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Article

Sustainability at the Grass Roots Level: A Multinational, Multicultural, Multigenerational Oral History

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Abstract

The concept of sustainability has evolved far beyond its initial environmental foundations, expanding into a multidimensional framework that integrates multinational policies, multicultural values, and multigenerational knowledge, but there is a paucity of bottom up or grass roots research. This paper is a narrative of oral history intersects supported by rigorous documentation including military records, census data, genealogical records, and scholarship extending over four centuries. By synthesizing individual lived experiences with systemic goals, such as those outlined by the United Nations Sustainable Development Goals (SDGs) [1], a more nuanced understanding of resilience and adaptation emerges. The analysis of recent scholarship indicates that sustainability is a dynamic, narrative - driven process that requires an in- depth understanding of the spatial and temporal consequences of global shifts, ranging from climate catastrophes to the translocal flows of capital and people [2]. This paper uses oral history to show the adaptation of a multigeneration, multicultural “ordinary” family in North America to the social, political, economic, and technological challenges faced over 400 years with a focus on sustainability.

Keywords: sustainability; oral history; multicultural; multigenerational; diversity; UN SDGs; grass roots; family history; innovation; adaptation

1. Introduction: Bringing the “Ordinary” Family into Sustainability Discourse

1.1. Purpose of Research

The purpose of this research is to examine how the actions of an “ordinary” multigenerational, multicultural family align with sustainability as defined by the United Nations Sustainable Development Goals (SDGs). At the heart of the sustainability discourse lies the relationship between human societies and the ecosystems that support them. For millions of years, humans and ecosystems coexisted in a state of mutual nurturing; however, modern extractive resource use has fundamentally threatened this balance. The consequences are visible in global challenges such as deforestation, pollution, and climate change, which are increasingly understood not as external threats but as direct outcomes of a way of life that failed to account for the future needs of the planet’s microbial organisms, forests, and oceans [3].

To address these challenges, the social ecology of resilience focuses on rebuilding the lost mutual relationships between people and nature. This is particularly critical in regions like sub- Saharan Africa, where resources for high - tech mitigation are often scarce. In these contexts, looking back at historical coping mechanisms and innovations becomes a vital methodology. This “looking back “ approach to oral history allows researchers to identify how communities manage risk and achieve social and economic goals through common sense solutions. Such bottom - up strategies, including community natural resources management, nature - based enterprises, and social dynamics, offer sustainable pathways toward achievement of the UN SDG goals:

1.2. Sustainable Development Goals

The United Nations has developed a set of goals aimed at eliminating poverty and hunger, improving health and education, ensuring gender equality, protecting the environment, and fostering long - term economic growth and global partnerships for a better world. The Sustainable Development Goals (SDGs) summarized are the following: SDG 1- No Poverty; SDG 2- Zero Hunger; SDG 3 - Good Health and Well- Being; SDG 4 - Quality Education; SDG 5 - Gender Equality; SDG 6 - Clean Water and Sanitation; SDG 7- Affordable and Clean Energy; SDG 8 - Decent Work and Economic Growth; SDG 9 - Industry, Innovation, and Infrastructure; SDG 10- Reduced Inequality; SDG 11- Sustainable Cities and Communities; SDG 12- Responsible Consumption and Production; SDG 13- Climate Action; SDG 14- Life Below Water; SDG 15- Life on Land; SDG 16- Peace, Justice, and Strong Institutions; SDG 17- Partnerships for the Goals.

Sustainability requires both adaptation to new technological, social, and cultural conditions and preservation of existing and traditional resources. This report uses oral history to record specific family anecdotes while situating them within the broader tapestry of Atlantic World history, demonstrating how a single family's narrative serves as a microcosm for the formation of the American identity through adaptation to change while maintaining respect for tradition. It uses oral history to demonstrate an in- depth historical analysis of a multinational, multi - cultural, multi - generational narrative. Sustainability in the face of cultural conflict, changing social norms, and political and economic forces is central to the survival of these Indigenous, French, English, Hessian (from Hesse, Germany), Swiss, and Scotch - Irish lineages in North America. By triangulating the family's oral traditions with extensive archival research, military records, and sociological studies, this document reconstructs the lived experience of ancestors against the backdrop of the continent's most transformative events: the early contact period in Acadia, the geopolitical struggles of Queen Anne's War, the American Revolution, the westward expansion into the Indiana Territory, and the industrial mobilization of the 20th century. Special emphasis is placed on the mechanisms of survival and cultural adaptation —from the diplomatic maneuvering of Grand Chief Membertou to the agrarian innovations of the Indiana frontier, through the domestic economy of the Great Depression, into modern times when women develop political and economic agency. This oral history demonstrates how a series of “ordinary” family lineages have shown actions and attitudes related to most of the SDGs. It provides grass- roots lessons in the social, economic, and environmental elements of sustainability that may be overlooked by much of the usual data- driven, technology focused work being done in sustainability.

2. Methods and Materials

2.1. Oral History Methodology

From the Smithsonian Institution, the definition of oral history is “ a research methodology that collects and preserves personal testimonies through interviews. This technique allows historians and researchers to capture the voices and experiences of individuals, providing valuable primary source material that enriches the historical record. It is particularly effective in documenting the experiences of marginalized groups whose stories may not be represented in traditional narratives ” [4]. The verbal input of this oral history represents three living generations and the older members ' personally experienced input from three generations further back. Thus, the narrative report s on actual lived experiences going from the 1800s to the 2000s, with “ remembered “ (family stories) and historical data going back to the 1600s. This provides a valuable contribution to the study of sustainability by complementing the existing literature [5].

2.2. What Can Oral History Bring to Sustainability Studies?

Sustainability has been studied using oral history in Africa [6], China [7], and other locations, but this study differs in bringing a long historical and multicultural perspective set in the North American context. Most oral history studies focus on a community, or a geographical location, or a

specific event. In contrast, this oral history brings together Indigenous, Canadian, Acadian, French, German, Swiss, and Irish lineages through 400 years of family history that illustrates maintaining tradition while adapting to change. Interviews were conducted and recorded by a male expert in communications technology (age 36), with narration from elderly grandmothers aged 81 and 77, and the daughter of one grandmother, age 61. The grandmother's personal memories go back to interaction with three generations that came before, including several individuals born in the 1800s. Family stories, documents, and published accounts go back another 200 years to the 1600s. The multi-century time horizon and variety of ethnicities contained in this narrative provide many illustrations of actions that relate to sustainability in today's terms. These actions and perspectives have enabled the family to adapt to change and yet preserve identity through many generations, and to succeed on a microscale in the face of extensive economic, political, and technological changes. This provides a unique perspective on challenges and responses, following the suggestions for future research of Al-Saudi and Furlan [8].

3. Results

3.1. *A Critical Partnership: Indigenous Sovereignty and the French (1500-1650)*

The family narrative begins not with the arrival of Europeans as conquerors, but with a complex diplomatic engagement between the Mi'kmaq people of the Nova Scotia area of today's Canada and the French explorers. The oral tradition identifies a direct descent from Henri Membertou and Louis Hébert, two towering figures whose lives illustrate the syncretic nature of early Canadian society. This was an important partnership that illustrates SDG 17.

3.2. *Henri Membertou: The Centenarian Grand Chief*

The oral history asserts a lineage to **Henri Membertou** (1507–1611), *telamon* (Grand Chief) of the Mi'kmaq First Nations in present-day Nova Scotia. Historical analysis confirms that Membertou was a singular figure in the contact period, serving as a living bridge between the pre-Columbian world and the era of permanent European settlement.

3.3. *The Cartier Connection and Indigenous Longevity*

The family tradition maintains that Membertou “knew Jacques Cartier” and lived to be over 100 is supported by primary source documentation from the early 17th century. When the French established the Port-Royal habitation in 1605, Membertou was already an elderly man of immense physical stature and authority. He explicitly recounted to the French chronicler Marc Lescarbot that he had met Cartier during the explorer's second voyage in 1534. If this timeline is accurate, Membertou would have been a young married man and father in the 1530s, placing his birth date near the turn of the 16th century. His longevity was a source of wonder to the Europeans; despite his advanced age (over 100 at the time of his death in 1611), he maintained a “splendid physique,” was taller than the average French man, and notably wore a beard—a trait that distinguished him from most of his Indigenous contemporaries [9].

3.4. *The Politics of Baptism and the Concordat*

The oral tradition notes that “Henry is the name the Jesuit priest gave him” [10]. This refers to the pivotal event of June 24, 1610, when Membertou and his extended family were baptized by the secular priest Jessé Fléché at Port-Royal. Membertou took the baptismal name “Henri” in honor of King Henry IV of France, while his wife adopted the name “**Marie**” after the Queen Regent, Marie de' Medici [10].

This baptism was less a submission to European religious authority and more a masterful stroke of Indigenous statecraft. By entering into the *Mi'kmaq Concordat*, Membertou formalized a diplomatic and spiritual alliance with the French Crown. He positioned the Mi'kmaq as “brothers” to the French, securing access to European trade goods, e.g., firearms and metal tools. He used these goods to

consolidate his power against traditional enemies to the south. The oral history's description of him as a "trader" is historically precise; Membertou was known to bypass coastal intermediaries, using his own French- style shallop (a small sailing vessel) to trade directly with Basque and French fishermen offshore, a practice known as "forestalling the market" (SDG 1- no poverty and 3—good health and well - being).

3.5. *Louis Hébert: The Apothecary and the Scientific Frontier*

The identification of **Louis Hébert** (c. 1575–1627) as an ancestor introduces the theme of scientific adaptation. As the first European apothecary in Canada, Hébert represents the transfer of Renaissance botanical knowledge to the North American environment.

3.6. *The Pharmacopeia of the New World*

Louis Hébert was the son of Nicolas Hébert, apothecary to Queen Catherine de' Medici, and was trained in the rigorous medical sciences of Paris. His arrival in Port- Royal in 1606 and subsequent permanent settlement in Quebec in 1617 marked a transition from transient resource extraction to scientific colonization. The oral history's claim that "Indigenous peoples... taught him about native medicinal plants" is a crucial insight into the survival mechanisms of the early settlers. Hébert's success depended on this cross - cultural exchange; he integrated native flora such as *Eupatorium* (Boneset) and *Hydrastis* (Golden Seal) into his European medical practice, establishing the first experimental gardens in Canada to evaluate the compatibility of European seeds with Canadian soil [11]. This part of the family tradition illustrates the benefit of partnerships (SDG 17), as well as SDGs 1, 2, and 3—reducing poverty, reducing hunger, and promoting good health and well- being.

3.7. *The Struggle for Agrarian Independence*

Hébert's legacy is defined by his struggle against the *Compagnie des Cent - Associés* (Company of One Hundred Associates), the fur trade monopoly that governed New France. The Company viewed agriculture as a threat to its profits, preferring settlers to remain dependent on imported supplies. Hébert defied these restrictions, clearing land on the Cap - aux- Diamants (the site of modern - day Quebec City) with hand tools to establish the first productive farm in the St. Lawrence Valley. His wife, **Marie Rollet**, was equally instrumental, serving as the colony's first teacher (SDG 4—quality education) and a godmother to many Indigenous converts. The descent from the Hébert - Rollet line connects the family to the foundational demographic event of French Canada —the establishment of the first permanent, self - sustaining European household [12].

4. The Crucible of Conflict – The 1704 Deerfield Raid

4.1. *The Deerfield Raid*

The narrative of a "10 - year- old girl named Martha" captured during a raid in Western Massachusetts serves as the central dramatic arc of the family's colonial history. This event, the Raid on Deerfield (February 29, 1704), was a defining moment of Queen Anne's War, illustrating the collision of English Puritan and French Catholic worlds.

The raid was not a random act of violence, but a calculated military operation authorized by Philippe de Rigaud Vaudreuil, Governor General of New France, to destabilize the New England frontier. The attacking force was a coalition of 50 French soldiers (mostly *Troupes de la Marine*) and approximately 250 Indigenous warriors from the Abenaki, Mohawk (Kahnawake), and Wyandot (Lorette) nations.

The oral history's specific detail regarding "snowshoes" and the "middle of a storm" is historically accurate and critical to understanding the raid's success. The attackers marched 300 miles from Fort Chambly to Deerfield on snowshoes, a technology that the English settlers had not yet fully mastered for warfare. On the night of the attack, heavy snow had drifted against the town's palisades, allowing the raiders to simply walk over the walls and bypass the fortifications entirely [13].

4.2. *The Captive Experience: Martha French*

The ancestor identified as “Martha” is **Martha French** (1695- 1762), the daughter of Deacon Thomas French. She was indeed 8 years old at the time of the raid [14]. The grandmothers’ recollection that “Martha’s mother died along the way” refers to **Mary Catlin French** (1666- 1704), who was killed on the march to Canada on March 9, 1704. The brutality of the march was dictated by the harsh winter conditions; captives who could not keep pace threatened the survival of the entire party and were often dispatched.

Upon arriving in Canada, Martha was placed in the care of the Sisters of the Congregation of Notre - Dame in Montreal. Her assimilation into French society was total. She was baptized into the Catholic faith on January 23, 1707, taking the name **Marthe - Marguerite** [10]. This renaming (“Marguerite”) is preserved in oral history. In 1711, at the age of 16, she married **Jacques Roy** (1688–1732), a master stonemason and “Sieur de Saint- Lambert.” This marriage elevated her social status, confirming the grandmother’s description of her becoming a “bourgeois housewife.” Her relatives would rise to prominence in New France. For example, her nephew, **Joseph - Octave Plessis** (1763-1825), became the Archbishop of Quebec.

4.3. *Divergent Paths: The “Unredeemed” Sister*

The oral history mentions a sister who “was taken in by an Indian family... became a respected Elder... and never wanted to go back”. This likely refers to **Abigail French** (1697-1785), Martha’s younger sister (aged 6 at capture), who was adopted by the Mohawks at Kahnawake and refused to return to English society [14]. This narrative parallels the famous story of Eunice Williams, the daughter of the Deerfield minister John Williams, who also married into the Mohawk nation and refused redemption. The grandmother’s mention of “two teenage boys” who became Puritan ministers likely refers to Eunice’s brothers, Stephen and Warham Williams, suggesting that the oral tradition has woven together the parallel destinies of the French and Williams families, neighbors in Deerfield who shared the trauma of captivity.

4.4. *The Legend of the Bell of St. Regis*

The grandmothers present a story of the “church bell” stolen by the Puritans and retrieved by the Indigenous raiders. Known as the “Legend of the Bell of St. Regis,” this narrative claims the raid was launched to recover a bell cast in France for the Sault - Saint- Louis mission. Historical research indicates that this is a 19th - century romantic fabrication; there is no record of a bell in Deerfield in 1704. However, the legend’s survival in the family’s oral history is significant in itself, representing the enduring need to ascribe moral and religious meaning to the violence of the frontier wars. This suggests the pragmatic usefulness of developing a morality-based orientation to sustainability discourse—“the earth is sacred” and “destruction of nature is against God’s will” correspond with many Indigenous orientations and contemporary spiritual ideologies.

5. The Acadian Diaspora and the Roy Lineage

5.1. *Acadians Expelled from Canada*

The grandmother’s mention of ancestors “expelled” from Nova Scotia who moved down the East Coast and into the Midwest connects the family to *Le Grand Dérangement* (The Great Upheaval) of 1755, the forced deportation of the Acadian people (French descended and Catholic) by the British.

5.2. *The Roy Family Migration: From Acadia to Indiana*

While the most famous Acadian migration led to the formation of the Cajun culture in Louisiana, a significant stream of exiles moved inland. The oral history connects the family to the Roy lineage, a name ubiquitous in Acadian genealogy. Research indicates that members of the Roy family, along with other Acadian refugees like the Chiassons and Bourgs, utilized the river systems of the interior

to migrate from the eastern seaboard to the French settlements of the Illinois Country and the Wabash Valley.

The specific mention of **Joseph Roy** (1716- 1756) receiving the “Fief of Vincennes” in 1749 suggests a connection to the pre - expulsion French presence in Indiana [15] since a town of the same name was established in Indiana by Acadians. This Joseph Roy was likely a descendant of the Roy families of Quebec (Pierre Roy and Catherine Ducharme) who were active in the fur trade at Detroit and Vincennes. The integration of Acadian exiles into these existing French networks allowed for the preservation of French identity in Indiana well into the 19th century. The family’s descent from **Azalia Roy Geis** (1865- 1903) (great grandmother of the grandmothers of this oral history) anchors this lineage in Harrison County, Indiana, where the Roy name persisted alongside other French surnames in a predominantly German region. The grandmothers who are the informants of this oral history knew Azalia’s daughter Orabelia and remembered her recounting family stories. Azalia herself died in childbirth, requiring 16- year- old **Orabelia Geis (Kochert)** (1886- 1977) to assume care of her numerous younger siblings. These included a premature baby kept alive in a homemade incubator kept warm by hot bricks warmed on a wood stove, and a rubber feeding tube. This represents a vivid illustration of frontier-style technological innovation valuable for the transition to a sustainable society but often overlooked by conventional researchers who neglect the adaptations of “ordinary” families (SDG 3—good health and well- being). Orabelia had among her family mementos a horsehair blanket from an ancestor who was a member of George Washington’s Army, **Honoré Lord** (1742- 1818) a Canadian who is listed in the Albany, New York “Muster Roll” of Major George Chardin Nicholson’s “detachment of French cadets in the service of the United States” on May 12, 1777 [16]. The “French Cadets” were largely composed of Acadian and Canadian volunteers who had fled south or were recruited during the American retreat from Quebec. Because these men were often experienced woodsmen or former militia members, they were viewed as valuable assets. Honoré’s service in Albany suggests he was part of the defensive forces guarding the northern frontier of New York during the crucial Saratoga campaign year.

6. The Hessian Connection – Heinrich Weinmann to Henry Wyman

6.1. Changing Identity

Displacement and immigration are central issues in the social element of sustainability. These issues are not new. The story of **Henry Wyman (Heinrich Weinmann)** (1731- 1838) provides a detailed look at the German auxiliary experience during the American Revolution. The grandmothers’ accounts of his capture, the forced march through Pennsylvania, his change of identity, and his subsequent settlement in Indiana are corroborated by military records [17].

6.2. From Hesse-Kassel to Trenton

Heinrich Weinmann was born about 1757 in Wettesingen, Hesse- Kassel, and served as a Grenadier in the Rall Regiment [18]. This unit was the primary Hessian force stationed at Trenton, New Jersey, in December, 1776. The grandmothers’ narrative of his capture aligns with the historical reality of the Battle of Trenton (December 26, 1776), where George Washington’s surprise attack resulted in the capture of nearly 900 Hessian mercenaries hired by the English to fight against the rebellious colonists [19].

6.3. The Prisoner Experience and George Washington’s Solution to a Problem of Scarcity

The grandmother s’ observation that the prisoners were “marched very slowly through Pennsylvania” until they “disappeared” is an astute description of the Continental Army’s prisoner management strategy. George Washington hardly had enough food to feed his soldiers, so assuming care of hundreds of prisoners of war would have been difficult, but moral principles required that the dignity of each individual be respected and that prisoners be fed. Washington’s solution was to move prisoners to interior towns like Lancaster and Lebanon, Pennsylvania, areas heavily settled by

German immigrants. Any farming household would be likely to welcome a physically fit young man who could serve as an extra farmhand and who had no particular allegiance to the British cause but was just a paid mercenary. This proximity facilitated the assimilation of the prisoners, many of whom shared language and religion (Lutheranism) with the local population. Weinmann's trade as a shoemaker was a valuable skill. Historical records confirm that artisan prisoners were often "loaned out" to local businesses or allowed to work for the army. This economic integration was the first step in his transformation from a mercenary working for the British Crown to an American settler. **Heinrich Weinmann** became **Henry Wyman** and became an American [20,21].

6.4. *The Great Wagon Road to Indiana*

After the war, Wyman migrated south to Rowan County, North Carolina, a common destination for Pennsylvania Germans moving along the "Great Wagon Road". There, he married **Catherine Kern** (Karnes) (1762- 1831) in 1784. The family's subsequent move to Washington County, Indiana, around 1804–1808 was part of the "Upland South" migration that populated the lower Midwest. This illustrates that migrations often occur in kin groups or by families following a charismatic, often religious, leader, a process that continues in modern times and leads to stability and mutual support for immigrants when they reach their destination. Wyman became a substantial landowner in the "Dutch Creek" area, a name that reflects the ethnic concentration of these German - American settlers. Migration in search of better economic opportunities is an important issue in current studies of sustainability and relates to SDGs 8—decent work and economic opportunity.

6.5. *Human Bondage*

The research uncovers a specific and complex narrative regarding **Harry Mingo**, a "slave boy" brought to Indiana by Henry Wyman. Despite the Northwest Ordinance of 1787 prohibiting slavery in the territory, many settlers from the South brought enslaved people under the guise of "indentured servitude." Court records from Washington County indicate that in 1808, Wyman entered into an indenture agreement with Mingo, effectively binding him to service for decades. The relationship appears to have been contentious, as Mingo sued for his freedom on several occasions [22]. The oral history's mention of Mingo escaping to Canada or being buried in the family cemetery reflects the ambiguous and often contradictory status of African Americans on the frontier, where legal freedom often coexisted with de facto bondage.

7. The Indiana Frontier – Whiskey, Religion, and the Klan

The settlement of Washington County, Indiana, serves as the stage where these diverse lineages converged. The oral history describes a society "founded on whiskey" that evolved into a disciplined agricultural community marked by religious fervor and social tension.

7.1. *The Technology of Distilling*

The grandmothers' remarks that early property records were dominated by "So - and- so's Still" reflects the economic reality of the early 19th - century frontier [23]. Before the advent of railroads, transporting bulk corn to market was prohibitively expensive. Converting corn into whiskey reduced its volume and increased its value, effectively turning spirits into a liquid currency corresponding to SDG 9-- industry, innovation, and infrastructure.

The German settlers of Southern Indiana brought with them the technology of the turnip shaped coper still [24]. These stills, hammered from sheet copper and riveted together, were distinct from the pot stills of the British Isles. The "worm," a coiled copper tube used for condensation, was often the most valuable piece of equipment a farmer owned. The ubiquity of these stills in Washington County underscores the industrial nature of early farming; it was not merely subsistence agriculture but a sophisticated value - added economy.

7.2. Elder John Wright and the Blue River Church

Despite the economic basis of the area being based on what we now call “moonshine,” there was a fervent religious life in the community that denounced alcohol, gambling, dancing, and even cardplaying. This early evangelistic spirit was dominated by figures like **Elder John Wright** (1785-1851), a seminal leader in the Restoration Movement [25] and an ancestor through the English line of the grandmothers’ paternal mother. Wright’s theology was radical in its simplicity. He rejected all human creeds and denominations, arguing for the unity of all Christians based on the Bible alone. He founded the original church, the Blue River Church of Christ, and his sons, also “Elders” (the name given to ministers of that religious group) populated the entire county with small churches following these ideas. Memories of that line persist in the family, with the grandmothers’ paternal uncle marrying **Helen McCoskey (Gill)** (1911- 2003), a loyal member of the original Blue River Church of Christ although she played the organ at the Catholic Church on alternate Sundays.

This theological rigor translated into strict social controls. The grandmothers’ recollection that “dancing was a sin” reflects the austere morality of the Blue River Church of Christ. In this environment, the pie supper emerged as a sanctioned social institution. These events were fundraisers for schools where young women baked pies in decorated boxes, and young men bid on them to share a meal with the baker. This ritual channeled courtship into a public, community - monitored setting, allowing for social interaction without violating the prohibitions against dancing or card playing. However, the more conservative religious leaders(Church of Christ and Quakers) disapproved of these social occasions because bidding resembled gambling, the decorated pie boxes looked too frivolous, and young men and women could flirt with one another outside of the supervised settings of home and church [26].

8. International Trade Brings New Immigrants and the Railroad Connects City and Country

8.1. Irish Immigration and Assimilation; Formal Education Comes to Town

John Patrick Gill (1822-1885) was a young laborer living in Ireland when he was “shanghaied”(forced by the Queen’s soldiers to join a ship lacking a full crew).Reportedly, the “redcoats” would come into a tavern and lay a hand on every tenth man and tell him he was a sailor now on a particular ship. Family lore says that this ancestor was put on a ship bound for China, sailing across the Atlantic. This might not have been all bad, since family tradition maintains that Gill’s father and brother had been killed and their bodies dissolved in lye for being Irish nationalists.

John Gill “jumped ship” in New Orleans and made his way up the Mississippi River to the Ohio River and the area of Louisville, Kentucky but decided to seek his fortune across the Ohio River in Indiana. He became the first teacher in the Pekin Academy, a private school founded in the small town of Pekin, Indiana in the mid-1800s (SDG 4— quality education). When he was interviewed for the position, he was asked if he would teach the children the world was flat or round, still a subject for debate at that time. His answer was that he would teach it both ways, a diplomatic answer for that time and place. From time to time he was called from as far away as Indianapolis to act as translator for Irish immigrants who were in trouble with the law and were being called for court appearances and he would always go, but then he would say they spoke some Irish dialect he couldn’t understand hoping to get his countryman out of trouble because the trial couldn’t proceed. He became a lawyer, and he and all his sons became farmers and teachers.

8.2. The Railroad Brings New Commercial Opportunities

In a few years John Gill accumulated enough capital to take advantage of the new railroad connection between the growing metropolitan area of Louisville, Kentucky, and its twin city across the Ohio River (New Albany, Indiana) and continued on to Salem, the county seat of Washington County, and points north. (The porter of this train facilitated the Underground Railroad, smuggling slaves from Kentucky to Salem, where a part of the town was called “Africatown”). The town of Pekin

was an intermediate stop. John Gill built a hotel over a creek to appeal to visitors from the city and especially catered to the large 4th of July celebration in Pekin that continues to this day. The distinctive feature of the hotel was that it was built over a stream where the men could sit on rocking chairs and fish (SDG 3—good health and well-being). It also had an icehouse where in the winter blocks of ice cut from Blue River in the winter could be kept frozen, insulated by straw for cool drinks in the summer (SDG 6—clean water and sanitation). John Gill married another Irish immigrant, **Bridget Whalen** (1883-1886). Their children included daughters **Eunice Gill** (1890-1975) and **Loretta Gill** (1901-1979) who are remembered by both grandmothers supplying this family history. Their home, the old hotel, was so large it had a room for canning jars, a room for suitcases, a room for paper bags and old newspapers, and felt rather creepy. Eunice had had a suitor in her youth, but he was a Protestant so with the norms of the time they could not marry. Loretta always wore her hair in long ringlets, in the style of the 1800s. They lived together in the old hotel, maintaining the accompanying farm all their lives, and would faithfully drive to St. Patrick's Church in the county seat, Eunice steering the car and Loretta operating the gearshift. When they died, the building was sold and converted into condominiums, an interesting example of the reuse of an existing resource repurposed for modern times, one ingredient of sustainability (SDG 12—responsible consumption and production) [26].

In addition to Eunice and Loretta. John and Bridget Gill had several sons, including **James Whelan Gill** (1858-1954). He married **Edith Karnes** (1868-1940), whose maternal family traced back to early colonial settlers and included several "Patriots" who fought in the American Revolution. James Gill was the great grandfather of the grandmothers who are informants here. The older grandmother remembers him well. He was in his 90s and blind when she knew him, but she spent hours sitting with him discussing news they heard on the radio, farming issues, and family stories. This account expands the notion that the women of the family are generally the storytellers and keepers of tradition. An alternative modality might be that an elderly person of either gender who maintains mental acuity may be charged with entertaining children and likely will rely on memories of past years and become the one who passes down family traditions (SDG 5—gender equality). Since women usually live longer than men, they may usually play this role. But for an elderly man, the same dynamic of memory and storytelling may be operative. Valuing the contributions of every generation leads to harmony within the family, sustains the family's traditions, and builds social capital. This can provide a feeling of rootedness and personal safety that enables acceptance of innovation and social change necessary for achievement of sustainability goals. James Gill's daughter, **Naomi Kiefer** (1890-1988) married farmer **John Kiefer** (1883-1971) bringing another line of German ancestry into the family.

9. Rejection of German Culture (World War 1) and the Shadow of the Klan (1920s)

9.1. *The Suppression of German Culture*

The "anti- German language acts" of World War I had a profound impact on the family's heritage. In 1919, Indiana passed legislation banning the teaching of German in elementary schools. This was part of a broader wave of nativism that saw German street names changed, German-language newspapers closed, and public use of the language stigmatized. This legislative erasure explains why the "Dutch accent" of **Frank Kochert** (1876-1953) remembered by the grandmothers was a remnant of a fading world [27].

9.2. *Danger from the Ku Klux Klan*

The 1920s brought a dark chapter to Indiana history with the rise of the Ku Klux Klan. Unlike the vigilante groups of the Reconstruction South, the Indiana Klan was a mass political movement that presented itself as a defender of "100% Americanism" and Protestant morality [28]. It was virulently anti - Catholic, anti - Jewish, and anti - immigrant.

The Kiefer family, as Catholics in a predominantly Protestant region, found themselves in a precarious position with possible danger coming from neighboring families and even the local government officials, a threat to sustainability (SDG 16 — peace, justice, and strong institutions). The grandmothers note that they “felt they had to do things correctly and be above suspicion”. The Klan’s influence was pervasive; lists of members from the period show that it included prominent citizens, merchants, and even clergy [29]. The collapse of the Indiana Klan following the murder trial of Grand Dragon D.C. Stephenson in 1925 [30] broke its political power, but the social fissures it exposed took decades to heal. The Kiefers’ adherence to the Democratic Party in a Republican, Klan - influenced county was a mark of their distinct cultural and religious identity.

10. Innovation and Resilience in the 20th Century

8.1.

The transition into the 20th century is marked by rapid technological change and the family’s adaptation to the industrial age. For example, the grandmothers’ maternal grandfather, Frank Kochert (1876-1953) had married into the maternal side of the family with parents who were immigrants from Germany and Switzerland where farming technology was different than Southern Indiana. He brought innovations to his farm in Lanesville, Indiana that demonstrate the application of vernacular engineering to agriculture. His construction of a “self - cleaning barn” on a hill utilizing gravity flow [31] anticipated the “gravity flow channel” systems that would become standard in later dairy operations. By positioning the barn on a slope, he used spring water and gravity to flush manure, a labor-saving design that was advanced for the 1930s. His “self-cleaning privy” over a running stream and a bridge designed for pigs to cross the river from one pasture to another further illustrate a pragmatic ingenuity that was unique for the area and correspond to SDG 9—industry, innovation, and infrastructure and SDG 15—life on land.

8.2. *The Science of Hog Cholera: “Hog’s Blood” and Condoms*

One of the most vivid anecdotes in oral history describes the work of **Eugene Kiefer** (1910- 1996), father of the grandmothers giving this oral history. A disease called “hog cholera “ was sweeping the countryside [32]. After consulting with Purdue University specialists, he decided inoculation of 1,000 hogs was required. He identified a few hogs that appeared to have immunity and re-injected their blood to get blood with hyperimmunity that he could inject to immunize the vulnerable hogs. To do this, he had to cut off the ends of tails off from hogs from which blood was being harvested. His innovation was to use an ordinary household item, a rubber condom, to cover the cut tail for sanitation, a big improvement over the standard university - developed method of bandaging them as you would a human. If the SDGs are expanded to include species other than the human, then this would fit squarely within SDG3—good health and well - being.

This detail highlights the intersection of scientific veterinary medicine with the improvisational nature of farm life. Expert advice from “extension agents “ funded by the federal government and research from a “land- grant” university, Purdue University, were essential in bringing modern scientific knowledge to the farmer, a process described eloquently by Ryan and Gross [32] and Rogers [33]. Purdue University labs would even do an autopsy of a sick hog when hogs appeared to have an illness the local veterinary could not diagnose and treat. The integration of federal agency, state university scientists, and the ordinary farmer provides an excellent example of the type of organization that brings about sustainable change. Experts did not come and go —they were a part of the community, a feature not recognized enough in current scholarship on sustainability (SDG 17—partnership for the goals).

8.3. *Orabelia and the African Violet Economy*

The story of **Orabelia Geis Kochert** (1886- 1977)(married to Frank Kochert) serves as a case study in the female domestic economy of the mid - 20th century. Widowed and land - rich but cash- poor,

she turned to the cultivation of African Violets (*Saintpaulia ionantha*) to support herself. The African Violet had been introduced to the U.S. market in the late 1920s, but its popularity exploded in the late 1940s and 1950s with the introduction of fluorescent lighting, which allowed the plants to thrive indoors [34]. It is interesting to see an early article about growing African violets under fluorescent light written by a woman in Texas with the surname of Geis, Orabelia's maiden name. Orabelia carried on correspondence with a number of relatives so it possible that she received information from this relative that enabled her to be "early to the market," aligning with both SDG 5 –gender equality and SDG 8— decent work and economic growth. Orabelia's propagation of these plants from leaf cuttings—a technique that required patience but little capital—allowed her to generate an income stream outside the traditional male-dominated farm economy. Her enrollment in Social Security in the mid-1950s was facilitated by the Social Security Amendments of 1954, which extended coverage to self-employed farm operators and home-based businesses [35]. Orabelia was very reluctant when her son-in-law, Eugene Kiefer, married to her daughter **Jeanette Kochert Kiefer** (1921- 2022), took her to the Social Security Office to pay back taxes and sign up for Social Security because she was afraid she would be arrested for not reporting her African Violet income. This legislative change was crucial for the economic security of widows like Orabelia, integrating them into the federal safety net. Ironically, the system had been designed in a way to have excluded anyone involved in food production, even to the point of excluding truck drivers who transported food products. This had the effect of excluding a high proportion of the African- American population, so Orabelia benefitted an early stage of the civil rights movement aimed to bring justice to African-Americans [36]. This fairly recent part of the family narrative relates most directly to SDG 1— no poverty.

8.4. *The "Dr. Karen" Connection: Pop Culture and Identity*

One grandmother's name, Karen, was inspired by a character in a comic strip, "Dr. Karen." Research confirms that the popular strip Mary Worth (originally *Apple Mary*) ran a prominent storyline in 1944 featuring a character named Dr. Karen Ward [37,38]. Dr. Ward was a physician involved in a plastic surgery plotline, a sophisticated and career-oriented female character who would have stood out in the cultural landscape of the 1940s. This connection illustrates the influence of mass media on personal naming conventions and the aspirations parents held for their children, even their daughters (SDG 5- gender equality) during the war years and later. Both the grandmothers became academics, so there was indeed a "Dr. Karen" although their parents never verbalized the expectation that they would be anything other than homemakers.

8.5. *Industrial Mobilization: The Charlestown Ammo Plant*

The Indiana Army Ammunition Plant (INAAP) in Charlestown, where Eugene Kiefer and Jeanette Kiefer worked, was a linchpin of the American war effort [39]. Built by DuPont in 1940, it was the world's largest producer of smokeless powder. Eugene's invention of a device to "temper bullet powder" refers to the critical tempering or drying process [40]. Smokeless powder (nitrocellulose) must be carefully dried and stabilized to ensure consistent burn rates and prevent spontaneous combustion. This work was hazardous and technically demanding, placing the family at the center of the "Arsenal of Democracy."

8.6. *Willis Mead and Merrill's Marauders*

Helen Kiefer Mead (1916- 2011) was the aunt of the grandmothers, The service of her husband **Willis Mead** (1914- 1942) in Merrill's Marauders (the 530 7th Composite Unit) connects the family to the China - Burma - India (CBI) Theater of WWII [41]. The Marauders were a long- range penetration unit that operated behind Japanese lines in the jungles of Burma (now Myanmar). This was some of the most grueling infantry combat of the war, characterized by disease, malnutrition, and difficult terrain. The grandmother's story of Helen Kiefer Mead (Eugene's sister) sitting on blocks of ice during

a cross - country drive to California while in advanced pregnancy to delay birth until they reached the West Coast vividly captures the dislocations and physical hardships endured by military families on the home front, and also the improvisational character of using ice blocks to keep Helen cool and comfortable (SDG 3—good health and well - being).

8.7. *Communication with the Wider World*

In addition to the migration of populations discussed above, family history includes an extraordinary amount of travel. John and Naomi Kiefer, and children Eugene and Helen, drove to the New York World's Fair in 1939 in a Ford Model A, with Naomi and Helen sleeping in the car and John and Eugene sleeping under the car. Eugene and Jeanette went to Cuba for their honeymoon, then spent months in Mexico when the older grandmother was a baby. Museums and art galleries were not a usual part of these long vacations. Instead, visiting National Parks, experiencing other cultures like Chinatown in San Francisco, looking at different farming techniques, and inspecting infrastructure were paramount.

When visiting Florida, the family explored how sewage and garbage were managed in a big city like Miami. The first stop was traveling to the "garbage mountain" where refuse was taken and piled high since it couldn't be buried due to such a high-water level and shouldn't be dumped in the ocean as it had been in earlier years (SDGs 14—life below water and 15—life on land). The family was impressed by the pad preparation to eliminate leakage, the washing of the trucks after every garbage run, and the planting of environmentally appropriate plants to achieve aesthetic goals. Summer travels took the family to all parts of North America, and more recent generations have traveled to all corners of the globe, including such distant areas as Mongolia, Amazonia, and the Kalahari Desert in Botswana.

8.8. *Religious Orientation*

Religion has not been an important element in the family tradition, although Catholicism has dominated. Funerals have been a basic venue for transmitting the oral tradition from generation to generation. There has been considerable intermarriage over the generations so defining the family lines and exchanging family history occurs. However, religion also provides a mode of communication with the wider world. Orabelia had a sister who became a nun and a college professor. She also maintained correspondence with missionaries around the world. According to the grandmothers, religious practice has been more of an opportunity for socializing and information sharing than for deep spiritual growth.

Several members of the Kiefer family have been active Sunday School teachers. Eugene Kiefer took an unusual approach that reflects the family's inclusive perspective. He took the children to play and note who was buried in both the Catholic cemetery and the town cemetery across the street. Eugene gave them an inclusive perspective that characterized the family's orientation and facilitated values to promote diversity and inclusion, values that support grass roots sustainability (SDG11—sustainable cities and communities).

Eugene's son **Thomas Kiefer** (age 73) taught Sunday School at the same church, but his approach was more scientific. He took the children to the cemetery and had them analyze which locations and stones were optimal considering traffic patterns, wind velocity, stone characteristics, and other material variables. This lesson illustrates the acceptance and use of modern science even in a deviant context, another perspective facilitating sustainability (SDG 15—responsible consumption and production).

Eugene's granddaughter, **Susan Hopkins-War** (age 61) was Superintendent of Sunday School at Bayside Community Lutheran Church in Half Moon Bay, California. Her approach was to produce dramas about Bible stories, getting costumes and props for the classes and doing a deep dive into performance art. For example, when the Sunday lesson was the creation of the earth and its species, the children received animal costumes and ran around the church acting out being created. This perspective, like the others, shows the creative thinking and innovation that facilitate sustainability.

The arts are an effective medium for communication of old stories and new learning. This orientation is often overlooked in economic development projects but so apparent when traveling to developing economies around the world where folk art, music, and dance are important modes of communication, developing community, and growing social capita solidarity (SDG 17—peace, justice, and strong institutions).

9. Caring for the Vulnerable and Demonstrating Deviance

9.1. *Acceptance of Nonconformity*

Often, oral histories include only the most successful achievements of the clan. One interesting feature of this narrative is that it includes numerous cases of care for individuals who did not conform or achieve high status or who evaded or did not succeed in evading the law. This is seen the case of the aforementioned Abigail French, who chose to become an Indigenous elder rather than to return to Puritan New England. It continues with **Mrs. Margaret Smith** (1784-1864), a daughter of Henry Wyman, who in the mid-1800s left her abusive husband in Tennessee and walked with her four children 200 miles back to Indiana where the family story says that she obtained one of the first divorces granted in Washington County. Another curiosity is that John Kiefer's male relatives were nearly all named "Nicholas" so if "the law" came looking for "Nicholas Kiefer" they would be told the one they were looking for was in a distant field or over in another village, a practice adopted to avoid conscription in the Prussian Army before immigration to America. The family celebrates an "Aunt Kate" who was the first woman in those parts to hem up her skirts and ride a bicycle, a scandal at the time. Orabelia was the first woman in her community to vote, also breaking widely held norms in that time and place. Another woman in the family married an African-American jazz musician and "passed for black" In the 1950s. **Helen McCoskey Gill** (1911-2005) (great aunt by marriage to the grandmothers) was a teacher who always maintained her maiden name and her own bank account, unusual for a married woman of her time. On the other hand, there have been cases of mental illness, trouble with the law, and plain laziness even to the point of refusing to attend school or work. In every case the family has supported the individual involved, materially and socially. They are remembered, not hidden away, or forgotten. Perhaps this suggests that sustainability requires acceptance of the problems and conflicts that occur in any social group, the practice of inclusion, and a general acceptance of diversity.

4. Discussion

10.1. *Limitations and Suggestions for Further Study*

Obviously, the oral history of one family's journey through the centuries needs to be supplemented by other narratives of how families have coped with the challenges of maintaining tradition while accepting change. Sustainability studies have tended to focus more on the environmental and material elements of sustainability rather than the social and familial. But scientific advances will not have widespread impact unless they are relevant even to "ordinary" families and marginal or frontier communities often overlooked by academic researchers and project planners. This is especially important in the developing world [42].

This report fulfills the requirement for depth and context by validating an extensive oral history with rigorous documentation. It confirms that the stories of snowshoes, copper stills, and tail bleedings are not mere folklore but accurate recollections of the technological and social realities that shaped the American experience, a study of sustainability through the centuries. Oral history demonstrates how sustainability has been demonstrated through adaptation to changing economic, political, and technological change. The powerful oral tradition maintains respect for elders and at the same time acknowledges the benefits of scanning the horizon even to distant lands for new opportunities. Maintenance of communication with distant relatives through relationship networks provides information about changes in economic and technological practices taking place outside of the immediate environment. It shows a new way to approach sustainability, by taking advantage of

the inherent strengths that already exist in a family or a village. One observation is that mixing different ethnic groups and cultural backgrounds has created a synthesis of sensibility that contributes to the practice of sustainability in ordinary life.

This study represents a new way to look at sustainability. It identifies grass roots, bottom-up values and practices that have supported sustainability for centuries in an “ordinary” North American family. The lineage traced in this report is a confluence of the major streams of North American history. It moves from the birchbark wigwams of the Mi’kmaq Grand Chief Membertou to the high-tech munitions lines of the Charlestown Army Ammunition Plant and beyond. Sustainability is not something new to a frontier or farming family and should be given more recognition by scholars and practitioners engaged in sustainability projects.

10.2. Key Themes and Insights:

- **Diplomacy and Adaptation:** The early generations (Membertou, Hébert) survived through alliance and the exchange of knowledge. The Mi’kmaq adoption of Catholicism and the French adoption of indigenous botany were pragmatic strategies for survival in a new world.
- **Resilience in Displacement:** The trauma of displacement is a recurring motif, from the forced march of the Deerfield captives to the expulsion of the Acadians and the migration of the Hessians. In each case, the ancestors rebuilt their lives in alien environments, transforming from captives and exiles into foundational settlers.
- **The Evolution of Economy:** The family’s economic history mirrors the nation’s. It evolves from the fur trade and subsistence farming to the value-added whiskey economy of the frontier, and finally to the specialized industrial and domestic economies of the 20th century (African violets, munitions).
- **Cultural Persistence and Erasure:** The persistence of the strong oral tradition indicates the strength of these multicultural enclaves. However, the external pressures of the KKK and WWI anti-German sentiment forced a rapid Americanization, merging distinct identities into the Indiana culture.

10.3 Openness to Change and Acceptance of Novelty, Technological Innovation, and Deviance both Positive and Negative: The family’s maintenance of communication with the outside world through travel, respect for expert advice and scientific advances in agriculture, and general acceptance of new or different products and customs is an important element of sustainability. Innovation requires making decisions involving risk, and where risk is involved, the possibility of failure has to be accepted.

10.4. Practical Suggestions

These practical implications can be useful for moving forward with the SDGs, promoting economic development, good environmental practices, and social stability through family networks and community-based resources:

- Much wisdom already resides in frontier and rural communities. Interventions from the outside may be leveraged more effectively if they are introduced to community leaders who have already earned the trust of their community and their extended family members, and who may have insights the expert should know.
- Diversity helps when adaptation for sustainability is needed. When different cultures come together, they can learn from one another and change is perceived as less risky when they see benefits from another group’s efforts or investments.
- If technologically complex projects are brought to a frontier or rural setting without proper preparation and continued monitoring, the odds of success are reduced. Simple solutions to environmental problems can often be found in the community itself. The example of hog cholera and the use of condoms for wound protection demonstrates this principle. It took university-based expertise to diagnose the problem, but grass roots practicality to develop a good solution.

Table 1. Chronology of Historical Figures, Regional Settlements, and Key Innovations.

Name	Period	Key Historical Events & Contributions	Verification / Source Link
Henri Membertou	c. 1507–1611	Mi'kmaq Grand Chief; First Indigenous baptism in New France (1610); early diplomatic relations.	Canadian Encyclopedia
Louis Hébert	Early 1600s	First European apothecary and farmer in Canada; pioneer of sustainable cultivation in Quebec.	Cap-aux-Diamants
Martha French	1695–1762	Survivor of the 1704 Deerfield Raid; represents the forced migration and cultural assimilation into Quebec.	Deerfield Museum
Joseph Roy Azalia Roy	1865-1903	Facilitated the migration of Acadian families from Canada to Indiana; central to the Acadian diaspora.	WikiTree Roy-2252
Henry Wyman	1757–1838	Former Hessian soldier (Battle of Trenton); early pioneer and settler in the Indiana Territory.	WikiTree Wyman-1734
Elder John Wright	1785–1851	Restoration Movement leader; instrumental in the social and religious sustainability of Blue River, IN.	Restoration Movement
John Patrick Gill	1822–1885	Representative of the 19th-century Irish-American immigrant wave	Ancestry Records
Frank Kochert	1876–1953	Innovator of the “Gravity Barn” system; improved efficiency in farming.	Ancestry Records

Table 2. Material Culture and Technological Innovations in Social Sustainability.

Practice/Artifact	Historical Context	Significance to Sustainability & Innovation	Verification / Source Link
Snowshoe	1704 Deerfield Raid	Enabled winter mobility; bypass of traditional English fortifications; cultural tech exchange.	Captive Histories [14]
Copper Stills	Early 1800s Indiana	Economic value-add; converted perishable corn into transportable, tradeable commodity (whiskey).	Alchemist Cabinet [31]
Hog Cholera Serum	1900s–1950s	Biological resilience; “Sow’s blood” vaccination and tail bleeding to preserve livestock assets.	Merck Veterinary Manual - Classical Swine Fever [32]

African Violets	1950s	Domestic micro-economy for women; first widespread use of indoor fluorescent lighting for horticulture.	AVSA Archive Index [34]
Powder Tempering	World War II	Industrial stabilization of smokeless powder; critical for munitions safety at Indiana Army Ammunition Plant.	Indiana Army Amm. Plant [39]

Appendix A. Technical Glossary of Historical Practices and Artifacts

- **Tail Bleeding (Hog Cholera):** A mid-20th-century veterinary method used to obtain anti-hog cholera serum. Technicians would make a small incision in the tail of a “hyper-immunized” hog to collect blood, which was then processed into a life-saving vaccine for the rest of the herd.
- **Powder Tempering:** A critical safety process in munitions manufacturing (such as at the Indiana Army Ammunition Plant). It involves controlling the temperature and moisture content of smokeless powder to ensure “ballistic stability,” preventing the powder from becoming too volatile or failing to ignite during storage or transport.
- **Fief (Seignorial System):** A land-granting system used in New France (Canada). As seen in the entry for **Joseph/Azalea Roy**, a fief was a plot of land held by a “seigneur” who encouraged settlement and farming, forming the basis of the early North American agricultural economy.
- **Restoration Movement:** A 19th-century American religious social movement (led by figures like **Elder John Wright**) that aimed to simplify church structure. In a sustainability context, it represents “social resilience” by creating strong, self-governing community networks in the Indiana frontier.
- **Domestic Female Economy:** A term used to describe the 1950s trend where women utilized household innovations (like **fluorescent lights** and **African Violets**) to create small-scale commercial ventures or community-based plant exchanges, contributing to household financial stability.

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