, pertussis and hepatitis B) in healthcare and school settings. Judge Donald W. Molloy of the U.S. District Court of Montana states: “Plaintiffs proved at trial that vaccinations have been and continue to be, a critical tool in the public health “toolbox” when creating a safe and effective health care environment.”³⁰⁵ Furthermore, vaccine-preventable diseases constitute “recognized hazards in the workplace”³⁰⁶ and “vaccines are the single best way” to prohibit the spread of these viruses.³⁰⁷ In his forty-one page ruling, Molloy also highlights the following:

In this case, as with many cases in litigation, there are ironies. The striking irony for the Court here stems from an acknowledgment of the role of Dr. Maurice Hilleman in the history of the development as well as the efficacy of vaccines. Dr. Hilleman is known as the ‘Father of Modern Vaccines.’ The irony is that Dr. Hilleman was born in Miles City, Montana, graduated from Montana State College in 1957 and was the most prolific vaccine scientist of the 20th Century. He is estimated to have saved more lives through vaccines he invented than any other medical scientist. Among the many vaccines he developed are hepatitis A and B, Haemophilus influenzae type B (Hib) pneumococcus, meningococcus, and varicella (chicken pox) and he was the first person to combine viral vaccines when he created the MMR vaccine for measles, mumps, and rubella. The importance and efficacy of vaccines is clear if only from the accomplishments of Dr. Hilleman, and

³⁰⁴ Ibid.

³⁰⁵ Montana Medical Association, et. al, and Montana Nurses Association v. Austin Knudsen, Montana Attorney General and Laurie Esau, Montana Commissioner of Labor and Industry, No. CV-21-108-M-DWM (Mont. December 9, 2022). 11.

³⁰⁶ Ibid., 21.

³⁰⁷ Montana Medical Association, et. al, and Montana Nurses Association v. Austin Knudsen, Montana Attorney General and Laurie Esau, Montana Commissioner of Labor and Industry, No. CV-21-108-M-DWM (Mont. December 9, 2022). 22.

to put it in perspective, Dr. Hilleman's measles vaccines alone is credited with preventing almost a million deaths.³⁰⁸

This quote illustrates Hilleman's importance as a vaccinologist. However, because he focused primarily on saving children rather than receiving direct recognition for his vaccines, his story is often omitted from wider histories of medical advancement and discovery. This chapter explores how the CCM used the rural and proximal context of Hilleman's origins to tell his story and communicate the importance of vaccines during a worldwide pandemic.

In recent years, the rate of parental refusal of vaccines has increased, in part due to the “successful control and near-elimination of many once dreaded infectious diseases” and public skepticism of health professionals, policymakers and the pharmaceutical industry.³⁰⁹ Measles and other diseases are on the rise as a result, putting pregnant women, newborns and children at risk. According to the U. S. Center for Disease Control, Montana has an estimated vaccine hesitant population of 21-26.7 percent, with the higher end of that spectrum located in rural areas. A February 2022 report to the National Rural Health Association found that respondents indicated they felt overwhelmed by information and misinformation about COVID-19 vaccines as their reasoning for not getting vaccinated (26 percent) or for having their children vaccinated (31 percent of rural parents). Overall, 71 percent of respondents indicated that their healthcare provider was the most trusted source of COVID-19 vaccination and 14 percent indicated they wanted more information but did not have a trusted source to ask (Figure 42).³¹⁰ The US

³⁰⁸ Ibid., 3-4.

³⁰⁹ Tulchinsky, “Maurice Hilleman” (2018) p. 455.

³¹⁰ “National Rural Health Association: Vaccine Considerations in Rural America,” Morning Consult (March 2022). https://www.ruralhealth.us/NRHA/media/Emerge_NRHA/PDFs/NRHA-Morning-Consult-survey-results.pdf

Department of Health and Human Services puts the percentage of rural health professional shortage at 77.2 percent, primarily in rural counties, meaning that people in these areas have greater difficulty scheduling basic services and a lower access to health information, resulting in a decreased level of health literacy.³¹¹

A Brief History of Dahl Memorial Hospital

Through the years, many notable medical professionals moved to Ekalaka area and practiced out of their own homes. One of the most memorable of these physicians was Dr. B. B. Sandy, who served Carter County for over 50 years, during which he set over 2,000 bones and brought over 2,000 citizens into the world.³¹² After moving to Ekalaka in 1910, Sandy began work as a horse-and-buggy doctor, but also visited outlying cases by foot, horseback, bobsled and a succession of 21 cars. Sandy also operated a clinic in the basement of a drugstore in the 1930s. In the 1920s, another doctor came to the area: H. S. Holmes and his wife established the Ekalaka Hospital in the remodeled Speelmon Home. Bertha Berry opened a maternity hospital in 1925, where she delivered many children through the 1940s. Lula Trabert opened a retirement home in Ekalaka, which she ran with the assistance of Drs. Sandy and Jess Anderson.

In the local Ekalaka Eagle newspaper, founded in 1909, editor Oscar Dahl, reported regularly on issues of public health and advocated for the construction of hospital facilities in the community, often using the Eagle to rally support. Construction of Dahl Memorial Hospital was

³¹¹ Mike Hennessy, "Improving Health Across Rural America," *Pharmacy times* 84, no. 9 (2018) p. 4.

³¹² Viola Sandy "Dr. And Mrs. B. B. Sandy" in *Shifting Scenes*, vol. II (Ekalaka, MT: Carter County Geological Society, 1978), p. 763.

completed in 1942 with Carter County funds of \$14,000. The first doctors in the new facility were Sandy, Johnson, and Bush. In 1957, a new addition was built from a county tax bond and matching funds from Hill-Burton Act. This 1946, federal law gave hospitals, nursing homes and other health facilities grants and loans for construction and modernization on the condition that they agreed to provide a reasonable volume of services for those who were unable to pay. In 1968, the twenty-one-bed nursing home was constructed under the same funding structure as the 1957 addition.

In 2018, the taxpayers of Carter County passed a \$15.1 million bond in support of a new building constructed at the corner of East Park Street and Central Avenue South in Ekalaka, Montana. Called the Carter County Healthcare Facility, it houses the Dahl Memorial Healthcare Association, which leases the building from the county. The new building opened for business in November of 2021. Copies of “Shots Felt ‘Round the World” went on display at the new building on November 19, or National Rural Health Day and reached a total of 2,201 people (Figure 43). Today, the critical access hospital and rural health clinic offers a twenty-four-hour emergency room, X-ray technology, and telemedicine. Carter County Museum has satellite exhibit space in the mezzanine of the clinic, where visitors may view pathological dinosaur and other animal bones, as well as medical artifacts from the CCM collection (Figure 44).

Rural Museums and Healthcare Collaborations

This history of healthcare in Ekalaka supported the ability of the CCM to collaborate with the community to create the “Shots Felt Round the World exhibition.” In order to increase vaccination rates amidst this shortage of healthcare professionals, public and private sectors must

work together to build vaccine confidence.³¹³ Rural museums and access to quality medical care may seem worlds apart, however, in recent decades, museums have used the past to educate in the present about health and wellness subjects and thus demonstrated their ability to contribute to healthcare.³¹⁴ In my position as executive director at the CCM, I used this approach to design the exhibition “Shots Felt ‘Round the World: Dr. Maurice Hilleman and the Montana Origins of the Fight Against Pandemics,” in consultation with local healthcare professionals and educators as a response to the COVID-19 pandemic.

This decision was informed by the CCM’s participation in a research initiative led by the Center for the Future of Museums. The goal of this initiative, called “Culture + Community,” was to build a bridge between the cultural sector and the experiences and the needs of its communities and audiences during the COVID-19 pandemic and beyond. In April and May 2021, the CFM conducted a second wave of research was conducted through a large-scale online survey that asked about the experiences, needs, and behaviors of a representative sample of the U. S. population plus a large sample on the contact lists of more than 650 cultural organizations around the country. There was no charge to participate as an institution, and upon conclusion of the study, the CCM received an online dashboard that included detailed data about local audiences that had responded to the survey – in this case museum members, partners, and Dino Shindig Field Expedition participants. The sample size for CCM was 107 respondents. Of this group, 28 percent indicated a desire that the organization help the community through increasing

³¹³ Orenstein, “Vaccines” (2019) p. 278.

³¹⁴ Paul M. Camic, Helen J. Chatterjee, “Museums and art galleries as partners for public health interventions,” *Perspectives in Public Health* 133, no. 1 (2013) p. 66.

awareness of COVID-19 safety practices and/or help with vaccinations, 36 percent through reflecting back on history and connecting the past to the present and 53 percent through educating children (Figure 45). This data showed a connection between the community identifying an area of concern and recognizing the museum as a resource to address the challenge. As a result, we designed the exhibition to incorporate all three of these areas – viewing the COVID-19 pandemic and vaccines through a lens that included reflection on past pandemics and vaccine history, collaboration with local teachers to design a companion curriculum to the exhibition, and collaboration with local healthcare providers and virologists at Montana State University to ensure the science presented was sound.

The exhibition consists of fourteen retractable banners and two additional banners specific to the local community and emphasizes a place-attentive approach by giving explicit attention to the historicization of the relationships between people, infectious diseases, and medical practice, which helps audiences find common ground to learn about the subject. In this way, the exhibit connects the history of the local, the history of the state, and the history of vaccines and pandemic disease, with a goal of enhancing “public understanding of the role viruses play in human health, a key contributor toward enhancing the use of vaccines to prevent infections.”³¹⁵ In every aspect of the project, the human experience is emphasized in issues of pandemic disease, inequality, scientific discovery, and innovation that make up the human environment. The biographical thread of Maurice Hilleman is key in tying these areas together in a story that is distinctly Montana – from Hilleman’s birth in Miles City and growing up on a

³¹⁵ Judy Diamond, et. al. “Viruses, Vaccines and the Public,” *Museums & Social Issues* 11, no. 1 (2016): 14.

ranch, to his education at Montana State College and later accomplishments throughout his career, his story is one that appeals particularly to a rural Montana audience.³¹⁶

The exhibit went on display in the Central Schoolhouse Gallery in May 2021. A virtual opening event was held due to the continuation of the COVID-19 pandemic at the time. Speakers for the event included the executive director of the CCM, local teachers who contributed to the curriculum, and Zahava D. Doering, co-director of the Smithsonian Vaccines and U.S. project. The Vaccines and U.S. project was created to help people make informed decisions about the COVID-19 vaccines and provides an opportunity for museums and other cultural organizations to help their communities. Twelve organizations and three independent museum professionals collaborated with the Smithsonian to develop a resource hub that is accessible and usable by individuals, groups, and organizations. The CCM joined this effort as a contributor in 2021.³¹⁷

During its time in Ekalaka, “Shots Felt ‘Round the World” drew over 3,000 people. An online version, published in May 2021 on the museum’s Matterport website and Google Street View, reached an additional 44,000 cumulative views. The “Shots Felt ‘Round the World” exhibit, curriculum, and traveling tour have all contributed to making the subjects of vaccines and public health more accessible, creating space for conversation, and promoting greater health literacy in rural areas across Montana. Together, they provide a model for other rural community

³¹⁶ Data from the pilot of the exhibition in Ekalaka, Montana, revealed that visitors frequently commented upon the birthplace of Dr. Hilleman, "Gosh, I didn't know he grew up around here! Nice to see that he valued the rural way of life -- hard work, and don't brag about it," was a common refrain.

³¹⁷ The Carter County Museum virtual exhibit of “Shots Felt ‘Round the World” and the “Hilleman & Vaccines” curriculum are featured under “Historic Perspectives” on the News and History section of the Vaccines and US website. <https://www.si.edu/vaccinesandus/news-and-history>

museums to partner with other anchor institutions, be they schools, hospitals, or others, to extend the Rural Social Space Model by incorporating local histories and extending impact to contribute to community vitality.

A Useful Life

The first five panels of “Shots Felt ‘Round the World” chronicle the life of Hilleman, who made it his life’s mission to eradicate childhood diseases. Hilleman created over forty vaccines, including eight of the twelve commonly given to children today. Hilleman was born August 30, 1919, in Miles City, Montana during the second phase of the influenza pandemic. His mother and twin sister became sick and died soon after his birth; Hilleman was brought up by his aunt and uncle who lived nearby. From an early age, Hilleman was interested in science particularly of the writings of Charles Darwin. He graduated from Custer County High School in 1937, and earned a scholarship to attend Montana State College, now known as Montana State University-Bozeman. While at MSC, Hilleman was a member of several honors societies, including Phi Kappa Phi and Phi Eta Sigma. Upon graduation from Montana State in 1941, Hilleman received fellowship offers from ten universities and decided to attend the University of Chicago, where he studied microbiology and graduated with his PhD in 1944. His groundbreaking dissertation demonstrated that Chlamydia – a sexually transmitted disease that causes infertility in thousands of women and affects about three million people in the U. S. every year – was not a virus, but a bacterium. This discovery led to the eventual treatment for the disease and

won him an award for “the student presenting the best results of research in pathology and bacteriology.”³¹⁸

Against the recommendations of his advisors, who wanted him to pursue a career in academic research, Hilleman chose to work in the pharmaceutical industry and took a position at E. R. Squibb & Sons. While studying vaccine development, he recognized that viruses can be used to stimulate antibodies in a vaccinated person and made his first vaccine, against Japanese B encephalitis, which was put into immediate use to immunize troops at the Pacific front during World War II. In 1948, he joined the Walter Reed Army Medical Center as chief of the Department of Respiratory Diseases. It was here that Hilleman “demonstrated that the influenza A viruses underwent gradual and progressive minor antigenic characteristics called drift and shift,” which now forms the basis of modern influenza vaccine strategies.³¹⁹ In 1957, Hilleman joined Merck Laboratories, where he directed the research and development of vaccines against Measles, Mumps, Rubella, Meningococci, Pneumococci, Hepatitis B, Hepatitis A, Polio, and Chickenpox. Montana State University granted Hilleman an honorary Doctor of Science degree in June 1966.

Hilleman created these vaccines and others using the scientific process, which involved critical thinking, use of the resources at Merck including rapid movement to clinical trials, and having a thorough, well-researched plan in place, which he presented to regulatory authorities. Throughout his life, Hilleman was obsessed with vaccine safety. He rigorously tested all of his

³¹⁸ Paul A. Offit, *Vaccinated: One Man's Quest to Defeat the World's Deadliest Diseases* (Harper Collins, 2021). 10.

³¹⁹ Theodore H. Tulchinsky “Maurice Hilleman: Creator of Vaccines that Changed the World” *Case Studies in Public Health* (2018): pp. 443-470.

vaccines and led by example. In developing his hepatitis B vaccine in the late 1970s, Hilleman used human blood and developed a chemical process to kill any contamination. Convinced of its safety, Hilleman first tested the vaccine on himself, then conducted a successful trial among Merck employees and executives.

Hilleman retired from Merck in 1984 at the age of sixty-five per the mandated company rule. He continued to work in his field, serving as an advisor to the World Health Organization (WHO). In 1998, President Reagan awarded him the National Medal of Science, the highest science award given in the U. S. In 1999, Hilleman was invited to contribute something of science to the National Millennium Time Capsule under the theme “Honor the Past -- Imagine the Future.” As a past recipient of the National Medal of Science, Hilleman proposed the topic of recognizing major contributions of 20th century vaccines for preventing disease, disability, and death among the peoples of the 21st century. Hilleman chose six vaccines and embedded them in a special transparent plastic box. He said this in his speech at the December 31, 1999, National Millennium Time Capsule Ceremony in Washington, DC:

The pediatric vaccines prevent more than four million deaths per year worldwide. Other vaccines prevent respiratory illness, hepatitis A and B, and even cancer. The principal diseases of children are no longer significant in the USA and in much of the developed world. My contribution consists of eight vaccines of the Twentieth Century which prevent illness, disability and death and have changed the face of the world!

Hilleman passed away on April 11, 2005. He is credited with saving more than a billion lives around the globe. At Hilleman’s memorial service, the following quote from him was read:

Well, looking back on one’s lifetime, you say, ‘Gee, what have I done—have I done enough for the world to justify having been here?’ That’s a big worry—to people from Montana, at least. And I would say I’m kind of pleased about all this. I would

do it over again because there's great joy in being useful, and that's the satisfaction that you get out of it.³²⁰

From the useful life of Hilleman, the exhibit then focuses on how the lessons of past pandemics can teach lessons about present problems, particularly in the context of local community life.

Past Pandemics, Present Problems

When asked about the growing levels of vaccine skepticism in the documentary *HILLEMAN: A Perilous Quest to Save the World's Children*, Hilleman lamented, "I think the only way we're actually going to get people to understand the importance of these vaccines is to watch children suffer again."³²¹ This quote inspired the three exhibition panels that focus on past pandemics, association with Hilleman, and their connections to today. Each is organized by the disease and its associated vaccine: smallpox, influenza, and measles, mumps, and rubella. Two additional panels focus on healthcare in Carter County and the impact of infectious disease on communities (Figure 46). Then the exhibition transitions to the COVID-19 pandemic, its early days in Montana and Carter County, and finally the current state of vaccination against the disease.

³²⁰ Gail Schontzler, "Life-saving vaccine scientist's 100th birthday celebrated," *AP News* (Bozeman, Mont.), September 6, 2019. <https://apnews.com/article/bozeman-rubella-hepatitis-miles-city-mumps-26cb1aa1b10042d9829792d37db886a1>.

³²¹ Paul A. Offit and Donald Rayne Mitchell. *HILLEMAN: A Perilous Quest to Save the World's Children*, (Medical History Pictures, Inc., 2016), <https://hillemanfilm.com/>.

Smallpox and the Anti-Vaccination Movement

The long history of Hilleman's vaccine development process began with the vaccine for smallpox created by Edward Jenner in 1768.³²² Smallpox is a highly contagious, disfiguring and often deadly disease that killed millions of people over thousands of years.³²³ It was the first continent-wide epidemic documented in historical records in the North American British colonies. Brought by sick individuals who traveled across the Atlantic Ocean to America, the disease killed over 90 percent of Native Americans. The first vaccine for the virus was created in the 1790s, but the disease remained prevalent throughout the world for almost two more centuries. In Montana, outbreaks occurred along the Missouri River, killing 17,000 Indigenous peoples, including half of the Arikara tribe, in what would be called the 1837 Great Plains Smallpox Epidemic. Others occurred in Butte, Missoula, Anaconda, and Great Falls throughout the late 1880s-90s, prompting the creation of the Montana State Board of Health in 1901.

One story that connects the smallpox epidemic to Ekalaka comes from the Russell family. Ben Russell contracted smallpox while at the Cheyenne River Indian Reservation in the fall of 1900. He broke quarantine to return home to Ekalaka, and soon after, his brother, Thomas, and mother Ijkalaka fell ill. An excerpt from *Shifting Scenes*, which chronicles the lives of those who lived in Carter County, Montana, captures the following story:

During our stay in Ekalaka, Mrs. David Russell was sick with smallpox. My mother helped two other ladies make gowns so that each day the doctor had a new one for her and he burned the one she had worn. This way he kept the disease from spreading outside the house.³²⁴

³²² Paul Offit, "Eight Doors" in *Vaccinated: One Man's Quest to Defeat the World's Deadliest Diseases* (New York: Harper Perennial, 2008) pp. 31-32

³²³ "Smallpox Symptoms and Causes." Mayo Clinic. <https://www.mayoclinic.org/diseases-conditions/smallpox/symptoms-causes/syc-20353027>

³²⁴ Anita Ewalt Rose, *Shifting Scenes* Vol. 1 (1978), p. 236.

Ijkalaka passed away from smallpox on May 16, 1901, followed by Ben and Thomas. That same year, the Montana State Board of Health issued a mandatory vaccination order for children attending school. As a result of this campaign, fewer children became infected with the disease, though outbreaks continued. In 1905, an outbreak in Billings prompted strict quarantine enforcement and vaccinations: “in a town of about 6,000 over 4,5000 tubes of vaccines were purchased, and presumably used, during the month of January.”³²⁵ In 1921, the Ekalaka Eagle newspaper ran the single column article “Regarding Smallpox” by then county attorney Rudolph Nelstead. He describes a number of stringent measures introduced as necessary because of a demonstrated lack “of cooperation with the County Health Officer in his efforts to prevent the spread of this disease is manifested by certain citizens in this community.” Enforced by the State Board of Health, these measures included isolation of infected individuals, vaccination requirements, and the closure of businesses, schools, and churches where individuals with the disease were present.

Opposition to these campaigns included complaints of the cost and “perceived violation of personal liberty.” This was despite proof that providing free vaccinations was cheaper for taxpayers than it was to fund the care of infected persons. Those who took issue on the grounds of personal liberty were called anti-vaccinationists and believed that vaccinations “would cause extended sicknesses in many homes as well as work and anxiety for hundreds of parents.”³²⁶ However, vaccinations were exactly the solution that was needed as individuals involved in the

³²⁵ “Smallpox: Vaccination not Quarantine.” Montana History Revealed (2015).
<http://mthistoryrevealed.blogspot.com/2015/06/smallpox-vaccination-not-quarantine.html>

³²⁶ “Smallpox: Vaccination not Quarantine.” (2015).

movements would discover. In one memorable article published in the 1918 Ekalaka Eagle, editor Oscar Dahl covers the Butte anti-vaccination movement and mentions the change of heart two individuals had when they contracted smallpox, rushing out to get the vaccine after their recovery (Figure 47).

Vaccine research and development saw exponential expansion in the mid-20th century through the efforts of Drs. Hilleman, Jonas Salk (polio), Charles Mérieux (vaccine mass production), and others.³²⁷ In a 2019 article titled “Vaccines Don’t Save Lives. Vaccinations Save Lives”, the author recalls his involvement in a 1974 smallpox eradication program where he “saw a disease with about a 30% case-fatality rate disappear before my eyes because of a vaccine.”³²⁸ This success was due primarily to an approach called “ring vaccination” in which individuals infected with the disease were isolated and primary contacts — and contacts of the contacts — were identified and the team continued working until they all accepted vaccination. Similar vaccination campaigns were enacted throughout the United States. In 1980, the World Health Assembly declared smallpox eradicated, making it one of the biggest achievements in international public health.³²⁹

Influenza

The 1919 Pandemic histories from members of the Carter County community presented in the exhibition were particularly poignant, as viewers recognized their ancestors and heard

³²⁷ Maurice R. Hilleman, “Vaccines in historic evolution and perspective: a narrative of vaccine discoveries,” *Vaccines* 18 (2000): 1436, doi:10.1016/s0264-410x(99)00434-x

³²⁸ Walter Orenstein “Vaccines don’t save lives. Vaccinations save lives.” *Human Vaccines & Immunotherapeutics* 15, no. 12 (2019): pp. 2786-2789.

³²⁹ “Smallpox.” World Health Organization (2020).

about their experiences or read the coverage in the local Ekalaka Eagle newspaper. In Carter County, it was a time when “the undertaker had trouble keeping caskets on hand.”³³⁰ In the winter of 1918, Sandy traveled from home to home in his sleigh caring for individuals stricken by the flu pandemic. Though he was able to save many lives, twenty-one members of the Ekalaka community died from the disease, including an individual who had contracted the disease while serving in World War I. Another individual was orphaned at the age of six, losing his father, mother, and siblings within the space of two days.³³¹ One nurse tells a tale of driving a team of horses seven miles to town each day to see what she could do to help, bringing chicken broth and buttermilk to those who were sick.³³² Other particularly harrowing tales are recorded in the museum’s history series *Shifting Scenes, Volume I*:

The ‘killer flu’ epidemic of 1918-19 was hard on everyone it hit. It struck Frank and Lottie and his parents just at potato digging time, but old timers didn’t quit. Lottie not only had the flu, she was expecting their baby in January and being too sick to stand up to pick her share of the potatoes, she crawled down the row—her four-year-old daughter lugging the buckets along and emptying them often. (Frank Roy Heckathorn, *Shifting Scenes Vol. I* (1978) p. 327)

People in town, five and six in a family were down with flu. Twyla was in school and each day I would drive to town to see what help I could be [...] At night I would kill and cook a chicken to make a gallon or more of broth. I also churned butter to have buttermilk for those who were desperately sick. I drove this big, wild team to a top buggy, on a high run. I built fires for people, fed people, emptied slop jars, changed beds, and ran to the next house to do the same thing again. (Elizabeth Julia Sacht, *Shifting Scenes Vol. II* (1978) p. 758).

³³⁰ Emma Kortum Bush “A Narrative of the Life of Christie G. Bush, Carter County Montana” in *Shifting Scenes, vol. I* (Ekalaka, MT: Carter County Geological Society, 1978), p. 103.

³³¹ “Willard and Helen Mathwig” in *Shifting Scenes, vol. II* (Ekalaka, MT: Carter County Geological Society, 1978), p. 558.

³³² Twyla Kalstrom “Elizabeth Julia Sacht” in *Shifting Scenes, vol. II* (Ekalaka, MT: Carter County Geological Society, 1978), p. 758.

More than 5,000 Montanans, or 1 percent of the population, died of influenza during the 1918-19 pandemic putting it in the top three states in the nation with the highest rates of influenza-associated mortality. This was a time when medical science and public health were ill equipped to deal with the pandemic as a vaccine for influenza had not been developed, which was the case for other diseases at the time, such as measles, diphtheria, typhoid, and scarlet fever.³³³

Hilleman would go on to predict the next influenza pandemic, which emerged in 1957, and lead the development of the Asian flu vaccine in just four months, which “was important in alleviating the world-wide pandemic.”³³⁴

Measles, Mumps and Rubella

Measles, mumps, and rubella caused widespread illnesses prior to the development of their vaccines in 1960. Children with measles develop high fever, a red rash and pink eye. The virus can also infect the lungs, causing pneumonia, and the brain, causing permanent damage. Hilleman used a technique where the virus is grown inside a chicken egg and weakened by passing it through the embryo cells forty times to make the vaccine. But he had to find chicken eggs he could use to produce the vaccine. During the 1960s, about 20 percent of chickens in the United States carried a chicken leukemia virus. Hilleman would have to find chickens that did not have this strain to make a vaccine he felt would be completely safe from passing the cancer on to humans. Hilleman’s friend Wendell Stanley directed him to Kimber Farms in Fremont, California, which had managed to breed a flock of virus-free chickens. John Kimber founded the

³³³ Todd S. Harwell, Greg S. Holzman, Steven D. Helgersen “No More War, No More Plague: The Spanish Influenza Pandemic Toll on Montana” in Montana The Magazine of Western History (2018): p. 29 <https://mhs.mt.gov/Portals/11/education/WWI/HarwellFlu.pdf>

³³⁴ Ibid.

farm in the early 1930s, and developed disease-free eggs, disease-resistant chickens, and hens that could lay 250 eggs per year through scientific breeding. After arriving at Kimber Farms, Hilleman asked to meet with the director of poultry research, W. F. Lamoreaux. At first, he refused to sell the disease-free chickens, but after finding out that Hilleman was from Miles City, Lamoreaux, who was from Helena, told him to “take them all.” Hilleman set up the flock of chickens at Merck and used them to make the Moraten strain measles vaccine, which brought the number of measles cases down from four million to fewer than fifty. Today, vaccines at Merck are still made from the descendants of the Kimber flock.

In 1963, Hilleman’s daughter, Jeryl Lynn, came down with the mumps. By weakening the mumps virus he had obtained from swabs of her throat, he was able to make a safe and effective mumps vaccine. The same strain of mumps virus is used to make the mumps vaccine today. It is called the Jeryl Lynn strain. Prior to the vaccine, mumps was the most common cause of meningitis (swelling of the lining of the brain and spinal cord in children). It was the leading cause of acquired deafness among children in the United States.

Children infected with the rubella virus suffered from a mild rash and swelling of the glands behind the ear. Rubella can pass from mother to child in the womb and cause birth defects, including blindness and deafness, heart defects or mental deficits. In Montana, women are asked to get a blood test for Rubella before a marriage certificate is issued to the couple. In 2007, this law was modified to offer a waiver option, and further legislation was introduced against it in 2019 because widespread use of the MMR vaccine has nearly eradicated this disease.

In the “Shots” exhibit these stories are connected to local histories of measles, mumps, and scarlet fever in newspapers across Montana (Figure 48). This shows the history of these diseases and their effects on a local scale, allowing viewers of the exhibit to connect experiences.

COVID-19

Another panel in the exhibit addresses vaccine development in Montana and helps tie in the COVID-19 pandemic. Founded in response to the outbreak of spotted fever in the Bitterroot Valley in 1900, Rocky Mountain Labs is now a National Institute of Health biomedical research facility located in Hamilton, Montana. For the first two decades of its existence, scientists traveled to the valley to investigate the cause, treatment, and prevention of spotted fever. Initially, they lived in tents and worked out of cabins and farmhouses. In fact, Dr. Ralph Parker even performed research on ticks in an old woodshed before renting an abandoned schoolhouse in 1921. Dubbed the Schoolhouse Lab, this building would become the site of the creation of the first effective vaccine against spotted fever. The Montana state legislature appropriated \$60,000 in 1927 for the construction of an entomological laboratory and Hamilton was chosen as the site. This inspired protests from residents worried that ticks might escape, and widespread infection would occur. Construction was completed in 1928 and the Public Health Service rented space within the building for continued research on vaccine production. In February 1932, the federal government purchased the facility for \$68,757 from the state of Montana.

Rocky Mountain Labs became part of the National Institute of Health in 1937, manufactured the United States’ supply of yellow fever vaccines during World War II, and helped develop the Ebola vaccine in 2014 for use in West Africa. Today, the facility is one of nine federal facilities in the country with the highest biosafety rating, and scientists there

investigate a wide variety of infectious diseases. Scientists at Rocky Mountain Labs began running experiments on the novel coronavirus before the first cases were confirmed in January 2020 and soon shifted all research efforts to the Covid-19 illness. Called “the center of the universe” in regard to Covid-19 research by a May 2020 New York Times article, the Montana lab’s five research teams conducted vaccine trials, built reliable animal models to grow the coronavirus in cell cultures, submitted research on effective ultraviolet light disinfection methods for N95 masks, and even provided the microscope images of the spiked coronavirus that accompanied all the articles on the disease during the pandemic.

COVID-19 is caused by a coronavirus first identified in Wuhan, China in December 2019. The disease frequently carries mild symptoms but can cause severe illness and death. Individuals who have underlying conditions are at greater risk of developing severe illness from the virus. Coronaviruses are common in people and several distinct species of animals and some cause mild upper-respiratory tract illnesses. ‘CO’ stands for ‘corona,’ VI for ‘virus’ and D for disease. The nineteen comes from the year it was first recorded. The formal name for the virus is SARS-CoV-2 and it is like other beta coronaviruses like MERS-CoV and SARS-Cov. Like these other viruses, it developed from an animal host, but the source has not yet been conclusively identified.

The first reported cases of COVID-19 in the United States occurred in January 2020. In March 2020, state and local governments began enforcing widespread public health orders such as social distancing and sanitation. Many businesses were closed, and airlines were grounded to contain the virus. Regulations fell primarily to the state level and were developed by public health authorities. By March 2021, the United States listed over twenty-nine million cases and

over 500,000 deaths. That total has since risen to 99.2 million cases and 1.09 million deaths. In Montana, there have been over 320,000 cumulative cases and 3,628 reported deaths.³³⁵ In Carter County, there have been 280 cases and five deaths reported as of November 2022.³³⁶

The public health response during the 1919 pandemic is like what was seen in the wake of the COVID-19 pandemic as the Montana State Board of Health, and city and county health officers implemented measures to protect the health of residents, including the isolation of ill persons and quarantining those exposed. Public gatherings were limited during the second wave of the pandemic through the closure of theaters, schools, and churches but on a county-by-county basis. As is the case today, some businesses ignored the orders, prompting the intervention of the State Board. It was required by law that cases be reported by local physicians to city and county health officers, and that those case reports would be communicated to the State Board of Health. However, reporting of cases broke down under the sheer number of increasing infections as physicians were overwhelmed with patients and “the local health officer was too busy responding to the calls of the sick to attend to his duty as health official.”³³⁷ This also happened in Ekalaka in November 2019 as the hospital was overwhelmed with COVID-19 cases and patients in critical condition, resulting in an eight-day hiatus in reporting of information and other sporadic communications throughout the month.³³⁸

³³⁵ “Tracking Coronavirus in Montana: Latest Map and Case Count.” New York Times (18 December 2022). <https://www.nytimes.com/interactive/2021/us/montana-covid-cases.html>

³³⁶ “Demographic Information for Covid Cases, Montana 11-23-2022” Montana Department of Health and Human Services. 2022. 2.

³³⁷ Harwell, *No More War*, (2018) p. 42.

³³⁸ November 13, 2020, post on Carter County COVID-19 Task Force Facebook Page.

As sovereign nations with the authority to legislate policy within their borders, Montana's tribes instigated several measures to mitigate the spread of COVID-19 on their reservations. They created unified task forces with county governments, closed roads to non-essential travel, instituted checkpoints, and closed recreational areas. According to the Indian Health Service, infection rates for American Indian and Alaska Native populations are more than 3.5 times higher than non-Hispanic whites, and Indigenous peoples are four times more likely to be hospitalized from COVID-19. A November 2019 Public Health and Human Services report stated that, in Montana, Indigenous peoples comprise 16 percent of the state's COVID-19 cases and 12 percent of the state's total deaths from the virus. Montana's urban Indian health centers and Indian Health Service (IHS) sites chose to receive their vaccines from the IHS. Other tribal health centers worked with the state. As of November 2022, COVID-19 cases affecting American Indians or Alaska Natives accounted for 8 percent of total cases and 11 percent of total deaths in Montana.³³⁹

COVID-19 Vaccines. Scientists at Rocky Mountain Labs partnered with a team in Austin, Texas and were able to define the structure of the SARS-CoV-2 protein and go to work on a vaccine using messenger RNA (mRNA). The team based their work on their earlier research on the MERS virus, which first appeared in 2012. Through a partnership with Moderna pharmaceutical company, the vaccine was developed and approved for emergency production in late 2020 by the U. S. Food and Drug Administration. In 2020, two COVID-19 vaccines were given emergency approval by the United States Food and Drug Administration (FDA) for

³³⁹ "Demographic Information for Covid Cases, Montana 11-23-2022" Montana Department of Health and Human Services. 2022. 5.

production. These require two doses, the first of which starts building protection and the second, which boosts efficacy. In early 2021, a third vaccine was added to that list, requiring a single dose. Like all vaccines, these are designed to teach the body's immune system to recognize and fight off the virus. By March 2021, over 107 million vaccines were administered in the United States, with over 300,000 doses administered in Montana. As of December 2022, 58 percent of Montanans are fully vaccinated, and 30 percent have received the bivalent booster.³⁴⁰ In Carter County, 32 percent of residents are fully vaccinated, and 15 percent of those have received the bivalent booster.³⁴¹ By October of 2022, a total of 68 percent of the U.S. population is considered fully vaccinated, (one dose of the Johnson & Johnson vaccine or two doses of the Pfizer-BioNTech and Moderna vaccines).³⁴² A February 2022 report to the National Rural Health Association found that 61 percent of rural adults reported as being at least partially vaccinated, with 62 percent of those having also received their booster shot. Just under half (42 percent) of rural parents and 48 percent of rural teens are fully or partially vaccinated.³⁴³

Museums and Civic Health: The "Hilleman & Vaccines" Curriculum

The weaving of history into contemporary issues "clarifies differing perspectives and misperceptions, reveals complexities, grounds competing views in evidence and introduces new

³⁴⁰ "Tracking Coronavirus in Montana: Latest Map and Case Count." New York Times (18 December 2022). <https://www.nytimes.com/interactive/2021/us/montana-covid-cases.html>

³⁴¹ "See How Vaccinations Are Going in Your County and State."

³⁴² "See How Vaccinations Are Going in Your County and State." New York Times (20 October 2022). <https://www.nytimes.com/interactive/2020/us/covid-19-vaccine-doses.html?>

³⁴³ "Vaccine Considerations in Rural America," Morning Consult, (March 2022).

ideas...[leading] to greater understanding and viable community solutions”³⁴⁴ to attain the goal of increasing public health literacy in Carter County. Museums play a critical role in promoting the civic health of their communities through education³⁴⁵ and the Carter County Museum, as discussed in Chapter Two, has a long-time relationship with educators in the community. By weaving local pandemic histories with the story of Hilleman, the museum elevated this content to the level of essential civic knowledge. A logical step to take in tandem was to “connect this content to local, state or national learning standards” through a K-12 companion curriculum.³⁴⁶ Titled “Hilleman & Vaccines: Connecting Culture to Scientific Curiosity,” this curriculum focused on a place-conscious approach to teach about the process of scientific inquiry and vaccine development, using local histories and the life of Hilleman. Weikert 2022 covers this project extensively, discussing COVID-19 and deaths from the disease as the nexus for the partnership project.³⁴⁷ In one of the interviews with teachers in the project, she quotes:

So that helps our students here to have a worldview. And programs like the Hilleman project really, really helped us expand beyond — “Yes, there's a significance to me and this place mattered because this gentleman grew up right down the road. That's the place that matters, but what he developed was for the world.”³⁴⁸

³⁴⁴ Pat Villeneuve and Amanda Martin-Hamon, “At the Heart of It: Museums and Place-Based Study in Rural Communities,” *The Journal of Museum Education* 32, no. 3 (2007): pp. 253-262, <https://www.jstor.org/stable/40479616>

³⁴⁵ Pennay, *The Civic Mission of Museums*, xii.

³⁴⁶ Ibid. p. 25.

³⁴⁷ Angela Hewitt Weikert, “Community, Agency, and Place: An Instrumental Case Study of a Relational Partnership between Rural Museum and School Stakeholders” (dissertation, Montana State University, 2022), pp. 105-172.

³⁴⁸ Weikert, “Community, Agency, and Place” (2022) p. 148.

This quote illustrates the central theme of the exhibit that it is the local place that connects visitors and students to history and makes it relevant for present day.

“Hilleman & Vaccines” took a team effort between museum staff and three local teachers: two who each taught science and math in the high school, and one who taught in the elementary school. These three teachers serve on the CCM’s Teacher Advisory Council, which was founded in 2017 after the MAIA project. One teacher shared the following regarding her involvement in the curriculum project:

I cannot express how much Carter County Museum means to this community and our school system. When [the museum director] approached me to participate in this project, I couldn’t jump at it fast enough! I am a native Miles Citian, and I was actually familiar with Dr. Hilleman to some extent, but as I learned more about him, I was shocked that he has not been widely recognized for his amazing body of work. I have watched (with, I fully admit, a little bit of jealousy) [other teachers] work with the museum on some other amazing projects, like MAIA. But what really motivated me to want to work with the museum was what my students would gain from this partnership. This project really forced me to broaden my approach beyond my narrow focus of the textbook. Our museum has become one of the best hubs for learning in our community, and I am just excited to be a small part of that!³⁴⁹

The CCM and its partners followed an intentional practice of collective impact by communicating frequently while focusing on the work that each organization does best — informal education and collections interpretations at the museums, lesson plan development at the schools, and the science of healthcare at Montana State University and Dahl Memorial.³⁵⁰ The teachers used the content from the exhibition and worked with staff at the CCM to create lessons for science and math classrooms as well as elementary school. In my capacity as

³⁴⁹ Mardee Guyer “Shots Felt ‘Round the World Virtual Exhibit Premiere.” Carter County Museum. May 28, 2021, educational video, 28:08 to 29:02, <https://youtu.be/dnjdtOPjcQk>.

³⁵⁰ Margaret Kadoyama. *Museums Involving Communities* (New York, Routledge, 2018) pp. 20-22.

executive director of the CCM, I supplied the background material for the curriculum on Hilleman's life, local and other Montana histories, and worked with staff at the Museum of the Rockies to integrate their collections from the Hilleman family into the curriculum. The Indian Education for All department of the Montana Office of Public Instruction granted the inclusion of two IEFA lessons designed for middle school audiences, which addressed pandemics and Indigenous tribes. The University of Montana School of Journalism also granted the use of their series on COVID-19 and tribal nations in Montana. Finally, I worked with professors in History and Vaccinology at Montana State University and the Vaccine Makers Project Team at the Children's Hospital of Philadelphia to ensure an expert review of the "Hilleman & Vaccines" curriculum.

The curriculum guide is broken into two units, one for elementary K-6 grades and the other for high school grades 9-12. The elementary guide is geared toward third grade students, but lessons can be adapted for younger students and there are notations on how to adapt for grades 4-6. There are five elementary level lessons designed to introduce students to topics of science, language arts, math, and social studies:

- Lesson 1: What are Germs?
- Lesson 2: How Does Our Body Fight Diseases?
- Lesson 3: Who was Maurice Hilleman?
- Lesson 4: What Were Maurice Hilleman's Contributions to Science?
- Lesson 5: How Can We Apply What We've Learned?

Each lesson was written by the elementary teacher from the CCM's Teacher Advisory Council. Their goal was to create engaging lessons that would fit grades 3 through 6 and that could be

adapted to lower primary classrooms. Each lesson featured vocabulary, hands-on activities, videos, worksheets, games, and assessments that would ensure something for everyone. Lesson One is focused on the essential question: How do we stay healthy? It begins with a reading of “Do Not Lick this Book,” which can be used to facilitate class discussion about germs. This is followed by the Glitter Germs activity, which helps illustrate how bacteria and viruses are passed among individuals. Lesson 2 is focused on the essential question: What can we do to help our bodies stay healthy? It begins with short videos on the immune system, viruses, and vaccines, followed by a class discussion. Students then read the poster “How Vaccines Work,” created by illustrator Claire Jorgensen for the “Shots Felt ‘Round the World” exhibition (Figure 49). A trip to the gym to play the game “Antibodies Attack” helps to tie the subjects together. Lesson 3 introduces students to Hilleman and other scientists that work in the field of vaccine research and development. A foldable book created by the elementary teacher for the lesson and students had the opportunity to color in the pages and work with partners to fill in the blanks.³⁵¹

The high school lessons were designed in tandem by the math and science teachers on the CCM’s Teacher Advisory Council. The science teacher gathered data and background information for all the vaccine trials in the math lessons. This gave students the opportunity to ask questions about the data and follow up with research, thus learning about the safety standards used in the development and approval of vaccines, why they are improved upon, and the risks involved.³⁵² There are six high school level lessons in the curriculum:

³⁵¹ Mardee Guyer, “Hilleman & Vaccines: Connecting Culture to Scientific Curiosity. A curriculum guide for grades 3-6 and 9-12.” MFPE Educator Conference, October 22, 2021, educational video, 15:33 to 21:37.

³⁵² Chioko Hammel, “A curriculum guide for grades 3-6 and 9-12,” 29:44 to 31:45.

- Lesson 1: Hilleman Documentary Viewing and Discussion
- Lesson 2: Graphing Scientific Data
- Lesson 3: Vaccine Efficacy
- Lesson 4: Herd Immunity
- Lesson 5: BRSV - A Math Lesson on Cattle Vaccination
- Lesson 6: Probability

Lesson 1 begins with the viewing of the documentary *HILLEMAN: A Perilous Quest to Save the World's Children*. This provides students with a background on Hilleman's life as well as the science behind the vaccines he developed. Before showing it in their classroom, the math teacher previewed the video on the eve of their own Moderna COVID-19 vaccine, again underscoring the relevance of the biographical subject to the contemporary pandemic. Prior to viewing the film in the classroom, teachers passed out the "Hilleman Community Discussion Guide" (Figure 50) to students, who were directed to complete the worksheet during the program. In Lesson 2, students used data from the Communicable Disease in Montana 2018 Annual Report from the Montana Department of Public Health to make graphs. Teachers are provided with talking points from the "Shots Felt 'Round the World" exhibition on Smallpox, Influenza and Rubella and vaccine safety and development as they relate to Montana history. Additionally, the math and science teachers designed a rubric to aid teachers in the evaluation of student comprehension. During the pilot in Ekalaka, math students completed graphs on Google Sheets (Figure 51). This lesson served to increase student proficiency in graphing, including identifying dependent and independent variables (Figure 52), which helps build a foundation for Lesson 3. In Lesson 3, students learn about the safety process for vaccine authorization, which includes the review of

every study, phase, and trial by an independent board of experts and the FDA. Background information from “Shots Felt ‘Round the World” on COVID-19 vaccines and their connection to Montana’s Rocky Mountain Labs, and the actions of Montana’s tribes during the COVID-19 pandemic were included as well. Students received copies of the data sets for the trials of several vaccines developed by Hilleman, as well as those for the Moderna and Pfizer mRNA COVID-19 vaccines. They were given 10 minutes to study this data and pose three statistical questions on the provided worksheet. Of those questions, they then chose one and presented a graph and explanation to the class. Again, a presentation rubric was included to check student comprehension. Lesson 4 addresses Herd Immunity and begins with a review of a simulation designed by NPR for a fictional virus, which is available online. This activity asks students to consider the following questions:

- What does the spread of a new virus look like?
- What does the spread of a virus look like with different vaccination percentages?
- What does the spread of a new variant look like with an existing vaccine?
- What does the threshold of herd immunity do for a population when it is met? And what is that threshold?

Lesson 6 in the high school series uses vaccine efficacy for MMR, Polio, DPT, HB and HIB to generate probabilities for eight given situations. This lesson is designed for grades 11 and 12, though students in grade 10 might also be able to complete this activity.³⁵³

³⁵³ Sharon Carroll, “A curriculum guide for grades 3-6 and 9-12,” 21:42 to 29:35.

Both lesson fives in the high school and elementary curriculum versions feature cattle vaccinations, which gives students the opportunity to apply what they have learned to a scenario that may be experienced in daily life on a ranch in Carter County, Montana (Figures 53-55). In both lessons, students are given background on Bovine Respiratory Syncytial Virus (BRSV) and Human Respiratory Syncytial Virus (RSV), the latter of which hospitalizes 144,000 adults and 57,000 children under the age of five each year.³⁵⁴

The math and elementary teachers piloted the curriculum in their classrooms at Ekalaka Public Schools in the spring of 2021. It was a featured project at the American Alliance of Museums Annual Conference in May 2021 (Figure 56) and the Montana Federation of Public Employees (MFPE) Montana Educators Association Conference in October 2021. Each educator shared stories of the impact of the lessons in their classroom in the companion video created for the virtual opening of the “Shots Felt ‘Round the World” exhibition in Ekalaka on May 28, 2021. During the MEA Conference, the math teacher shared a few tips for others who might look to include the lessons in their classroom, including a note that Lesson 1 takes two class periods to view the video and facilitate discussion. In Lesson 2, for example, students were willing to display both their successful and failed graphs, and a lot was learned in class discussion from the failed attempts. In Lesson 3, the best results came from students who combined data sets, such as the efficacies of dose one and dose two for measles, mumps, rubella and varicella or the comparison of vaccination rates for measles, mumps, rubella, diphtheria, pertussis, and tetanus. By Lesson 4, students in the pilot classroom were proficient at creating graphs and the

³⁵⁴ National Notifiable Diseases Surveillance System. Respiratory Syncytial Virus Associated Mortality 2019 Case Definition. Cdc.gov.

contemporary context of the ongoing pandemic provided for powerful discussion. For example, during the pilot of this lesson, the math teacher supplemented the activities by directing students to look at the Montana State Library’s Department of Health and Human Services site and comparing Carter County’s vaccination rate with nine Montana counties of their choice. By the time this lesson was taught in the classroom, students were able to notice a change in vaccination data from that provided in Lesson 2. To drive this point home, the math teacher recommended that others take it one step further and compare vaccination rates between the U.S. and ten other countries.³⁵⁵ Of the curriculum’s impact in the classroom, the math teacher shared the following:

We have had great discussions about what it means to be “vaccine eligible,” and we have had these conversations while just this week, one vaccine was approved for ages 12-15. What an incredible time to be talking about Hilleman’s contributions to immunization.³⁵⁶

While teaching the lessons, the elementary teacher found that the tag activity associated with Lesson 1 made for a fun game that helped the students understand the information. They chose to create the foldable book for Lesson 3 for their students as it proved to be complex for learners below fifth grade. In Lesson 4, students loved the story about Hilleman’s daughter, Jeryl Lynn, and were able to connect it to the scientific method. In Lesson 5, their favorite part were the self-portraits students created of themselves as famous scientists.³⁵⁷ In regard to the overall impact of the lessons, a teacher shared the following:

My third-grade students have been very engaged in this unit. They love the hands-on activities, and I am truly amazed at how much material they are retaining. This group of amazing educators helped me come up with lessons that I feel offer students an opportunity to learn about an important scientist, important information

³⁵⁵ Sharon Carroll, “A curriculum guide for grades 3-6 and 9-12,” 21:42 to 29:35.

³⁵⁶ Sharon Carroll, “Shots Felt ‘Round the World Virtual Exhibit Premiere,” 31:50 to 32:44.

³⁵⁷ Mardee Guyer, “A curriculum guide for grades 3-6 and 9-12.” 15:33 to 21:37.

about how we can help our bodies fight diseases, important lasting interest in museums, but mostly the important concept that THEY can make a difference in the world just like Maurice Hilleman.³⁵⁸

The science teacher noted the key to the fifth high school lesson on BRSV and cattle vaccination is the visualization of population loss evident in the pie chart and the connection between the herd immunity and vaccines.³⁵⁹

Regarding their experience of being involved with the development of the curriculum, the science teacher shared the following:

Throughout the pandemic, I am finding that students need to know more about molecular biology, especially the importance of the major macromolecules in life and how they actually affect cells, for example how animal viruses can hide themselves using a fatty envelope. Students learn a ton about macromolecules, but this curriculum gives the perfect context to reinforce those lessons and to connect students with more studies and more data. Collaborating with the math teacher helps students understand the data better and illuminates just how important math is to science.³⁶⁰

Hilleman's childhood in southeast Montana enabled local students to connect with his rural background and helped inspire interest in the field of healthcare. During the pilot of Lesson 5, several high school students gave examples of applying techniques in quarantining and vaccinating before adding new cattle to herds at their ranches.³⁶¹ Teachers involved with the pilot project shared examples of student work that included drawings of themselves as doctors. One elementary student wrote: "I want to find a cure for lung cancer so no one should deserve (sic) to go through that type of pain. I'm gonna try to learn how to become a scientist [...] it might take a

³⁵⁸ Mardee Guyer, "Shots Felt 'Round the World Virtual Exhibit Premiere," 32:50 to 33:31.

³⁵⁹ Chioko Hammel, "A curriculum guide for grades 3-6 and 9-12," 32:04 to 34:50.

³⁶⁰ Chioko Hammel, "Shots Felt 'Round the World Virtual Exhibit Premiere," 33:36 to 33:49.

³⁶¹ Chioko Hammel, "A curriculum guide for grades 3-6 and 9-12," 32:04 to 34:50.

couple years, but I will do it.” Others shared personal motivations. One for finding a cure for cancer:

I would like to make a cure for canser (sic) because one of my family members died from canser. [...] It made me sad when my family member past (sic) away. It would be fun to help people. I would have fun to be a scientist.”

Another for a cure for heart attacks:

I’m going to make a probiotic to stop a heart attack. I would do this because my grandma had a heart attack. [...] The reason I want to create this probiotic to save people that can’t be saved right now. People deserve to be saved.

During the high school pilot, students were asked whether Hilleman was correct in saying that people would have to see others suffer again from vaccine preventable diseases to realize how dangerous they were. Several high school students responded with agreement, and a few went on to add that seeing the diseases in action underscored the importance of getting vaccines.

Shots Felt ‘Round Montana: Weaving Histories in Rural Montana

In the next phase, “Shots Felt ‘Round Montana,” CCM partnered with the community healthcare organization One Health, and museums and libraries in rural areas across Montana to bring the exhibition to Chinook, Miles City, Billings, Lewistown, Glendive, Great Falls and Hardin. This was made possible by a SHARP (Sustaining the Humanities through the American Rescue Plan) project grant from Humanities Montana to CCM in 2021-2022. The project was threefold: the exhibition, which embedded public health within cultural and historical contexts in each community; a documentary film showing, which facilitated discussions between audiences and local healthcare providers; and the curriculum, which expands student understanding of scientific concepts related to vaccine development and infectious diseases. Each of these

methods encouraged critical reflection of the histories and subjects at hand, fostering an interdisciplinary awareness that can in turn forge relationships and teach people to think creatively, reason, and ask questions.

As executive director of CCM, I worked in consultation with staff at Blaine County Museum, Lewistown Public Library, Frontier Gateway Museum, Great Falls Public Library and Big Horn County Museum to create two custom exhibit panels that addressed the histories of healthcare and infectious disease in Chinook, Lewistown, Glendive, Great Falls and Hardin, respectively (Figures 57-61) The Western Heritage Center, which hosted the exhibition in Billings, paired “Shots” with their own pandemic exhibition, titled “Conquering Diseases of the Past” and thus did not need custom panels. Text and images for the panels addressing Blaine, Dawson (Frontier Gateway) and Big Horn counties were created by staff at the corresponding museum. In the case of the two libraries, I drew from archival collections at Lewistown Public Library and collections online at Montana Memory Project for Cascade County and Fergus County. I supplemented the material with newspaper articles from Montana Newspapers. The approach ensured each community spoke its history for itself, which is an important consideration in exhibit design.³⁶² The exhibit was on display in Chinook from February to March 2022, spent April 2022 in Miles City, Summer 2022 in Billings, Fall 2022 in Lewistown, and Winter 2022-23 in Great Falls. A total of 22,189 people saw the exhibition during this tour. The exhibit went on display in Hardin in December 2022 through April 2023 (Figure 62).

³⁶² Kadoyama, *Museums Involving Communities: Authentic Connections*, (2018).

The local panels remained in each host community at the conclusion of the exhibition to support continued engagement. This tour included facilitated discussions between audiences and their healthcare providers during a film showing of the documentary *HILLEMAN: A Perilous Quest to Save the World's Children*. Each of these environments encouraged critical reflection of the histories and subjects at hand, fostering an interdisciplinary awareness. A total of seventy-two people attended the film showings and thirty-six filled out the associated survey. Audience feedback indicated that the film increased awareness and knowledge about vaccines and their development, as well as introduced them to Hilleman. In each community, audiences mentioned the value of public health professionals sharing their insights with the community and answering questions about vaccine efficacy, the state of rural healthcare, and concerns about vaccine misinformation.

Across the tour of the exhibit, a total of twenty-nine people filled out the associated exhibit survey (Appendix C). Of these twenty-nine people, 77 percent identified as female, 80 percent as Caucasian, and 35 percent as between the ages of twenty-six to thirty-five (Figure 63). Participants began by identifying the location in which they saw the exhibit and their level of understanding of topics such as infectious diseases, vaccines, Montana history, local healthcare, and local history of infectious disease before viewing the exhibition. For the topics of infectious disease and vaccines, most participants selected a little or a moderate amount. Most respondents selected “a little” regarding Montana history and local healthcare. Finally, about local history of infectious disease, participants largely selected “none at all” and “a little.” The next pre-exhibit question asked whether respondents knew about Hilleman before attending the exhibit, to which 61.5% answered “no.” After attending the exhibit, the level of understanding of the topics of

infectious diseases, vaccines, Montana history, local healthcare and local history of infectious disease all increased to a majority response of “a moderate amount,” “a lot” and “a great deal,” with the most marked impact in infectious disease, vaccines, local healthcare, and local history of infectious disease (Figure 64). This data suggests that the exhibit achieved its goal of increasing individuals’ understanding by using a place-attentive perspective.

The companion K-12 curriculum “Hilleman & Vaccines: Connecting Culture to Scientific Curiosity” was taught in Blaine and Custer counties during the traveling tour of “Shots Felt ‘Round the World.” In Blaine County, fifty-seven students from four school groups attended the Blaine County Museum in Chinook and discussed local histories of pandemics as part of their classes. In Miles City, the school nurse taught the curriculum to 127 students, including K-6 in the Kinsey School, 4th graders from Lincoln, and 8th graders from Sacred Heart. The Miles City students also saw the HILLEMAN documentary. Since its publication, the curriculum has also been taught in Great Falls and is available as a free resource online.

Today, vaccines are credited with saving millions of lives. Their regulation, development and use are organized around mandates, research and testing, informed consent, and disparities in access. Vaccine mandates, particularly in schools, seek to protect the greatest number of people. Research and testing ensure that vaccines must pass rigorous safety and efficacy standards. The inclusion of diverse experts of scientific and social disciplines invites ethical discussions that prioritize safety and communication. Informed consent is part of the transparency process; however, access issues remain a challenge, particularly in rural areas. The CCM partnered with Carter County Public Health to host a Flu vaccination clinic on November 8, 2021. A total of twenty-one people attended the clinic, including several children. In the months since, the

museum has regularly partnered with Carter County Public Health to host other flu, COVID-19, and school vaccination clinics. Fifty people were vaccinated for flu and ten received the Moderna bivalent booster vaccination during the most recent clinic co-hosted by the museum in October of 2022. This is a direct example of a museum-hospital partnership to increase social impact in the community regarding physical well-being.

Conclusion

According to social scientist John H. Falk in *The Value of Museums: Enhancing Societal Well-Being* there are four aspects of well-being related outcomes to which museum experiences relate: (1) Personal, (2) Intellectual, (3) Social, and (4) Physical.³⁶³ I took these areas of well-being into consideration in drafting the “Shots Felt ‘Round the World” exhibit survey instrument. Two questions measure the impact of the exhibition, and of museums in general, on respondents (Figures 65-66). The first asked:

1. In which of the following ways did the “Shots Felt ‘Round the World” exhibition most strongly impact you?
 - a. It improved my knowledge or understanding and satisfied a personal/academic/professional interest in the subject.
 - b. I was moved emotionally and felt a strong sense of personal connection.
 - c. I was able to reflect, contemplate, and recharge.
 - d. I spent time with people and shared an experience of a traveling exhibition with local ties to the area.

Twenty-one respondents identified themselves with option A, twelve each chose options B and C, and eight people chose option D. Considering that this exhibit was a driving reason why

³⁶³ John H. Falk. *The Value of Museums: Enhancing Societal Well-Being*. (Lanham, MD: Rowman & Littlefield, 2022). pp. 8-9

respondents chose to visit the host organization, it makes sense that the first question would have the majority support among respondents and correlate to satisfying intellectual well-being (option A). The selection of option B suggests success in the exhibition design to impact individuals' personal well-being through the incorporation of place-attentive content. The choice of option C shows that despite the heavy nature of the exhibit content, respondents felt they were able to reflect, contemplate and recharge, further underlining the impact of museum exhibitions on physical well-being. Options B and C were tied for respondent selections, indicating equal value. The selection of option D by eight respondents shows a correlation to the impact on social well-being by enabling them to share an experience of the exhibit with family or friends.

The second question dealt with museums in general:

2. Of the following statements, which best describes why you visit museums generally?
 - a. To stimulate my own creativity, to reflect and contemplate, to escape or recharge.
 - b. To be moved emotionally, to experience fascinating or beautiful things, to feel a strong sense of personal connection.
 - c. To improve my own knowledge or understanding, to satisfy a personal/academic/professional interest in a subject.
 - d. To spend time with people in a nice place, to visit an attraction and learn more about the area.

For this question, eight people selected option A, ten chose option B, seven chose option D, and a majority of nineteen chose option C. Again, each of these correlates with museum impact on social well-being and the value of the experiences that they create. Like the results of the exhibit question, most respondents satisfied aspects of intellectual well-being (option C), which may be a motivating factor in choosing to attend the museum rather than other places more generally. The difference between personal well-being (option B) and physical well-being (option A) was two people, again suggesting a close correlation between those areas. Finally, the choice of

option D by seven respondents again underscores museum attendance as a social activity, however its placement in the bottom of both survey responses suggests competition from other social organizations (i.e., third places such as coffee shops, restaurants, bars, sporting events, etc.) in this aspect of well-being.

Together, these findings from the “Shots Felt ‘Round the World” survey indicate the exhibit’s success in increasing visitor knowledge of local histories and underscore the impact of museums to visitor well-being, both of which contribute to increased community vitality.

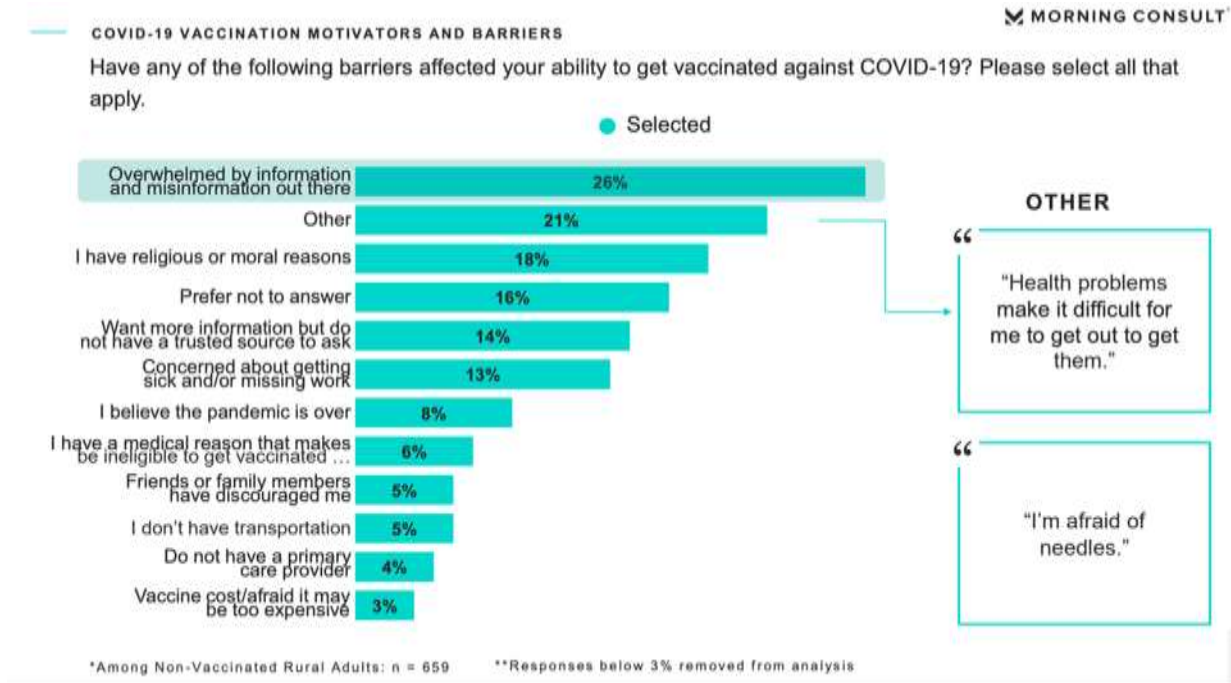


Figure 42. COVID-19 Vaccination Motivators and Barriers. February 2022 Report to National Rural Health Association.



Figure 43. Local panel on display at Dahl Memorial Clinic (Ekalaka, Mont.). Photo by Sabre Moore (2021).

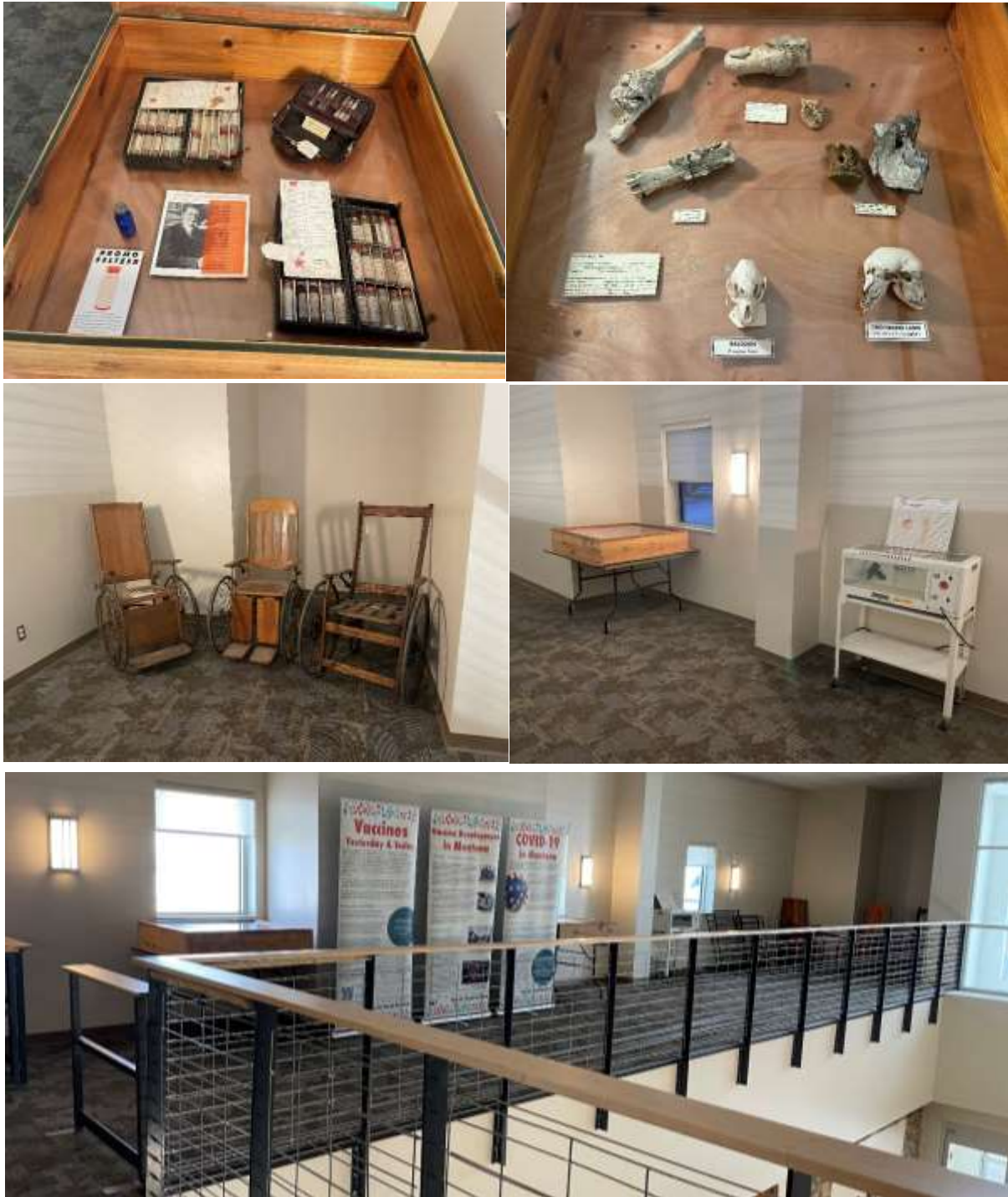


Figure 44. Satellite CCM exhibits at Dahl Memorial Hospital (Ekalaka, Mont.). Photo by Sabre Moore (2023).

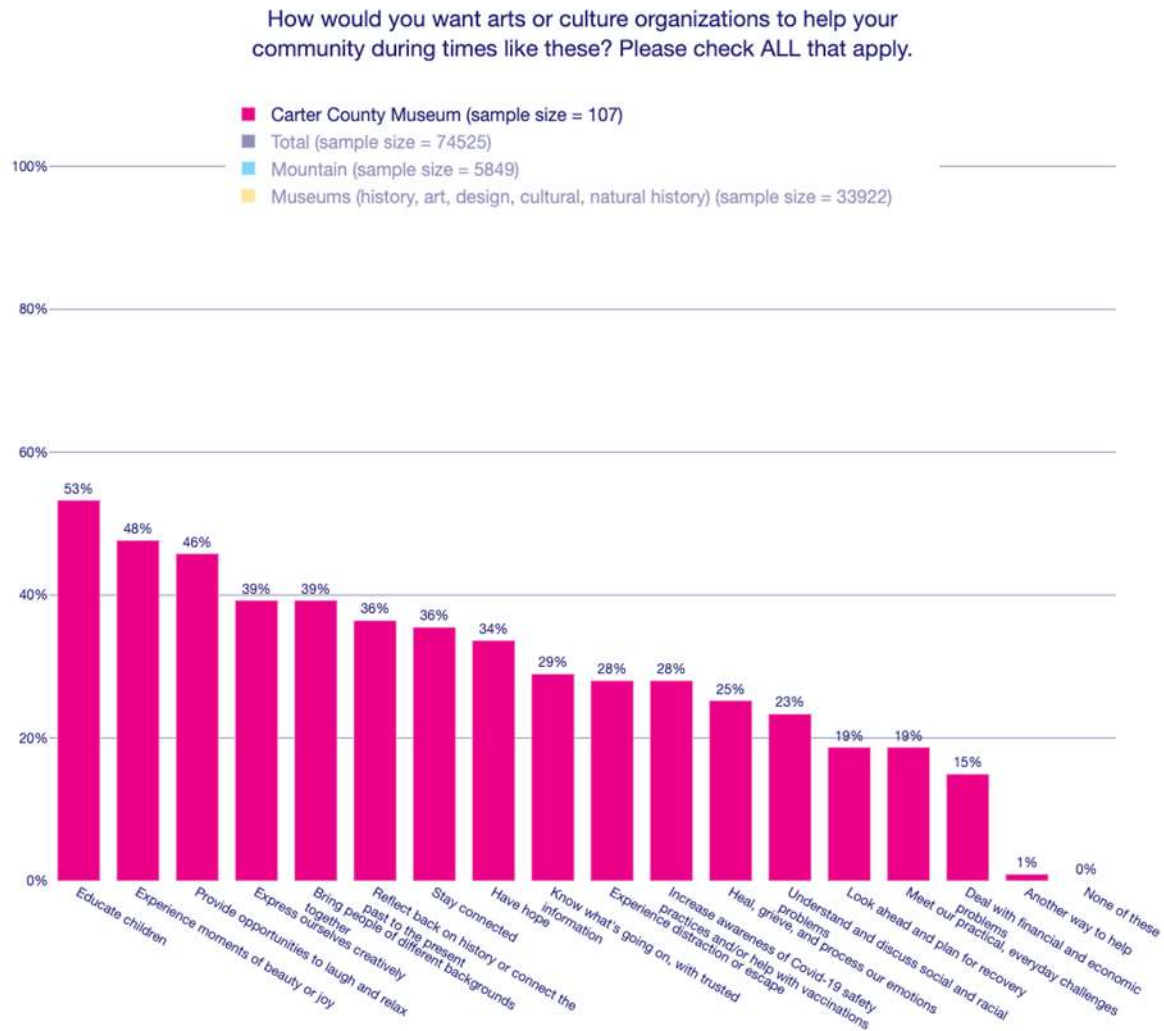


Figure 45. Results from Carter County Museum respondents during the second wave of the survey “Culture & Community in a Time of Transformation: A Special Edition of Culture Track” conducted from April 5-30, 2021.³⁶⁴

³⁶⁴ Culture + Community in a time of Transformation: A Special Edition of CultureTrack,” LaPlaca Cohen, November 23, 2021.

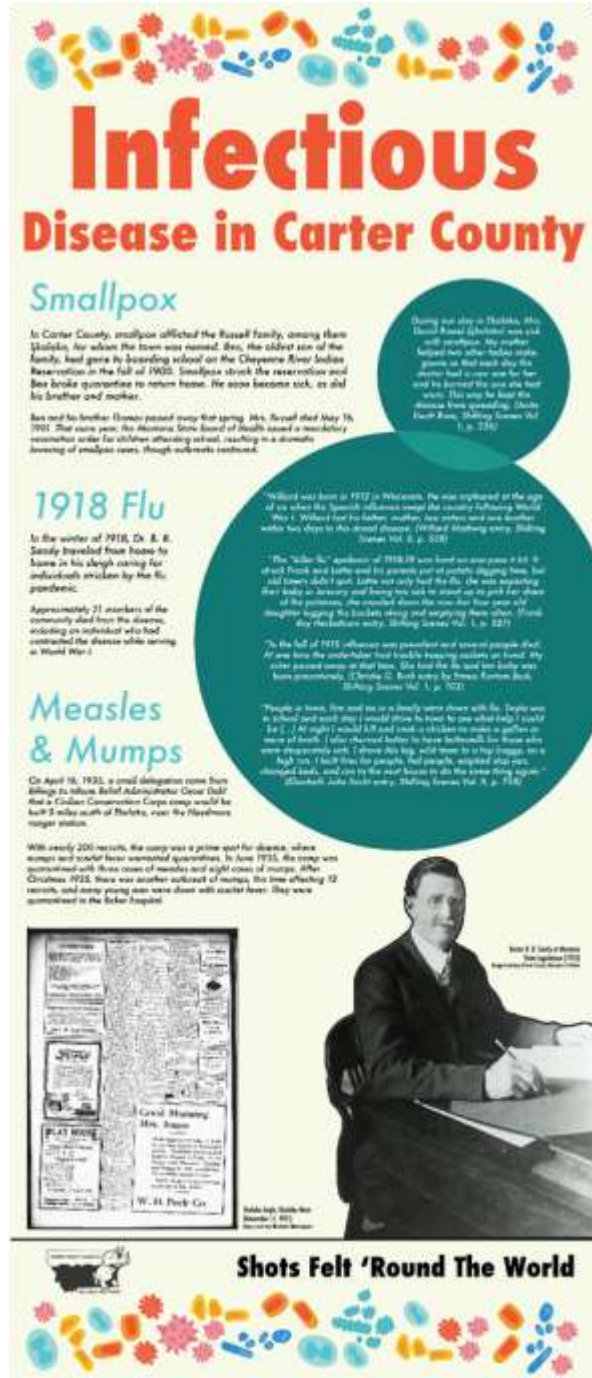


Figure 46. Local panels on Healthcare and Infectious Disease in Carter County designed by Sabre Moore with reference to materials in the Carter County Museum Archives, Montana Memory Project, and Montana Newspapers.

March of Dimes Reports Rare Case: A Twin Is Spared Her Sister's Fate

Screaming sirens pierced the quiet of a cold winter night three years ago, waking the Schmidt household and sending Joanne, older of the five-month-old twins, into a screaming session of her own.

But Carol Anne, "the little one," slept through all the noise. "It was then that we really knew," recalls Mrs. John L. Schmidt of Long Island City, N. Y. "My husband and I had always suspected, but never really admitted to ourselves, that 'the little one' couldn't hear."

The blonde, blue-eyed Schmidt twins were born a minute apart on Columbus Day, 1964, but the difference between them is much more than a mere 60 seconds.

Their mother was stricken with German measles (rubella) early in pregnancy—so early that at the time she did not even know she was pregnant. The rubella virus caused Mrs. Schmidt only temporary discomfort and apparently left Joanne unaffected.

But for the other developing twin, Carol Anne, the result was tragic. She has suffered from near-total hearing loss since birth. Moreover, she has a heart defect and her general physical development has been slower than that of her sister.

What happened to the Schmidt twins is rare, if not unique.

"I have seen some cases where both twins were affected," the physician-in-charge of the March of Dimes-financed Rubella Birth Defects Evaluation Project at New York University Medical Center said in a recent interview, "but this is the first case I have seen in which one twin has been spared."

The physician is Dr. Louis Z. Cooper, assistant professor of pediatrics at the university, who has examined the Schmidt twins and hundreds of other congenital rubella victims as part of the March of Dimes project.

The day a woman gives birth is, to say the least, filled with emotion and expectation. On that October day in 1964, the emotional stress on Eleanor Schmidt was particularly intense.



THESE TWINS are a medical mystery. Joanne Schmidt, right was born healthy, but Carol Anne was born with physical defects caused by German measles (rubella). With them is Dr. Louis Z. Cooper at March of Dimes Rubella Birth Defects Center.

"We had no idea of what to expect. The doctors told us what rubella could do if contracted early in pregnancy. After the girls were born, we were just grateful it wasn't more serious," Mrs. Schmidt said.

She recalled that at birth Joanne was two pounds heavier and two inches longer than Carol Anne. Now the older twin is 12 pounds heavier than her sister.

"The little one," who wears a hearing aid in each ear, has been enrolled for half her young life in an auditory training program. She also attends speech therapy class and sees several specialists regularly.

To help prepare Carol Anne for school, Mrs. Schmidt keeps a special album of photographs from newspapers and magazines. She has helped her

daughter develop a vocabulary of 150 words from photos of houses, cars, boats, etc.

"Joanne has been a big help, too," Mrs. Schmidt points out. "The little one follows her in everything, eating, walking. Of course, she's not as well coordinated as Joanne. You can see that from her knees. They are forever scraped from falls."

Step-by-step the Schmidt family overcomes each new difficulty. They are not alone. The twins were born during one of the most severe rubella epidemics in the history of this country. In New York City alone, there were an estimated 200,000 cases in 1964.

Experimental vaccines to prevent rubella are now being tested, and authorities have expressed hope that an effective vaccine will be available within the next few years.



FIGHTING THE MUMPS—Little David Kefauver, son of the Democratic Presidential aspirant, Sen. Estes Kefauver, follows his mother's example and prepares to swallow his pill. Mrs. Nancy Kefauver has halted campaign activities for her husband to carry on a campaign of her own at home—against the mumps. Three of the four Kefauver youngsters are suffering from the disease. Baby Gail, 18 months, holds the medicine bottle for Mommy, as Diane, 4, awaits the cue for her to down the little white pill. The Kefauvers' fourth child, 10-year-old Linda (not shown), isn't ill; she had mumps several years ago.

6 WOTANIN WOWAPI JUNE 23, 1980

German measles harmful to unborn

The new statewide immunization law will require all school children from kindergarten through the 12th grade to be immunized against six childhood diseases. There have been a number of outbreaks of many of these diseases throughout the country and Montana. Recently there were three suspected cases of Rubella (German Measles) in this community. This can be alarming considering the harmful effects this disease can have on unborn infants if its contracted by a mother during pregnancy.

Rubella or German Measles is a mild febrile infectious disease with a characteristic diffuse macular rash sometimes resembling that of measles, scarlet fever or both. There may be few or no constitutional symptoms in children but adults may experience a 1-5 day prodrome characterized by a low grade fever, headache, malaise, mild coryza and conjunctivitis. As many as 20-50% of infections may occur without evident rash.

Congenital Rubella Syndrome occurs among 20-25% or more of infants born to women who have acquired rubella during the 1st trimester of pregnancy, with decreasing frequency thereafter. This syndrome includes many birth defects as cataracts, microcephaly, mental retardation, deafness, patent ductus arteriosus with other cardiac defects. Moderate and severe cases of congenital rubella syndrome are immediately recognizable at birth; mild cases may not be detected for months or years.

The infectious agent is the rubella virus. The mode of transmission is through the nasopharyngeal secretions of infected persons. Infection is by droplet spread or direct contact with patients or presumably by indirect contact with articles soiled with nose and throat discharges. Infants with congenital rubella syndrome excrete the virus and serves as sources of infection to their contact.

The incubation period or time interval between exposure to the virus and the first sign of the disease is 14-21 days. The communicable period or time during which the virus may be transferred from an infected person to another person is for about 1 week before and at least 4 days after onset of rash.

Therefore rubella vaccine should be administered as one dose of live rubella vaccine given after the first birthday. The vaccine is given to women in the childbearing age if serological tests indicate susceptibility and if there is reasonable likelihood of no pregnancy for the next 2 months.

Diane Weeks
Community Health Nurse
PHS Indian Health Center
Poplar, MT

Figure 48. Clockwise from left: Big Timber Pioneer (1968), Wotanin Wowapi (1980), Dillon Daily Tribune (1952) coverage of rubella and mumps epidemics in Montana towns.

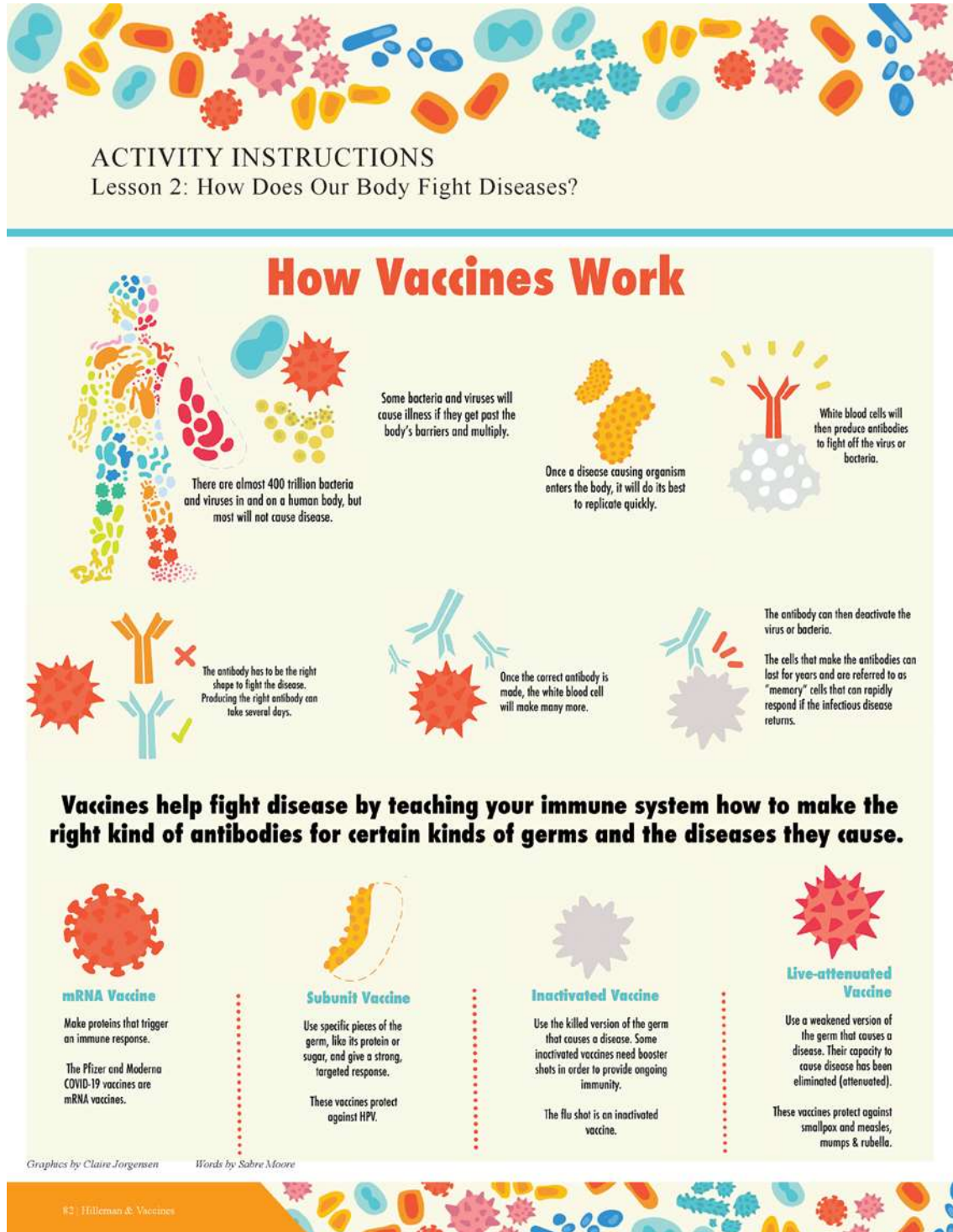


Figure 49. "How Vaccines Work" Illustration by Claire Jorgensen adapted for "Hilleman & Vaccines" Curriculum, p. 82.



HILLEMAN Community Discussion Guide

Use this guide to facilitate a book club style audience conversation. Questions can help focus the conversation on the wonder of scientific discovery and the positive impact of vaccines on public health.

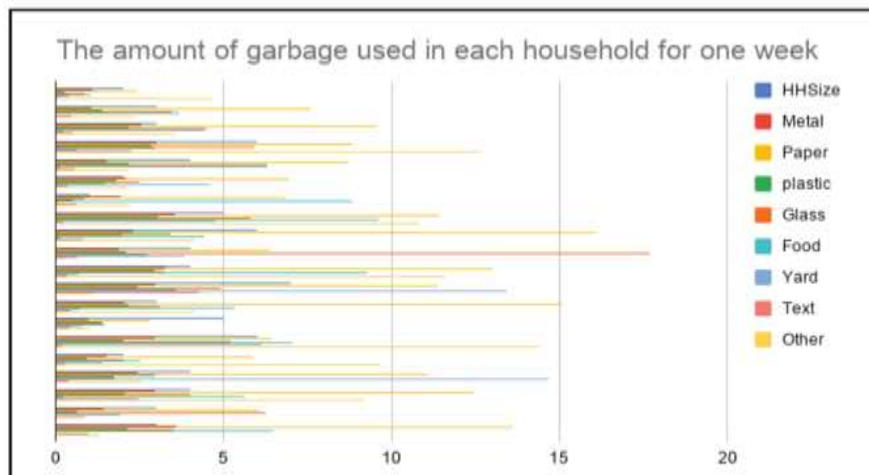
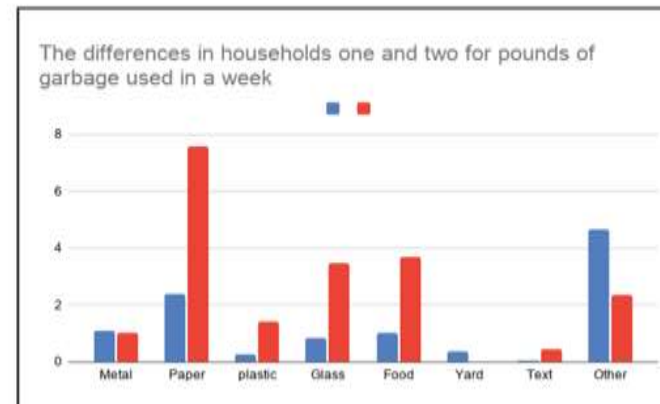
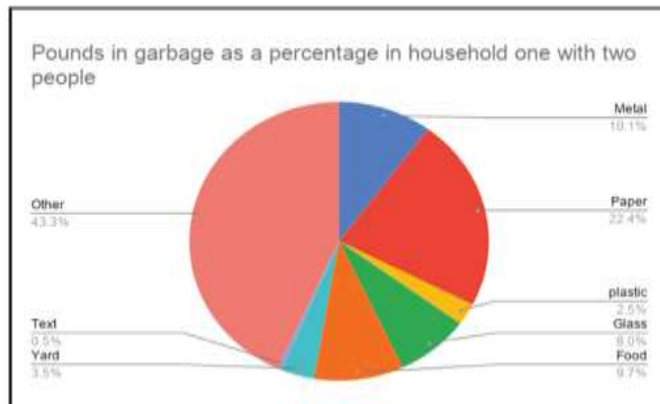
- What surprised you the most about the film?
- Were you already familiar with all of the different diseases and their effects that were shown in the film? If not, which diseases did you not know much about and why do you think you didn't know about them?
- What were some moments in the film that stood out to you? Why?
- What moments in Dr. Hillman's life do you think were most pivotal for him? How do you think the story of his life would have changed had those episodes or events not taken place?
- How important is the setting and time period to the story of Dr. Hilleman's life and work? Do you think his story would have played out the same way in a different setting or time period?
- How important a role do you think Dr. Hilleman's personality played in his ability to achieve his goals?
- Were you surprised by the way that Dr. Hilleman and other scientists in the film talked about vaccine safety? What struck you about their behaviors concerning vaccine safety?
- Dr. Hilleman expressed his belief that some vaccine preventable diseases would have to make a resurgence for people to realize how dangerous they are. Do you agree or do you think there are other ways to help people realize how dangerous the diseases can be?

To keep the discussion focused on the film, questions about vaccines or vaccine safety can be directed to the Vaccine Education Center (VEC) website which provides complete, up-to-date and reliable information about vaccines and the diseases they prevent.

vaccine.chop.edu



Figure 50. Community Discussion Guide for “Hilleman & Vaccines” Curriculum high school Lesson 1, p. 150.



SAMPLE GRAPHS FOR STUDENT CREATED DATA

Note: This student is a freshman and used the same data for all three types of graphs.

Figure 51. "Hilleman & Vaccines" Curriculum high school Lesson 2 example, p.161.



6. Create your own data and make a line graph

Instructions:

Make a bar graph of the following data. Make sure you include a title, labels for both axes, labels for the categories, and a color key. (COVID-19 Vaccination Data from Montana Department of Public Health, April 9, 2021.)

Montana County	Number of Eligible Population Fully Immunized	Total Eligible Population
Blaine	1654	4910
Carter	201	1003
Dawson	1795	6944
Gallatin	18017	94211
Garfield	218	1001
Hill	3686	12328
Liberty	462	1917
Musselshell	649	3895
Phillips	831	3113
Teton	1000	4810
Valley	1411	5917
Wheatland	340	1722

7. What are the dependent variables? *Eligible number of people and the number of fully vaccinated people.*

8. What is the independent variable? *The Montana County.*

9. Create your own data and make a bar graph.

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Figure 52. “Hilleman & Vaccines” Curriculum high school Lesson 2 example, p.159.

BRSV in Cattle

The human virus RSV can cause severe problems for children under 10 months of age. Cattle can be infected with a similar virus called BRSV. There is a vaccination that many ranchers give to their cattle to prevent BRSV. What would happen if they didn't?

1. You own 90 heifers. They are NOT vaccinated for BRSV.
2. You bought 10 more heifers. How many do you have now?

90+10=_____heifers

3. Oh no! One of your new heifers has BRSV. You will receive a piece of paper from your teacher telling you the fraction of your cows that have died! Use the array of heifers on the other side of the paper to make groups to represent your fraction.

_____ of 100=_____ dead heifers

4. Complete the bar graph on the board.

5. Since BRSV is a respiratory virus, how can it spread? _____

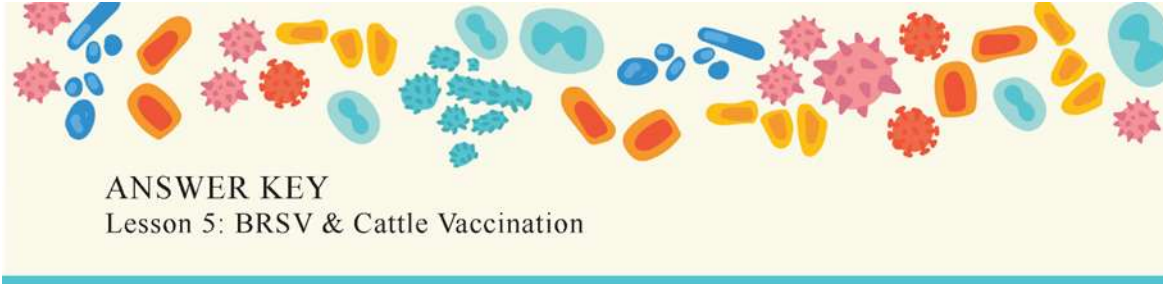
6. How could you prevent your heifers from catching BRSV from a contagious heifer?

7. If heifers were worth \$500 apiece, how much money would you lose

_____ dead heifers x \$500 = \$_____



Figure 53. “Hilleman & Vaccines” Curriculum elementary Lesson 5 example, p. 137.



STUDENT WORKSHEET - TEACHER ANSWER KEY

1. On your ranch, you have 90 heifers and you have just purchased 10 more heifers at the sales barn and brought them to the ranch.

If your students are more advanced, change these numbers to be more challenging than 100. On a blank worksheet, fill in the numbers you want before making copies.

2. Choose a **percentage** from your teacher. Write your **percentage** below.

Use 5, 10, 15 and 20% as random draw choices. You could use fractions instead of percentages if you want your students to compare different fractions. The percentages students choose from should be between zero and twenty percent because that is the mortality rate for BRSV. On the blank worksheet, write in percentage or fraction on the blanks before you make copies. If you want them to draw from a hat, be sure and have them ready.

3. One of the new heifers has BRSV. Now, _____ percent of the herd you have chosen, has died. Have your teacher check your math. Use Google Sheets or another program to create a pie chart to represent this. Make sure you label your categories and give the graph a title. Include a legend or labels where needed. Show your math here.

Number of Deaths = _____

This can be done using a Google Sheet which is shared to the entire class. Each group could have their own page so that if you pull it up on the board, all of the graphs are there and students can compare graphs. However, if you are worried about copying or tampering, this is not the best choice. The teacher can easily pull up separate Sheets for each group. On the blank worksheet, write in percentage or fraction on the blank before you print.

Chart Example:

Percent of Unvaccinated Cattle that Died due to Exposure to BRSV	
Status of Cattle	Percentage of Healthy or Dead Cattle
Healthy	76
Dead	24

Percentage of Healthy or Dead Unvaccinated Cattle due to Exposure to BRSV

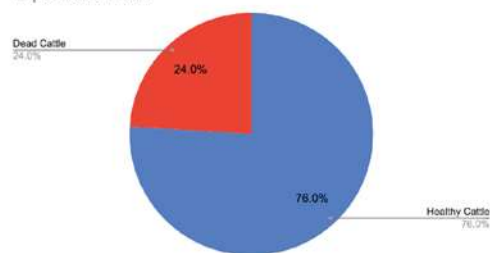
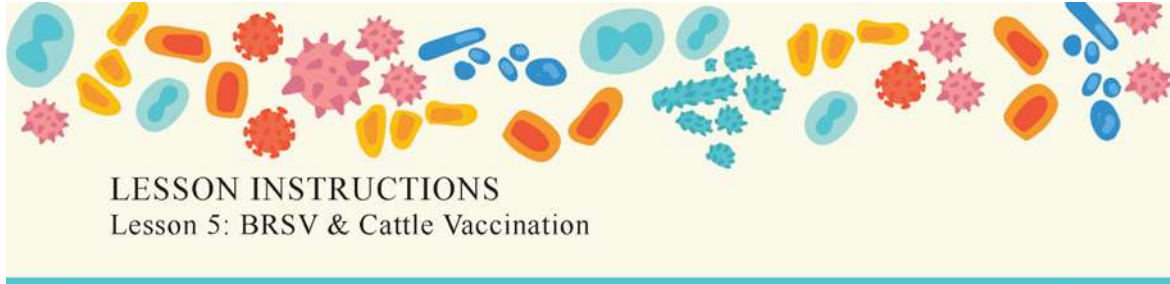


Figure 54. “Hilleman & Vaccines” Curriculum high school Lesson 5 examples, p. 186.



4. Brainstorm in which ways can this virus spread and spread easily amongst cattle? Write your ideas here.

Stressed cattle are more likely to acquire infections. Stressors can be transportation, being mixed with new cattle, being over-crowded, poor husbandry, and mixing age groups. The virus spreads through respiratory and nasal droplets and in the air.

5. Make up a scenario where you describe how your new heifers were introduced, transported, and housed to cause the kind of disease spread you witnessed. Write about your scenario here and be prepared to present it to the class.

If they had a high mortality rate, they may have let the new cattle out immediately into the pasture with the others. They may have had all of them in the corral together. The cattle may have been stressed after a long transport, or they may have all been mixed together in a closed area with poor ventilation. They may also consider the cleanliness or sharing of the water source or feed.

6. Now, you are beginning with a herd that is vaccinated but the vaccines had different percent efficacies. Choose your percent efficacy (between 50-75%) and write it below. Now, there is one new heifer that has BRSV. Predict how many heifers will be lost by using the mortality percentage or fraction that you drew above. Show your math below.

Percent Efficacy: _____

Number of cattle you could expect to lose: _____

Again, you can start with different numbers of cattle. Students will need to use the mortality rate that they drew above when calculating. If the vaccine had 75% efficacy, 25% of the cattle could catch the virus, and whatever percentage of those you drew above will die from BRSV.

7. Make another pie chart on the same spreadsheet, which shows the percentage of cattle that died when you started with a vaccinated herd.

Here is an example.

Percent of Unvaccinated Cattle that Died due to Exposure to BRSV	
Status of Cattle	Percentage of Healthy or Dead Cattle
Healthy	95
Dead	5

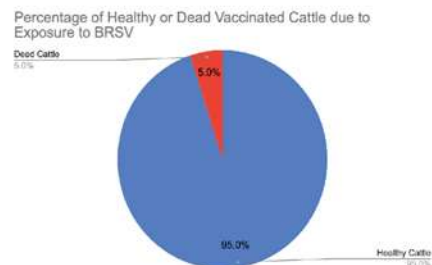


Figure 55. "Hilleman & Vaccines" Curriculum high school Lesson 5 examples, p. 187.



Hilleman and Vaccines: Connecting Culture to Scientific Curiosity

Authors: Sabre Moore (Project Manager), Angie Weikert (Editor), Sharon Carroll (Math Teacher), Mardee Guyer (Elementary Teacher), Chioko Hammel (Science Teacher)



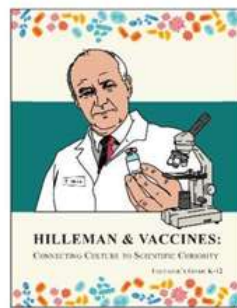
The Project

Since establishing an official sister relationship in 2013, the Carter County Museum and Museum of the Rockies have collaborated on several curricula, including "MALA: Math and Agriculture In Action" and "Our Home, Our World, Investigating Earth and Space Science in Kumamoto and Montana." Together, these projects have reached over 6,000 students in Montana and Kumamoto, Japan, fulfilling our mutual goal of educational outreach. "Hilleman & Vaccines" is the next step in that collaboration, providing a high impact learning tool to reach residents of rural Montana with a public health story that is place-conscious and timely in this era of global pandemic.

About 9.3 million public school students in the United States attend a rural school, and Montana has the highest share of rural schools of any state. This project supports those students by incorporating local knowledge and expertise from the rural community of Ekalaka in southeastern Montana, ensuring the curriculum's relevancy in the classroom.

The Guide

This guide is divided into four categories: Background Information, Indian Educational for All Connecting Resources, Elementary (grades K-6) and High School (grades 9-12).



ELEMENTARY LESSONS

What are Germs?

How Does our Body Fight Diseases?

Who was Maurice Hilleman?

What were Maurice Hilleman's Contributions to Science?

How Can We Apply What We've Learned?

HIGH SCHOOL LESSONS

Graphing Scientific Data

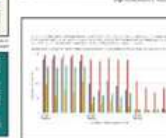
Vaccine Efficacy

Herd Immunity

BRSV & Vaccines

Probability

Sample Materials



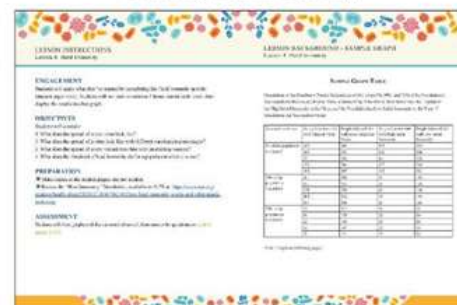
Including Diverse Voices



Connection to Place



Building Health Literacy



Companion Exhibition



Testing and Evaluation

The lessons were designed by a group of teachers from the elementary and high school level, who piloted the curriculum in their classrooms in Ekalaka, Montana during spring 2021. Content background was provided by Carter County Museum in consultation with Montana State University and Museum of the Rockies.

Next Steps

Carter County Museum and Museum of the Rockies will contact teachers, send the curriculum and share how to use it in the upcoming 2021-2022 school year. The exhibition: "Shots Felt Round the World: Maurice Hilleman and the Montana Origins of the Fight Against Pandemics", produced by the Carter County Museum, will begin traveling to rural communities in Montana in 2022.

Acknowledgements

A very special thank you to the Montana State University Outreach & Engagement Seed Grant program for funding this project, to Montana OPI for use of the HEPA lessons, and the Hilleman Family.



Figure 56. Poster describing "Hilleman & Vaccines" K12 curriculum, presented at American Alliance of Museums Annual Meeting (May 2021).



Figure 58. Local panels designed by Sabre Moore in consultation with Frontier Gateway Museum.

Healthcare in Big Horn County

1840-1850 - Smallpox epidemics found their way to Crow country. The tribe suffered a staggering population loss. The tribal population, estimated at 10,000 in 1830, declined to approximately 2,000.

1910 - Elvire Gilmore had the 1st hospital in Hardin. Doctors performed operations on her dining room table at her home on the corner of 5th and Crow.

1913 - Dr. Richards sold his home and good will to Dr. Orville Swell "D.S." Heverfield. Heverfield was born and raised in Assumption, Illinois. He came to Montana and married a young woman who grew up in Musselshell.

1914 - Dr. O.S. began construction of hospital on 3rd street. Dr. W.A. Russell moves to Hardin from Huntley, served as the County Health officer.

1915-1916 - Dr. O.S. opened Heverfield General Hospital, aka Hardin Hospital. 1st superintendent was Miss Mary O'Keefe. There was a single R.N., Lucille Dow who later became 2nd superintendent. Later Dr. O.S. sold hospital to Lucille.

1926 - Hospital closed for a few years, reasons unknown.

1928 - Mrs. John Shreve (Mrs. A.M. Crilly), leased the hospital and became superintendent.

1929 - Dr. Lysle Heverfield and Dr. George Baker served at the hospital. Labbitt Hospital owned and operated by Dr. Labbitt on 3rd street directly across from the present day court house. The building no longer exists. Doctors in Hardin: Dr. Wolf, Osteopath, office for patients near library. Anna Dygert had a birthing home, as did Elvire Gilmore. Hospital closed again until Dr. Labbitt bought the building. Mrs. Lucy Winn and Miss Hazel Brown were his superintendents.

April 22, 1943 - An issue of Hardin Tribune stated that Kendrick House opened as an emergency hospital under the supervision of Lucy A. Winn, R.N. Nurses Dee Atkins Smith, Dr. Shubert was the doctor on duty. Dr. M.O. Anderson ran a private hospital and clinic on Center Ave. between the Ford garage and 1st Interstate bank. Dr. Yates operated a clinic where the Stage store is now located.

1945 - July 25 - Chamber of Commerce sponsors plans to purchase Heverfield General Hospital, aka Hardin General Hospital. September 18 - A group of men met in the Community Room of the Courthouse to discuss collecting money with which to take over the Hardin General Hospital and operate it as a community hospital. From this the Big Horn County Community Hospital Association was formed. October - BHC Hospital Association made arrangements with Mabel Simmons to continue as superintendent of the hospital as she was for Dr. Labbitt.

1956 - April 28th - The BHC Community Hospital Association held their annual meeting of the stockholders. At meeting they decided to turn the hospital over to the county.

1957 - March 7th - A new county board was established. The concept of building a new hospital was discussed but the county would do it. The BHCCHA would like to run the hospital as an "old folks' home." The Association turned over equipment to county for the new hospital that wouldn't be needed at the nursing home.

1959 - Big Horn County Memorial Hospital opens.

1960 - September - The BHCCHA discusses leasing the "old folks' home" to the Lutheran Hospitals and Homes Society of America, Inc. of Fargo, ND. October 10th - The BHCCHA decided to operate the "old folks' home," new name Mountain View Rest Haven. Mrs. Ursula Zelka was manager.

2012 - Big Horn Valley Health Center founded in Hardin, Mont. Merges with OneHealth in 2018.

2021 - OneHealth Big Horn opens Campus clinic.

Big Horn County
Historical Museum
Hardin, Montana

Humanities MONTANA
Shots Felt 'Round Montana

Infectious Disease in Big Horn County

Smallpox

One of the deadliest infectious diseases ever seen in North America was Smallpox. This is a disease that's been around since the first set of English settlers came to the Americas and lasted until its official eradicator in 1980. Smallpox hit Montana in Waves, according to an article in the Billings Gazette that it was possible the Crow had picked up the disease from trading horses with the Shoshone. One account from 1805 by a fur trader, who spoke with members of the Crow, was told that there was a population decrease going from 16,000 to 4,000. Another epidemic happened in 1883 which led to an even further decrease from 800 lodges to 360 lodges. The Hardin Tribune constantly reported cases throughout the 20th century further showing the never ending battle over the disease until a proper vaccine was created.

The Hardin Tribune, Excerpt from a notice by Co Health Officer W.A. Russell.

"Where a case of smallpox is reported to the health officer (and all cases must be reported), the health officer must place a sign bearing the words 'Smallpox Here' on the house where such disease exists. The patient that is suffering from smallpox is prohibited from leaving the premises until the stage of desquamation is complete and his or her person has been in the manner prescribed in regulation 21." (The Hardin Tribune (Hardin, Mont.) Feb. 13, 1920.)

1918 Flu

The Spanish influenza pandemic of 1918 hit the U.S. hard, especially Montana, with a 1% population decrease during the 10 month epidemic. Coming in fourth most affected state by the virus, the people of Montana struggled to keep up with the rising numbers of ill and dying. Part of the problem with this strain of flu was that it mainly attacked the younger, seemingly healthy population of people who were living or moved to Montana to start a life on the western front. Rural and smaller communities in Montana were hit the hardest, due to a lack of medical aid, minimal nurses and physicians, "To accommodate the increasing number of cases communities converted public buildings into hospitals."

"Hardin and vicinity has been hit by the Spanish influenza epidemic and it is probable that there are fully 200 cases, the majority in very mild form, while several are quite severe...The Hardin physicians are kept busy day and night and it is difficult to get nurses." (The Spanish Flu Hits Harding Hard. The Hardin Tribune (Hardin, Mont.) December 5, 1918.)

The Hardin Tribune, December 5, 1918, quotes from an article outlining federal guidelines from the Surgeon General of the Public Health Service, on how to prevent other respiratory diseases and lower the flu numbers.

"U.S. Health Service Issues Warning: Increase in All Respiratory Diseases After the Influenza Epidemic Probable. Influenza Expected to Lurk for Months...How to Guard Against Pneumonia. Common Colds Highly Catching-importance of Suitable Clothing-Could Save 100,000 Lives."

"The important thing is right living, good food and plenty of fresh air." Quote from Report Blue, U.S. Surgeon General.

In order to combat the growing infection rate, Big Horn County posted a closure of all schools, theaters or public gathering locations and people were strongly urged to stay inside. Big Horn County was one of the communities that was hit exceptionally hard as shown in the Hardin Tribune November 1, 1918, when there were 6 obituaries posted of individuals who died of flu or flu related illnesses such as pneumonia. While the newspaper did try to remain positive and post its normal news along with national news, much of the newspaper was overrun by obituaries.

Tuberculosis

Tuberculosis, a horrid disease that preys on a person's respiratory system and left untreated can be deadly. There have been reports of tuberculosis outbreaks in the U.S. since 1895 and even today there are still reports of cases. In Big Horn County, MT, according to The Hardin Tribune as of January 04, 1918, there were more than 4,000 reported cases and few nurses or doctors to spare in helping those infected. Some of the worst numbers of tuberculosis outbreaks came from the Crow reservations, according to a survey done between 1926-1930 by the Indian Board of Affairs and Montana State Health Department. Native Americans on the reservation at this time were 15 times more likely to contract the disease and with few medical treatment options available on the reservation for them would die from it rather than recover. One way that the county found ways to raise awareness about tuberculosis was through the sale of Christmas seals to local communities through the Montana Tuberculosis Association, which was a branch of the Tuberculosis association established in 1894. The association helped spread awareness and helped fund clinics specifically for the testing and treatment of tuberculosis.

Big Horn County
Historical Museum
Hardin, Montana

The Hardin News, Hardin, Mont (November 1912)
Image courtesy: Big Horn County Historical Museum

Humanities MONTANA
Shots Felt 'Round Montana

Figure 59. Local panels designed by Sabre Moore in consultation with Big Horn County

Figure 61. Local panels designed by Sabre Moore with reference to materials from Great Falls on Montana Memory Project and Montana Newspapers.



Figure 62. “Shots Felt ‘Round the World” on display in communities around Montana as part of a SHARPS project grant from Humanities Montana. Top row (left to right): Chinook, Billings, Great Falls. Middle: Lewistown. Bottom (left to right): Hardin and Miles City. Made available through the Carter County Museum Archives.

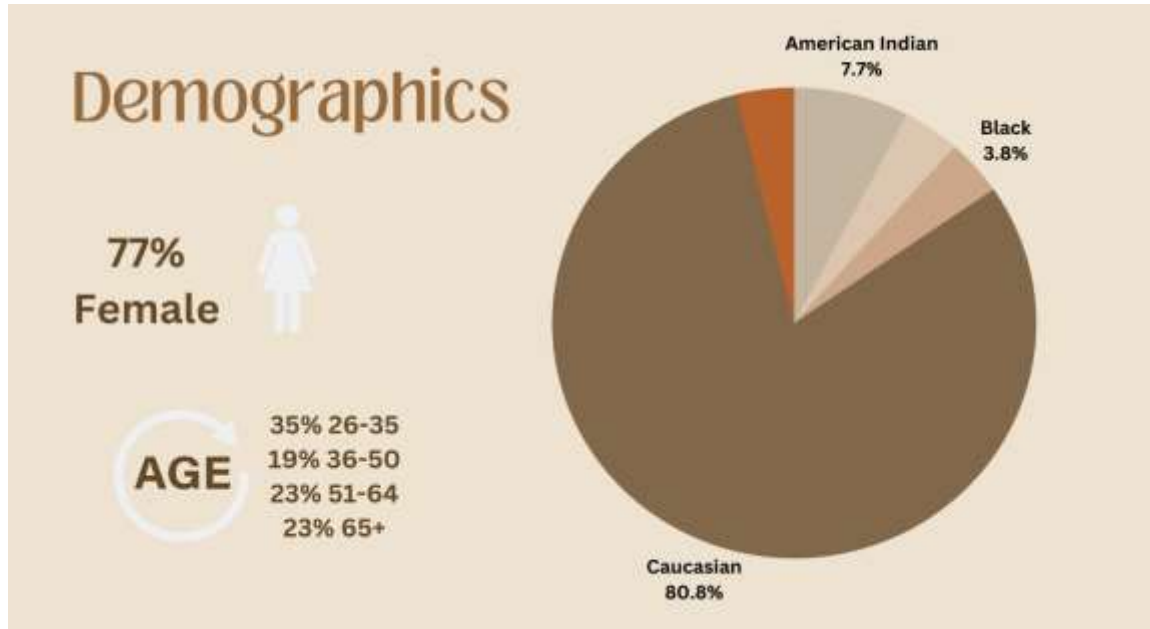


Figure 63. Chart depicting demographics of survey participants during the tour of the “Shots Felt ‘Round the World” exhibit through Montana (2022-23).

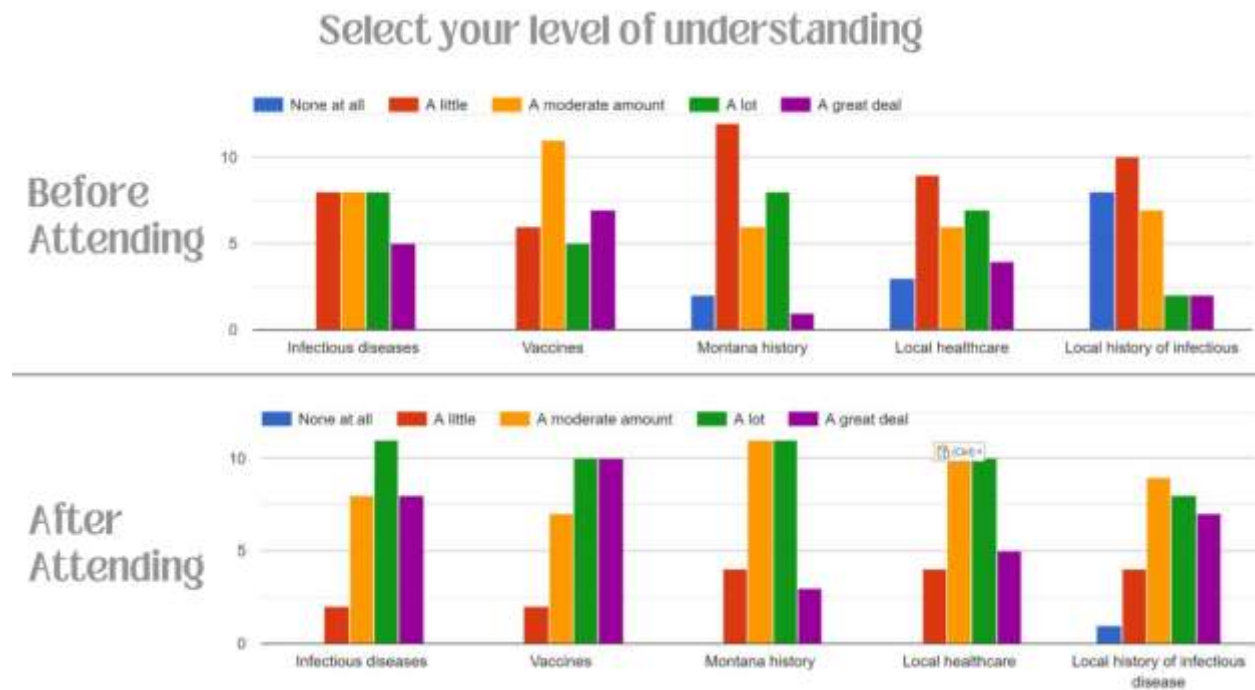


Figure 64. Chart summarizing the level of understanding selected by survey participants regarding specific subjects before and after attending the “Shots Felt ‘Round the World” exhibit during its tour through Montana (2022-23).

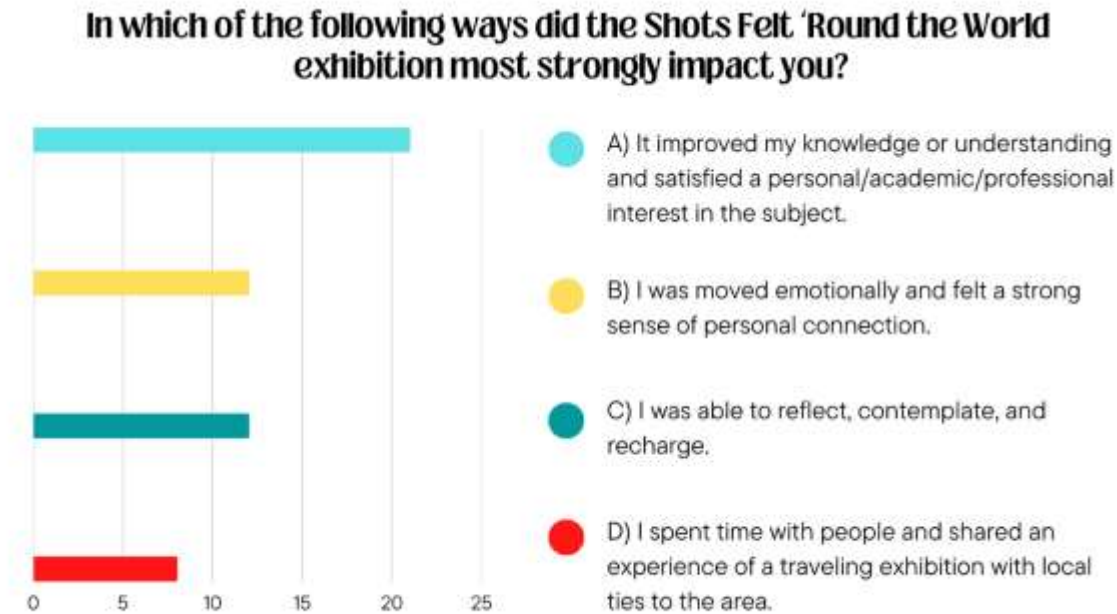


Figure 65. Chart summarizing type of impact selected by survey participants after attending the “Shots Felt ‘Round the World” exhibit during its tour through Montana (2022-23).

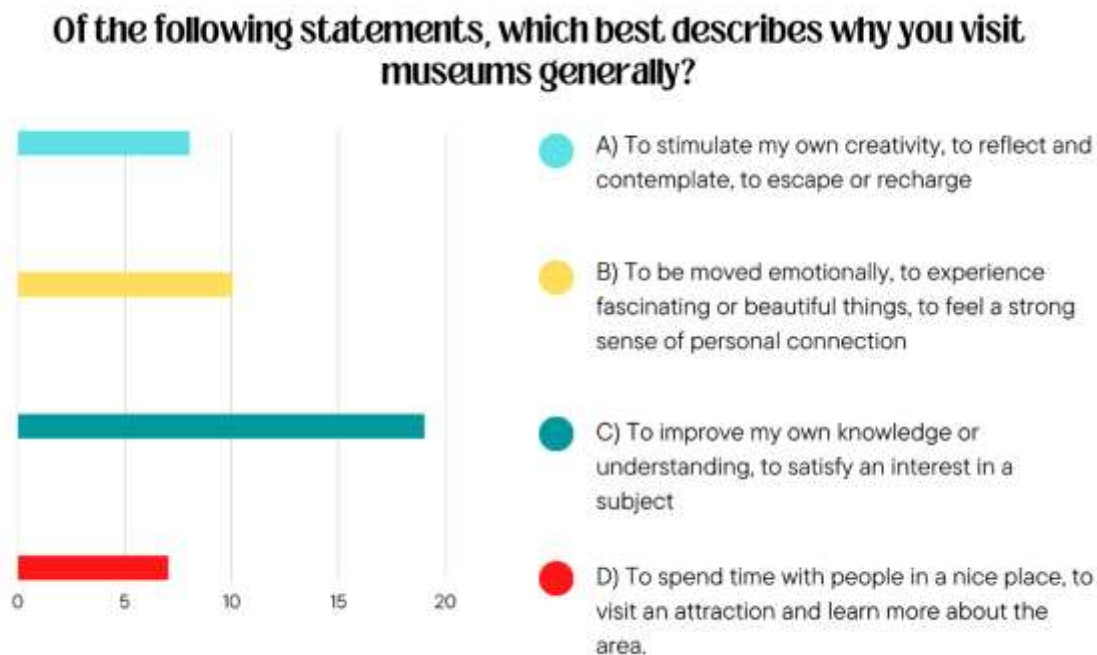


Figure 66. Chart summarizing reasons why survey participants visit museums as identified during the “Shots Felt ‘Round the World” exhibit during its tour through Montana (2022-23).

CHAPTER SIX

CONCLUSION

In 2021, the Carter County Museum participated in the Measurement of Museum Social Impact Study, which provided the opportunity to measure the CCM's impact on the social fabric of its community through the participation of visitors of local, national, and international origin. At the time, museums were still dealing with the challenges of operating during the COVID-19 global pandemic. The board and staff of the Carter County Museum chose to apply to participate in this project to provide representation and relevance for rural museums and the social impact they can have on their communities. As a participant in this research, Carter County Museum was responsible for recruiting study participants, who then visited the museum three times over the course of eight months and filled out a survey (Appendix A). In January of that year, the CCM was selected, along with thirty-eight other cultural institutions across the U. S. to test the scalability of the social impact model to a national scale, across a diverse array of communities, both urban and rural.³⁶⁵

For the purpose of the study, social impact was defined as “the effect of an activity on the social fabric of a community and the wellbeing of the individuals and families who live there.”³⁶⁶ This research is rooted in the work of, among others, John H. Falk, who is an expert in free-choice learning, particularly in regards to the museum field, and the founder of the Institute for

³⁶⁵ Utah Division of Arts and Museums and Thanksgiving Point, “Museum Impact Study,” museumsocialimpact.org, 2022, <https://museumsocialimpact.org/>.

³⁶⁶ “Museum Impact Study”

Learning Innovation.³⁶⁷ In 2021, Falk published *The Value of Museums: Enhancing Societal Well-Being*, which examines his lifelong quest to describe the museum experience and answer “why people use museums, what they do during those experiences, and what they take away from these experiences, including the value they derive.”³⁶⁸ This book looks at the half century of research conducted by Falk and others, including Lynn Dierking, whose research focuses on lifelong learning and out of school learning in museums. First, they developed the Contextual Model of Learning, a theory that helps make sense of how people learn in and beyond museums. That understanding then began to evolve into a more inclusive and broadly focused paradigm. This theory was laid out in Falk’s 2018 book *Born to Choose: Evolution, Self and Well-Being*, which looks at the role that self and well-being play in choice. *The Value of Museums* takes that concept one step further into a theory that provides a “more consistent and inclusive depiction of the value people derive from museum experiences.”³⁶⁹ In this theory, Falk describes the pursuit of enhanced well-being, “a complex and multidimensional process with deep evolutionary roots, that motivates people to engage in museum experiences.”³⁷⁰ These experiences can be divided into the following four aspects of well-being related outcomes to which museum experiences relate:

1. Personal Well-Being -- catalyzing wonder, interest, and a sense of identity; creating feelings that foster a sense of belonging and stronger sense of self.

³⁶⁷ Michelle Mileham, “Measuring the Social Impact of Museums,” *Alliance Blog* (blog), February 2, 2021, <https://www.aam-us.org/2021/02/02/measuring-the-social-impact-of-museums-call-for-study-sites/>.

³⁶⁸ John H Falk, *The Value of Museums: Enhancing Societal Well-Being* (Rowman & Littlefield Publishers, 2021). P. x.

³⁶⁹ Falk, *The Value of Museums*, p. xiii.

³⁷⁰ *Ibid.*, p. xiv.

2. Intellectual Well-Being -- facilitating curiosity and learning and the ability to utilize improved understanding in the service of solving personal and societal challenges.
3. Social Well-Being -- making it possible for individuals to feel stronger linkages with their family and friends, building shared life experiences and forging deeper coherence with others.
4. Physical Well-Being -- providing opportunities for people to gather (physically or virtually), interact, explore, and learn within a safe, healthy, anxiety-free, and restorative environment.³⁷¹

The MOMSI study provides a tool to study these areas so that museums can better understand and articulate their social impact, then use this information to improve internal practices and leverage funding to continue their community-strengthening work. The MOMSI research is similarly divided between four categories: (1) Health and Wellbeing, which is measured through statements regarding physical health, (2) Valuing Diverse Communities, which is measured by understanding connection to community along with perspective of self and others, (3) Continued Education and Engagement, which is measured by understanding the ways that wonder, curiosity, and interest are stimulated in museum visitors and (4) Strengthened Relationships, which is measured through statements about social and family relationships.³⁷² The study proposes the inputs of the participating museums, their staff and volunteers, and their visitors and communities, the activity of inviting visitors free of charge, and the output of access to the museum's exhibits and programs. This results in short-term, intermediate, and long-term outcomes that have impacts on each of the four areas (Figure 67). Sample questions for the Continued Learning and Engagement category include:

³⁷¹ Ibid., p. 8-9.

³⁷² "Museum Impact Study"

- I wonder about how things work.
- I incorporate recently learned information into my day-to-day life.
- I regularly visit local museums (could also include zoos, gardens, etc.).

Sample questions for the Increased Health and Wellbeing category include:

- I am able to bounce back from adversity.
- I am open to new ideas.
- I am confident in contributing my opinion to a conversation.

Sample questions for the Strengthened Relationships category include:

- It is easy for me to develop social relationships.
- I make it a point to spend time with my friends and/or family.
- I build strong and supportive relationships with a variety of people.

Sample questions for the Valuing Diverse Communities category include:

- I learn new things from people who are different from me.
- I understand how cultures are similar and different.
- I am aware of the challenges faced by others with backgrounds different than my own.

These categories and understandings come from a survey first conducted at Thanksgiving Point, a nonprofit farm, garden, and museum complex in Utah. Thanksgiving Point shared their results with the Utah Division of Arts and Museums. The two organizations partnered to conduct a statewide social impact study, funded by a Museum National Leadership Grant from the Institute of Museum and Library Services, which ran from 2017-2019. The results of this pilot, which included 400 respondents across eight museums, revealed that “museum visitation is correlated

with statistically significant increases in health and well-being, intercultural competence, strengthened relationships, and continued education and engagement.”³⁷³ For the MOMSI study, also funded by a grant from the Institute of Museum and Library Services, this survey tool was adapted for national use with thirty-eight participating museums, including the CCM, across the United States, and will result in a free social impact toolkit for museums of all sizes to measure their social impact.³⁷⁴

The participating museums were required to be open to the public and offer free admission to study registrants for each of their three visits. This was simple for the CCM, as it does not require admission; it did mean, however, that visitors needed additional incentive for their participation. CCM staff chose to offer a ten percent discount in the museum gift shop and entry into a gift-card drawing for those who finished their visits and filled out a survey. The minimum number of participants for the study was set at one hundred, however an exception was made for the CCM and other rural institutions as it could be difficult to find one hundred separate households to participate in a community with a population of four hundred. The board and staff of the CCM were instrumental in the recruitment effort, inviting neighbors and friends to participate through conversation, rather than the usual recruitment style of a flier in the lobby. To facilitate signups and increase accessibility, the CCM worked with MOMSI staff to create a signup link specific to the museum, which participants who did not have access to a home computer or who had difficulty accessing the form could use to register at the museum. For the

³⁷³ Utah Division of Arts and Museums, “Social Impact Study | Utah Division of Arts & Museums,” artsandmuseums.utah.gov, 2021, <https://artsandmuseums.utah.gov/impactstudy/>.

³⁷⁴ This toolkit is expected to be published in June 2023.

CCM, which is popular with non-resident tourists,³⁷⁵ the MOMSI project prompted a look at renewing engagement with the local community.³⁷⁶ Many participants were long-time residents of the area who did not often visit the museum and this study served as a spark to bring them, along with their grandchildren and visiting relatives back through the doors.

After registering, participants were invited to visit the museum three times between October 2021 and August 2022. This extended timeline allowed for institutions that have heavier visitation during summer seasons, such as outdoor sites and zoos. This also helped the Carter County Museum, as it was able to recruit individuals that attend the Annual Dino Shindig event and other summer programs. Data analysis was conducted between October 2022 - January 2023, and host reports were presented to museums beginning in February 2023. The Carter County Museum was the first to host a report presentation and chose to invite the community to a special Carter County Geological Society meeting, which shared the results in a public forum on March 2, 2023. Other institutions have decided to share their results internally and with staff, though a few are considering wider discussions.

The national median recruitment for the MOMSI study was 143 people, and the median accepted was 125, due to restrictions such as only one person being allowed to participate per household and double registrants. The CCM recruited sixty-eight people and sixty-seven

³⁷⁵ According to the *January 2023 Director's Report*, in 2022, forty percent of visitors to Carter County Museum were from out of state, twenty-four percent were out of area Montana residents, and one percent were international.

³⁷⁶ Laureen Trainer and Michelle Mileham, "Recruiting Strategies: How to Find Community Members for Research Studies and More," *Alliance Blog* (blog), April 22, 2022, <https://www.aam-us.org/2022/04/22/recruiting-strategies-how-to-find-community-members-for-research-studies-and-more/>.

completed one or more visits, compared to a national project median of thirty-two.³⁷⁷ This success rate can be attributed to the CCM's close contact with its participants, which included reminder emails in addition to those sent by the MOMSI team; invites for participants to attend monthly Carter County Geological Society meetings; and that all staff were able to recognize participants on site and help to sign them in at the front desk. Reasons for the national attrition rate include ongoing wariness around indoor space due to COVID-19 surges, lack of time or motivation to participate fully, and the possibility that MOMSI-based emails were sent to the junk folder in email servers.³⁷⁸ Of the sixty-seven people who completed one or more visits at the CCM, sixty-three completed the survey, resulting in a 94 percent completion rate. For comparison, a total of 2,562 people received the survey and 2,042 completed it across thirty-eight participating museums, resulting in an 80 percent completion rate.³⁷⁹ Again, the CCM's success can be traced to the strategies outlined above, but also due to the incentive of receiving a gift card,³⁸⁰ and the relationships developed between the participants and the staff and those who received the survey. In some cases, the CCM provided a computer to fill out the survey and staff read the questions to those who had trouble seeing them on the screen. These personal relationships that were forged between the CCM staff and participants further illustrated the

³⁷⁷ Carter County Museum, "CCGS Presents: MOMSI Study Results," www.youtube.com (Carter County Museum, March 28, 2023), <https://youtu.be/qCtsszxwzvs>.

³⁷⁸ Michelle Mileham and Laureen Trainer, "How to Retain Participants in Visitor Research Studies," *Alliance Blog* (blog), February 10, 2023, <https://www.aam-us.org/2023/02/10/how-to-retain-participants-in-visitor-research-studies/>.

³⁷⁹ "CCGS Presents: MOMSI Study Results"

³⁸⁰ Twenty-four gift cards in amounts ranging from \$10 to \$100 were distributed to participants who completed the survey and the ten percent discount remained in place while it was spent. All gift-cards were used at the CCM gift shop by March 2023.

study results in which the CCM had significant growth in ten out of ten areas for the category of strengthening relationships.

The full results of the national survey will be available later in 2023. Early presentations show statistical improvement in all four categories nationwide.³⁸¹ CCM results also show statistical improvement in all four categories, including ten out of ten indicators for continued learning and engagement, eleven out of sixteen indicators for health and well-being, nine out of ten indicators for valuing diverse communities, and ten out of twelve indicators for strengthened relationships (Figures 68-71).³⁸² Of the participants that completed the survey, 60 percent identified that they were members of the museum before the project began. Sixty-six percent of survey takers were female, thirty-one percent were male, and three percent chose not to say. Many respondents identified themselves as White/Caucasian (85.5%), 6.4% identified as more than one race, 1.6% as American Indian or Alaska Native, and 3.2% preferred not to say. Half of survey takers (50%) were between the ages of 25 to 44, 43.3% were forty-five or older, and 6.7% were between the ages of 18 to 24. Over 24% reported a household income lower than the median household income of Ekalaka, which is \$385,594.³⁸³

The Qualitative data section of the report shared the analysis of three open-ended survey questions to which MOMSI participants responded:

- How does this museum benefit your community?

³⁸¹ American Alliance of Museums, “CARE-Apy: How to Measure Museum Social Impact: From Participant Recruitment to Retention,” On Demand Programs: Audience Research and Evaluation, March 17, 2023, <https://www.aam-us.org/2023/03/17/care-apy-how-to-measure-museum-social-impact-from-participant-recruitment-to-retention/>.

³⁸² Measurement of Museum Social Impact, “Carter County Museum Report,” February 9, 2023.

³⁸³ “Carter County Museum Report,” p. 3.

- How did participating in this study change your perspective of museums/cultural sites?
- In what ways, if any, did Carter County Museum change the way you interact with others?

In the case of Carter County Museum, the answers to the first question can be divided into the four categories of social well-being as defined by the study, as well as a new fifth category: Economics (Figure 72). Of the sixty-one people who responded to this question, thirty-six fell within the category of Continued Learning and Engagement, for example: “The museum treasures the community's cultural and natural history and allows the community to share in it. They always welcome the community to take part at a variety of levels.”³⁸⁴ Twenty-eight fell within the category of Economics, for example: The CCM “creates a community staple of culture and curiosity, brings new information and perspectives to locals, benefits the community by attracting tourist dollars.” Eighteen fell within the category of Strengthened Relationships, for example: The CCM “provides a place for the community to gather, hold its history, and work together to overcome challenges.”³⁸⁵ Seven fell within the category of Valuing Diverse Communities, for example: The CCM benefits the community “by bringing in multiple perspectives and ideas from around the country/world, with the staff, associated institutions, and visitors that they welcome in.”³⁸⁶ And two answers fell within the category of Increased Health and Well-being, for example: The CCM is a “huge asset to Ekalaka. It has become the heart and

³⁸⁴ Measurement of Museum Social Impact, “Carter County Museum Qualitative Coding Report,” February 9, 2023. P. 6-7.

³⁸⁵ “Carter County Museum Qualitative Coding Report,” p. 6-7.

³⁸⁶ Ibid.

soul of that place.”³⁸⁷ Participants frequently commented on the variety of exhibits, diversity of items in the CCM collection, and the fact that exhibits change regularly. Participants noted pride in the museum as a member of the community and several acknowledged the hard work of the staff and their participation in the community. The greatest benefit to the community, according to study participants, were the continued learning and engagement opportunities offered by the museum, which echoes the findings of the quantitative data. Overall, the qualitative results of the study revealed that the Carter County Museum:

Benefits the community by providing learning and engagement opportunities, especially through exhibits, classes, and events. These opportunities are for the local community, tourists, and people of all ages. Because of the programs and its rural location, the museum also strengthens relationships by involving the community in its work and bringing people together. Carter County Museum also brings culture and diverse perspectives to the community.³⁸⁸

In responding to how the Carter County Museum changed the way they interacted with others, fifty-seven participants shared social-emotional experiences, including several that referenced the Annual Dino Shindig, which allows them to connect with people on a different level, understand different histories, and build empathy. One participant wrote that “Every visit I see new exhibits or notice something new about an existing object. Every visitor I bring helps me experience the museum from new eyes. I also make new friends every year at the Dino Dig.” Respondents frequently commented that the museum provided a space for shared experiences, both with their guests and with other visitors, including “I met people with different views and gained new perspective and appreciation for different ways of looking at questions and

³⁸⁷ Ibid.

³⁸⁸ “Carter County Museum Report,” p. 4.

challenges.” Finally, visits to the museum also served as catalysts for conversations and forming new connections. One example of this is the respondent who observed “Learning about what is happening, past and present, in this community allows me to take that information home and present it to the community I live in through discussion and conversation.” Another participant was inspired to find ways to volunteer at the museum, stating: “I love the people who work there, and feel like connecting with them on a regular basis could only be a positive experience.”

For those participants who were regular visitors to the museum, this study provided a new lens, where the necessary attention to detail resulted in new discoveries of items they had overlooked or changes that had been made at the museum since their last trip. Throughout the course of the visits, staff saw a renewed appreciation for and pride in what some participants called a hidden gem of a museum. Participants in the study came away with a greater appreciation for museums and for the staff’s work that make the museum a beneficial place for the community. For the CCM, appreciation extended to the role that small, rural museums play in the community and the learning landscape, with several noting that larger museums could learn from small museums like the CCM.³⁸⁹ One participant shared the following: “This museum is several hours away from my community but I believe this museum is transformational for Montana and an incredible example of what is possible in rural Montana communities.”

This dissertation began by acknowledging the gap in scholarship regarding rural museums, particularly in the United States, and their contributions to community vitality. Chapter Two gave shape to the power of place in museum design, describing the foundation of

³⁸⁹ “Carter County Museum Report,” p. 6.

the Carter County Museum, its roots in the community and the effect the institution has had on the fabric of local society. Chapter Three confronted omissions of the contributions of rural places to the field of paleontology and addressed the silencing of Indigenous and Black narratives. Chapter Four further addressed the deep histories of place, connecting discussions of the land and its settlement to the resilience of Indigenous people in the face of systemic genocide and racism. Chapter Five provided an example of a museum-based project that harnessed the power of local place to confront silences regarding vaccines and infectious disease and described how it was replicated in other rural communities.

The Rural Social Space Model provided the scaffolding for each chapter, which was organized to follow discussions of demography, economy, and geography and how the interconnections between the museum and its place affected the narratives that were prioritized and how the work of the Carter County Museum contributed to community vitality. These included the demographic example of decolonizing the museum through NAGPRA compliance and the telling of Indigenous histories, the economic example of the Annual Dino Shindig and its establishment as a tourism driver to the area, and the geographic example of rooting discussions of contemporary topics such as healthcare, Indian boarding schools, and fossil dispossession in local place.

Other rural institutions may choose to follow this model and adapt it to their own communities. In this way, we can elevate rural museums to the national conversation, as evidenced in this quote from a MOMSI participant:

I have spent a lot of time in larger museums. Small, rural museums are important in very different ways than large institutions that share the museum name. Places like CCM are so personal, so important to the community, and so critical to the success of the economic vitality and community pride of rural towns. Prior to

visiting CCM, I thought that smaller museums would benefit from larger museum's support and guidance. Now I think it's the other way around - small, rural museums understand the community and are doing the type of work that larger museums spend years trying to figure out. Small museums like CCM should be elevated in the national conversation about the importance of museums as a community anchor institution.³⁹⁰

As noted, the narrative is often framed around what larger museums are doing, usually with financial and staff resources that are not often present in small communities. However, the example of the CCM and the relationships built within the community reveal a distinct advantage of rural institutions to harness the power of place to confront silences and contribute to community vitality.

Inputs	Activities	Outputs	Short-Term Outcomes	Intermediate Outcomes	Long-Term Outcomes / Impacts
US Museums • Staff and volunteers • Visitors and communities	Invite visitors to participating museums Provide Access to • Lifelong learning opportunities • Arts/History • STEM topics • Culture	Access to museum exhibits and programs	Content knowledge School success Making interpretations Personal application	Stimulate inquiry, wonder, curiosity, and interest Critical Thinking Conservation	Continued Learning and Engagement
			Restorative Self Esteem Participating in community activities	Recharge Positive Outlook Involvement in Community	Increased Health and Well Being
			Altruism Empathy Communication Perspective	Connection to Community (belonging, perspective, place, sense, etc.) Empathy Social Success / Competence	Valuing Diverse Community
			Positive time spent with others Care and concern for others	Strengthened Social Relationships Strengthened Family Relationships	Strengthened Relationships

Figure 67. MOMSI Study Inputs and Outcomes.

³⁹⁰ “Carter County Museum Qualitative Coding Report.”

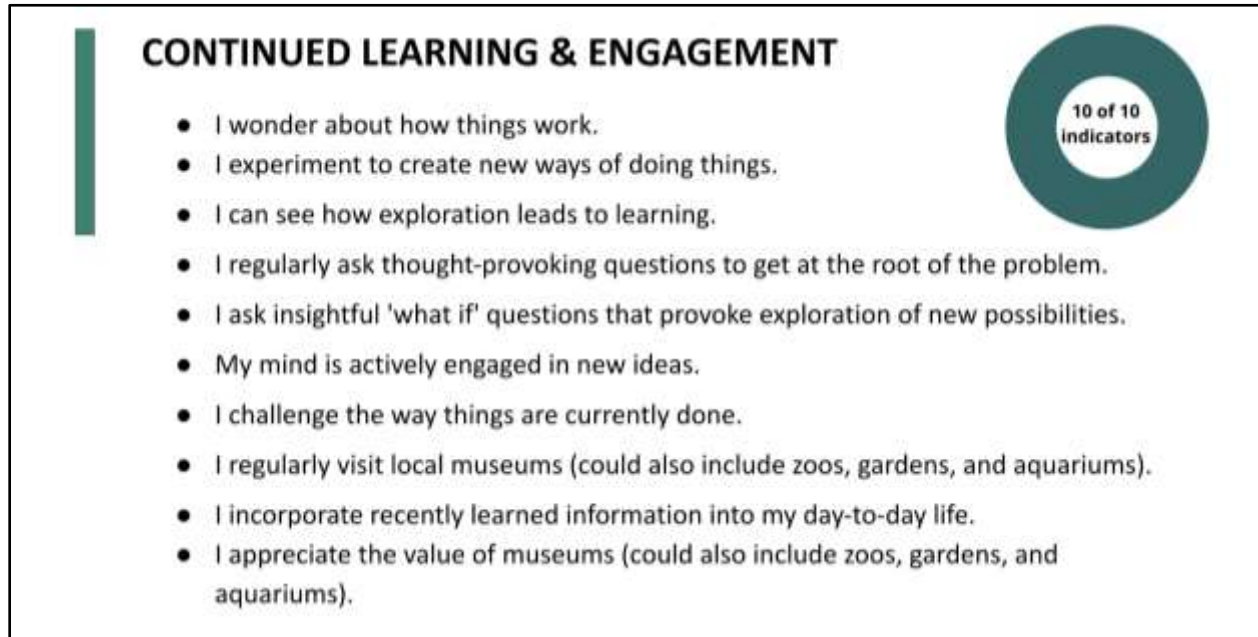


Figure 68. Indicators identified by CCM-based participants in the quantitative data results regarding significant impact of continued learning & engagement in the MOMSI study.

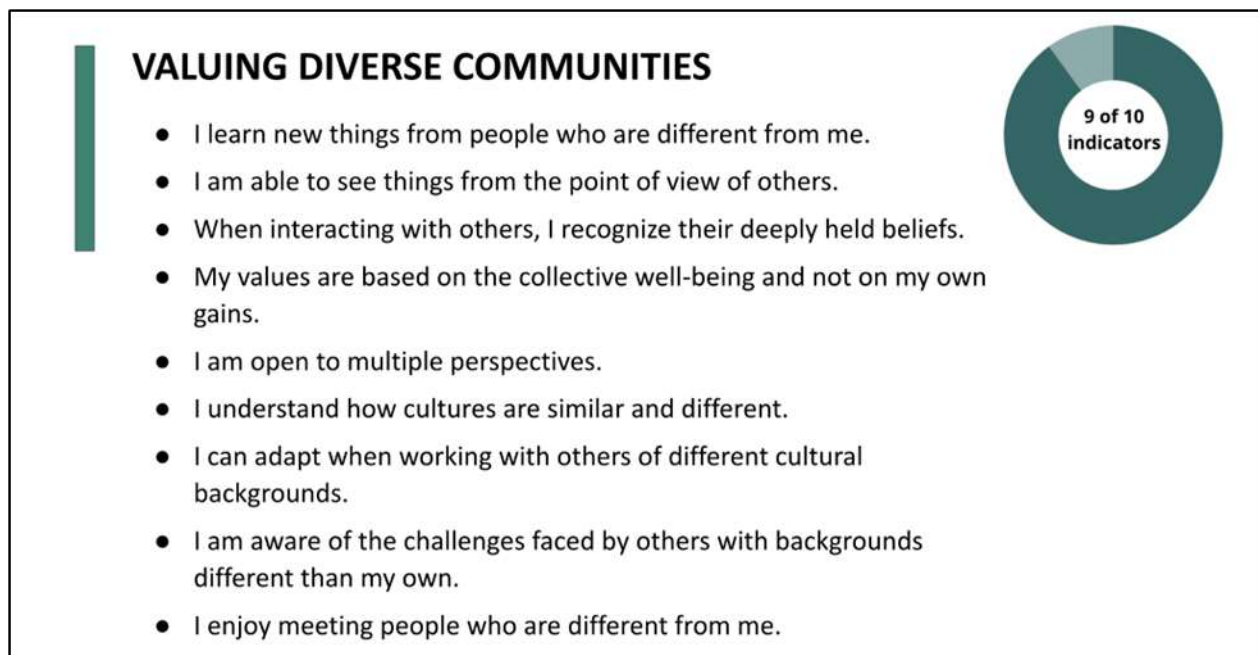


Figure 69. Indicators identified by CCM-based participants in the quantitative data results regarding significant impact of valuing diverse communities in the MOMSI study.

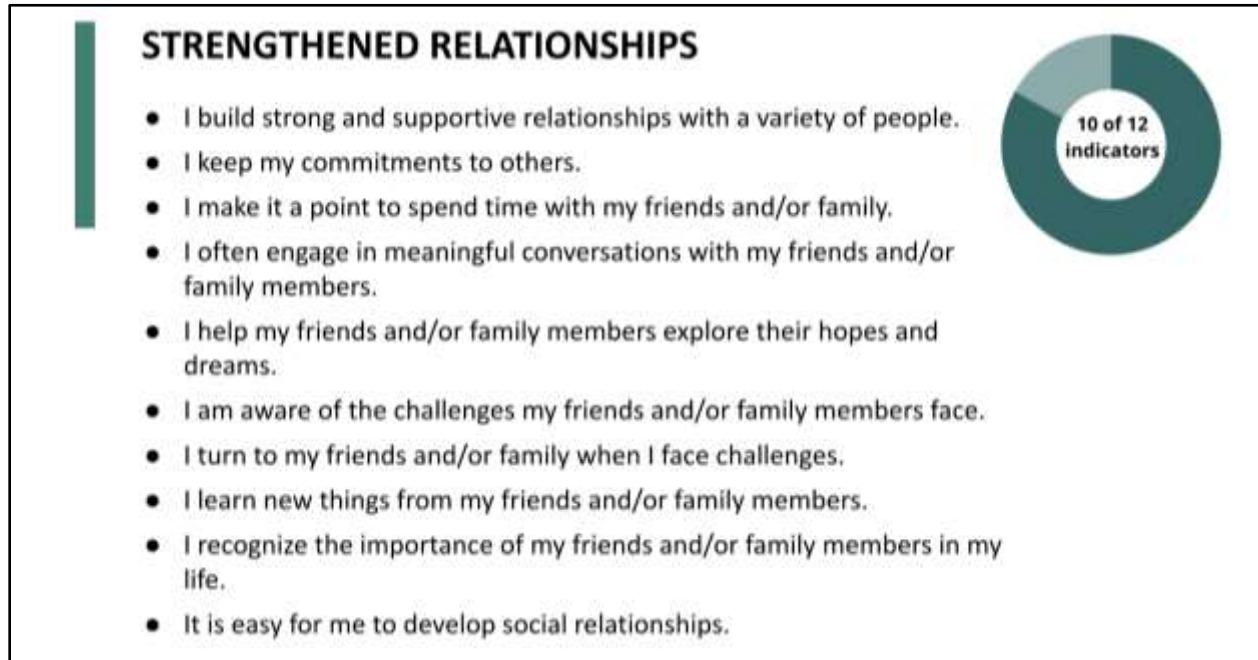


Figure 70. Indicators identified by CCM-based participants in the quantitative data results regarding significant impact of strengthened relationships in the MOMSI study.

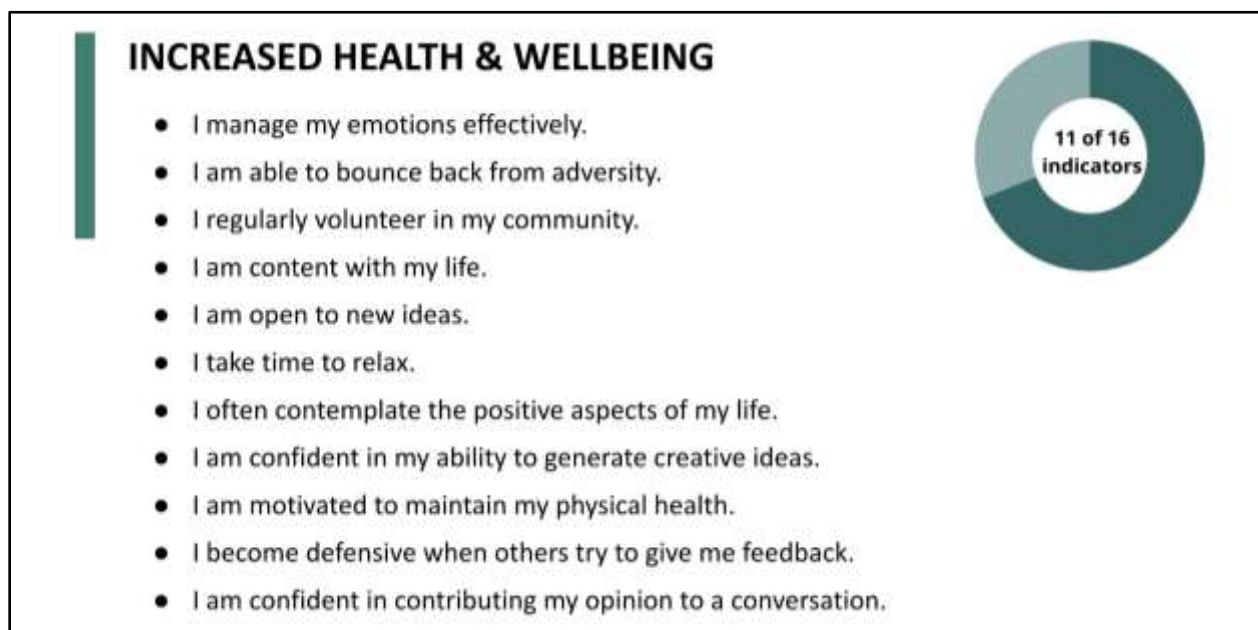


Figure 71. Indicators identified by CCM-based participants in the quantitative data results regarding significant impact of increased health & wellbeing in the MOMSI study.

Concept	Number of Responses
Continued Learning & Engagement	36
Other/Economics	28
Strengthened Relationships	18
Valuing Diverse Communities	7
Increased Health and Well-being	2
Not Applicable	2

Figure 72. CCM MOMSI Qualitative Data Table in response to “How does this museum benefit your community?”

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APPENDICES

APPENDIX A

MEASUREMENT OF MUSEUM SOCIAL IMPACT SURVEY INSTRUMENT

MOMSI Social Impact End of Experience Survey

Thank you for taking the time to participate in this nationwide research study! Your responses to this survey will help us better understand the social impact museums, gardens, zoos, and other cultural organizations have on the communities they serve. This survey will take approximately 20-30 minutes and will ask questions related to your experience before and after visiting your museum, garden, zoo, or other cultural organization. Your responses will be kept confidential and will only be used internally by the MOMSI Admin Team and the organization you visited. If at any time you have any questions, please feel free to contact Michelle Mileham, MOMSI Project Manager at michelle@museumsocialimpact.org.

Before you proceed to the survey, please complete the CAPTCHA below.

Which museum did you visit for this study?

You selected []. Is this the museum you visited for this study? Yes/No

How many times did you visit [] within the time period of this study?

- ☐ 0 visits
- ☐ 1 visit
- ☐ 2 visits
- ☐ 3 visits
- ☐ 4 or more visits

Table 1. MOMSI Social Impact End of Experience Survey.

[illegible]

Table 1. MOMSI Social Impact End of Experience Survey continued.

I ask insightful 'what if' questions that provoke exploration of new possibilities.														
My mind is actively engaged in new ideas.														
I challenge the way things are currently done.														
I regularly visit local museums (could also include zoos, gardens, and aquariums).														
I incorporate recently learned information into my day-to-day life.														
I appreciate the value of museums (could also include zoos, gardens, and aquariums).														
I manage my emotions effectively.														
I am able to bounce back from adversity.														

Table 1. MOMSI Social Impact End of Experience Survey continued.

I regularly volunteer in my community.															
I am open to new ideas.															
I am content with my life.															
I often contemplate the positive aspects of my life.															
I am confident in my ability to generate creative ideas.															
My life feels in control.															
I am motivated to maintain my physical health.															
I take time to relax.															
I often feel the stress of life.															
I have difficulty concentrating.															
I often compare myself to others.															
I become defensive when others try to give me feedback.															
I often criticize others.															

Table 1. MOMSI Social Impact End of Experience Survey continued.

I am confident in contributing my opinion to a conversation.														
I learn new things from people who are different from me.														
I am able to see things from the point of view of others.														
I am concerned for the well-being of others.														
When interacting with others, I recognize their deeply held beliefs.														
My values are based on the collective well-being and not on my own gains.														
I am open to multiple perspectives.														
I understand how cultures are similar and different.														

Table 1. MOMSI Social Impact End of Experience Survey continued.

I can adapt when working with others of different cultural backgrounds.														
I am aware of the challenges faced by others with backgrounds different than my own.														
I enjoy meeting people who are different from me.														
I build strong and supportive relationships with a variety of people.														
I keep my commitments to others.														
I make it a point to spend time with my friends and/or family.														
I often engage in meaningful conversations with my friends and/or family members.														

Table 1. MOMSI Social Impact End of Experience Survey continued.

I help my friends and/or family members explore their hopes and dreams.														
I am aware of the challenges my friends and/or family members face.														
I turn to my friends and/or family when I face challenges.														
I learn new things from my friends and/or family members.														
I recognize the importance of my friends and/or family members in my life.														
I am excited when something good happens to a friend and/or family member.														
I get upset at friends and/or family members when they make mistakes.														

Table 1. MOMSI Social Impact End of Experience Survey continued.

It is easy for me to develop social relationships.														
I have conversations with others about art.														
I am motivated to learn about art.														
I have an appreciation for art.														
I have conversations with others about history.														
I am motivated to learn about history.														
I have an appreciation for history.														
I have conversations with others about science and the natural world.														
I am motivated to learn about science and the natural world.														
I have an appreciation for science and the natural world.														

Table 1. MOMSI Social Impact End of Experience Survey continued.

I have conversations with others about conservation.															
I am motivated to learn about conservation.															
I have an appreciation for conservation.															

What about your visits surprised you?

How does this museum benefit your community?

How did participating in this study change your perspective of museums/cultural sites?

What, if anything, did you dislike about your experience at []?

In what ways, if any, did [] change the way you interact with others?

Is there anything else you would like to share?

How many times did you visit this museum?

Were you a member of [] in the year prior to your participation in this project? Yes/No

What is your zip code?

What is your gender?

- ☐ Male
- ☐ Female
- ☐ Another category – please specify.
- ☐ Prefer not to say.

With which racial or ethnic group(s) do you identify? (Select all that apply.)

- ☐ American Indian or Alaskan Native
- ☐ Asian
- ☐ Black or African American
- ☐ Hispanic or Latino
- ☐ Native Hawaiian or Pacific Islander
- ☐ White or Caucasian
- ☐ Another category – please specify.
- ☐ Prefer not to say.

What is your age?

- ☐ [In 10 year spans]
- ☐ 75+

What is your annual household income?

- ☐ Less than \$10,000
- ☐ [In \$10,000 brackets]
- ☐ More than \$150,000
- ☐ I prefer not to say.

Would you like to have your name entered to receive a prize from the museum you visited?

Yes/No

Please type in your contact information. Your contact information inserted here will only be used to contact you regarding the prize.

Name:

Email:

Phone:

APPENDIX B

DINO SHINDIG VISITOR SURVEY INSTRUMENT

Dino Shindig Visitor Survey Instrument

Q1. Are you, or someone in your group, a registered participant for this event?

Yes/No

Q2. Are you a resident of Montana?

Yes/No (skip to Q4.)

Q3. Do you reside in Carter County?

Yes (skip to Q14. After spending)/No

Q4. In what state, province, or foreign country do you reside?

Q5. Is this your first-time visiting Carter County or the Ekalaka area?

Yes/No

Q6. Was attending this event your primary reason for being in the area?

Yes/No

Q7. For what other reasons are you visiting the area? (Check all that apply.)

- ☐ Vacation/recreation/pleasure
- ☐ Other
- ☐ Business/convention/meeting
- ☐ Visiting friends/relatives
- ☐ Shopping

Q8. For this event, how many nights did you spend away from home?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10 or more

Q9. How many of those nights were in Montana?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10 or more

Q10. Of your nights in Montana, how many did you stay in Ekalaka?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10 or more

Q10a. Of your nights in Montana, how many did you stay in locations close by (outside of Ekalaka)?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10 or more

Q10b. In what town did you spend those nights (outside of Ekalaka but close by)?

Q11. In what type of accommodation(s) did you stay in the Ekalaka/Carter County area? (Check all that apply.)

- ☐ Hotel/motel/B&B
- ☐ Private campground
- ☐ Resort/condominium
- ☐ Rental cabin/home
- ☐ Home of friend/relative
- ☐ Guest ranch
- ☐ Public land camping
- ☐ Second home/cabin/condo
- ☐ Vehicle in parking lot

Q12. Please enter your best estimate of the TOTAL amount of money in US dollars you (and your family/travel group, if applicable) spent in the Ekalaka/Carter County area in each of the following categories. If you did not spend money in a category, please leave it blank. (See Table 3 for expenditures).

- ☐ Accommodations in Ekalaka/Carter County
- ☐ Hotel/motel/bed & breakfast
- ☐ Campground
- ☐ Rental cabin/home
- ☐ Food in Ekalaka/Carter County
- ☐ Restaurant/bar
- ☐ Groceries/snacks
- ☐ Transportation in Ekalaka/Carter County
- ☐ Gasoline/diesel
- ☐ Local transportation
- ☐ Auto rental
- ☐ Retail/Services in Ekalaka/Carter County
- ☐ Retail goods
- ☐ Entertainment/recreation

Q13. How many people does the above spending represent (including yourself, i.e., your travel group size)?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10 or more

Q14. What option best describes the group with whom you attended this event?

- ☐ Self
- ☐ Immediate family
- ☐ Family/friends
- ☐ Business associates
- ☐ Couple
- ☐ Extended family
- ☐ Friends
- ☐ Organized group/club

Q15. Please select all the ages represented in your group:

- ☐ 0-5 yrs.
- ☐ 6-10 yrs.
- ☐ 11-17 yrs.
- ☐ 18-24 yrs.
- ☐ 25-34 yrs.
- ☐ 35-44 yrs.
- ☐ 45-54 yrs.
- ☐ 55-64 yrs.
- ☐ 65-74 yrs.
- ☐ 75 and over

Q16. What best describes your annual household income? (In US dollars)

- ☐ Less than \$20,000
- ☐ \$20,000 to \$39,999
- ☐ \$40,000 to \$59,999
- ☐ \$60,000 to \$79,999
- ☐ \$80,000 to \$99,999
- ☐ \$100,000 to \$149,999
- ☐ \$150,000 to \$199,999
- ☐ \$200,000 and over

Q17. How long before this event did you make plans to attend?

- ☐ The day of the event
- ☐ 1-7 days before the event
- ☐ 1-4 weeks before the event
- ☐ 1-6 months before the event
- ☐ Over 6 months before the event

Q18. How did you hear about the 2022 Dino Shindig? (Check all that apply.)

- ☐ Word of mouth
- ☐ Posters
- ☐ Group or club
- ☐ Newspaper
- ☐ Magazine
- ☐ Other website
- ☐ Radio
- ☐ Flyer
- ☐ Social media
- ☐ Television
- ☐ Email from event planners
- ☐ Event website

Q19. Please rate your satisfaction with the 2022 Dino Shindig:

Table 2. Rate your satisfaction with the 2022 Dino Shindig.

Satisfaction	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Organization of the event					
Event staff					
Cost of the event					
Location of the event					
Number of people at the event					

Table 2 Rate your satisfaction with the 2022 Dino Shindig continued.

Parking					
Sound system					
Variety of activities					
Signage/directions					
Cleanliness					
Availability of restrooms					

Q20. Of the following statements, which best describes why you generally visit museums?

(Choose one.)

- To be moved emotionally/to experience fascinating or beautiful things/to feel a sense of connection.
- To improve my own knowledge or understanding/to satisfy a personal/academic/professional interest.
- To spend time with people in a nice place/to visit an attraction and learn more about the area.
- To stimulate my own creativity/to reflect and contemplate/to escape or recharge.

Q21. How often do you visit the Carter County Museum?

- this event was my first visit.
- three to five visits per year
- less than once per year
- six to ten visits per year
- One to two visits per year
- more than ten visits per year

Q22. What is your age?

Q23. What is your gender?

Male/Female

Q24. When might you come to the Dino Shindig again? n=61

- Next Year
- Within 5 Years
- Never

Q25. Please tell us what you liked about the 2022 Dino Shindig.

Q26. Please tell us if there is anything you didn't like about the event:

Q27. Do you have any suggestions for improvements to the event?

APPENDIX C

“SHOTS FELT ‘ROUND THE WORLD” EXHIBIT SURVEY INSTRUMENT

“Shots Felt ‘Round the World” Exhibit Survey

Thank you for taking the time to share your feedback! This survey is designed to understand visitor perceptions about the exhibition "Shots Felt 'Round the World: Dr. Maurice Hilleman and the Montana origins of the fight against pandemics." This survey will take approximately 5-10 minutes and will ask questions related to your experience before and after visiting the exhibition. Responses are anonymous and will be shared with the Carter County Museum and the museum, library, or One Health clinic you visited. Your response will help shape our work with communities across Montana.

Which organization did you visit today?

Please select the option that best describes your level of understanding of the topics before you attended the exhibit:

Table 3. Level of understanding of topics before attending exhibit.

Mark only one oval per row.

	None at all	A little	A moderate amount	A lot	A great deal
Infectious diseases	☐	☐	☐	☐	☐
Vaccines	☐	☐	☐	☐	☐
Montana history	☐	☐	☐	☐	☐
Local healthcare	☐	☐	☐	☐	☐
Local history of infectious disease	☐	☐	☐	☐	☐

Did you know about Dr. Maurice Hilleman before attending this exhibit?

- ☐ Yes
- ☐ No
- ☐ Maybe

In which of the following ways did the “Shots Felt ‘Round the World” exhibition most strongly impact you?

- ☐ It improved my knowledge or understanding and satisfied a personal, academic, or professional interest in the subject.
- ☐ I was moved emotionally and felt a strong sense of personal connection.
- ☐ I was able to reflect, contemplate, and recharge.
- ☐ I spent time with people and shared an experience of a traveling exhibition with local ties to the area.

Please select the option that best describes your level of understanding of the topics before you attended the exhibit:

Table 4. Level of understanding of topics before attending exhibit.

Mark only one oval per row.

	None at all	A little	A moderate amount	A lot	A great deal
Infectious diseases	☐	☐	☐	☐	☐
Vaccines	☐	☐	☐	☐	☐
Montana history	☐	☐	☐	☐	☐
Local healthcare	☐	☐	☐	☐	☐
Local history of infectious disease	☐	☐	☐	☐	☐

Is there anything else you would like to share about your experience of this exhibit?

Of the following statements, which best describes why you visit museums generally (select one):

- ☐ To stimulate my own creativity, to reflect and contemplate, to escape or recharge.
- ☐ To be moved emotionally, to experience fascinating or beautiful things, to feel a strong sense of personal connection.
- ☐ To improve my own knowledge or understanding, to satisfy a personal, academic, or professional interest in a subject.
- ☐ To spend time with people in a nice place, to visit an attraction and learn more about the area.

How often do you visit museums?

- ☐ Once per year
- ☐ 1-2 visits per year
- ☐ 3-5 visits per year
- ☐ 6-10 visits per year
- ☐ More than 10 visits per year

What is your zip code?

What is your age?

- ☐ <18
- ☐ 18-25
- ☐ 26-35
- ☐ 36-50
- ☐ 51-64
- ☐ 65+

How do you self-identify?

- ☐ American Indian/Alaska Native
- ☐ Asian
- ☐ Black/African American
- ☐ Caucasian
- ☐ Hispanic/Latinx
- ☐ Native Hawaiian/Pacific Islander
- ☐ Other
- ☐ Decline to answer.

Select the gender with which you identify:

- ☐ Male
- ☐ Female
- ☐ Transgender
- ☐ Non-binary/non-conforming
- ☐ Prefer not to respond.