June 2020

Crossroads of Conversion: Intersections of Bodies, Materials, and Histories in Early Medieval Bohemia

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Abstract

This dissertation examines the skeletal remains and mortuary practices from two cemeteries at the early medieval site of Libice nad Cidlinou in the Czech Republic. The 9th and 10th centuries in Central Europe have been characterized by political consolidation and the rise of Christian institutions. As Christianity gained influence in the region, conversion altered not only religious beliefs: political landscapes, disease ideologies, material culture, and bodies were also transformed. The skeletal remains and mortuary contexts of 260 individuals from the Akropole and Kanín cemeteries at Libice are compared to examine how social status and engagement with Christianity influenced daily life and the formation of bodies. To do so, osteological data is integrated with archaeological and textual sources. Three thematic areas further inform on how bodies are entangled with large-scale historical processes: birth and infancy, violence and warfare, and disease experiences. As a microhistorical bioarchaeology, this project is relational and multiscalar with an emphasis on individual osteobiographies that inform how historical processes are experienced and enacted through individual lives.
CROSSROADS OF CONVERSION: INTERSECTIONS OF BODIES, MATERIALS, AND HISTORIES IN EARLY MEDIEVAL BOHEMIA

by

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Dissertation
Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Anthropology.

Syracuse University
June 2020
Acknowledgments

It takes a village, and I have a village-full of people to thank at the end of this journey. First and foremost, my adviser, Dr. Shannon Novak. Thank you for taking a chance on an untrained student curious about what bones can tell us, thank you for mustering your contacts to find this project, thank you for pushing me to the far reaches of the theory-verse, thank you for reading an untold number of drafts, and thank you for reaching the finish line with me. Thank you to my unparalleled committee, Dr. Lars Rodseth, Dr. Douglas Armstrong, Dr. Albrecht Diem, and Dr. John Robb. Your comments, critiques, and encouragements have pushed this dissertation to new heights. But each of you have worked with me beyond your roles as committee members. Through field work, publishing, grant writing, and seminars, you have made me the scholar that I am today. Thank you.

Many other people and institutions made this work possible. This project was primarily funded by a National Science Foundation Graduate Research Fellowship under Grant No. 2012142383. Other generous sources of funding include Syracuse University Department of Anthropology, Maxwell School of Citizenship and Public Affairs, Moynihan Institute Center for European Studies, and Roscoe Martin Research Grant Program. Thank you to Dr. Joan Coltrain for the isotope analysis that will form the next stage of this project. Thank you to Dr. Matthieu van der Meer for early forays into medieval historiography. Special thank you to Dora Cash and Irenka Micková for translation assistance. And thank you to Dr. Wayles Browne for introducing me to the intricacies of the Czech language.

Thank you to the faculty of the Department of Anthropology at Syracuse University for fostering my intellectual development and deepening my love of this field. Special gratitude is owed to the late Dr. Bill Kelleher, Dr. Cecilia VanHollen, Dr. Chris DeCorse, and Dr. Theresa
Singleton for giving me a foundation in social and archaeological theory. Thank you to graduate school friends and colleagues who shared thoughts, beers, lab candy, cautionary tales, and triumphs, academic and otherwise: Cullen Black, Jessica Bowes, Mafe Boza Cuadros, Tony Chamoun, Melissa Darroch, Retika Desai, Meredith Ellis, Ross Freedenburg, Melinda Gurr, Katie Hicks, Rachel Horlings, Steven Johnson, Jocelyn Killmer, Aja Lans, Karen McNamera, Fran McCormick, Lalit Narayan, Paul Noe, Ayse Ozcan, Sarah Platt, Vanessa Reeves, Sean Reid, Matt Reilly, Alanna Warner-Smith, and Cristina Watson.

This project would not be possible without the generosity and support of colleagues and friends in the Czech Republic. My deepest thanks to Dr. Petr Velemínský and the Department of Anthropology at the National Museum in Prague for access to research collections, logistical support, and guidance on this project. Thank you to Dr. Jan Mařík and the Archaeological Institute of the Czech Academy of Sciences for access to excavation reports, photographs, and the research library. I am incredibly thankful for the mentorship and friendship offered by Jan and his wife, Petra Maříková Vlčková, as well as Jan’s deep knowledge of the archaeological site at Libice. Thank you to Dr. Michael Dietz, Dr. John Staeck, Dr. Jiří Macháček, and all of the fantastic archaeologists who allowed me to join them for several field seasons at Pohansko, Břeclav. Thank you to Dr. Eva Drozdová for access to research collections at Masaryk University in Brno. And thank you to Pavel Kubálek and Eva and Luke Čečil (and Nessie!) for facilitating introductions and guiding me through my first visits to Prague.

And finally, to my family and friends, a million thanks. If you are a non-academic reading this, then you almost certainly one of the people to whom I owe thanks for love, support, and encouragement through this journey. Thank you to my mother, Jane, who promised to always let me dig in the sandbox, and whose strength as a woman, a teacher, and a mother is a
model for my life. Thank you to my sister, Kristen, who shares my scientific curiosity and whose adventures to the far reaches of the globe inspire me and keep me guessing what time zone she is in. Thank you to my husband, Joe, who has been by my side since the beginning and whose love and partnership has sustained me through distance, change, and challenges. The greatest thanks I can offer you is a freezer always full of breakfast burritos. Finally, thank you to Nathan, my sweet tiny monster. You are the greatest thing I have ever been a part of and thank you for patiently letting me observe your developing deciduous dentition.
To my father, Glenn, as I think about the past…
…and to my son, Nathan, as I look to the future.
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Chapter 1: Introductions

1.1 Introduction

Enduring historical narratives in Europe tend to give the impression that the political processes of state formation and institutions such as Christianity are impersonal and abstract forces bearing down on human lives. For example, medieval sources described the Christianization of Bohemia in terms of sweeping conversion events in second half of the 9th century, a narrative largely unquestioned through most of the 20th century. However, upon closer examination, these large-scale phenomena are enacted, changed, and empowered by individuals and groups (Gregory 1999; Armstrong 2003).

Archaeologists and historians have more recently conceptualized conversion as a slow transition, with many small increments of change (Barford 2001; Urbańczyk 2008). Conversion was far more complicated than a reorientation of religious beliefs. Also altered were social relations, landscapes, material culture, and ways of knowing the world (Curta 2008). Archaeologists and historians face the challenge of meaningfully representing these complex processes without losing sight of the specific textures and contingencies of such phenomena on the ground (Robb and Pauketat 2013). One solution to this challenge involves moving between different scales of analysis. In this project, I aim to link traces of individual lived experiences and material fragments with histories on a large scale. I do so through the lens of people negotiating Christianization and political upheaval in a peripheral zone of Europe, examining their experiences of emerging rituals, material practices, and shifts in worldviews.

Located at the margins of western Christendom, the 10th-century site of Libice nad Cidlinou (Figure 1.1) adds new texture to the embodied experiences of religious transformation and the development of Christian institutions in early medieval Europe. One of the earliest
surviving descriptions of the settlement at Libice comes from an 11th-century cleric known as Cosmas of Prague. In his chronicle of the Czech people, Cosmas describes Libice as the site of a legendary 10th-century massacre, giving it an enduring place in Czech historical narratives. But the archaeological site beneath the modern village of Libice - and the early medieval people who once inhabited it - have more stories to aid our understanding of early medieval Central Europe. Libice might be envisioned as a crossroads, a literal nexus of moving people and materials in the medieval landscape, but also a place of intersection for the political and cosmological upheavals in the 9th-10th centuries. The ways in which people negotiated these transformations are reflected in bodies, objects, and other traces left behind. These clues and signs give nuance to – and occasionally challenge – long-standing interpretations of the past.

Figure 1.1: The foundations of the early medieval church at Libice nad Cidlinou. The rooftops of the modern town are visible beyond. The Akropole cemetery surrounded this structure, and the Kanín cemetery was located 1.5km to the southeast (photo: author).

Against the historical backdrop of Libice, I analyze and compare skeletal remains and mortuary contexts from the two largest early medieval cemeteries at the site: Akropole and Kanín. These two cemeteries were in use for roughly the duration of the 10th century and likely
represent different (but potentially overlapping) social strata. My osteological analysis focuses on a comparison of nutrition and diet, activity markers, trauma, and disease. Both the disparities and similarities within and between these groups suggest that religious institutions, while closely tied to political structures, did not permeate all levels of the social hierarchy equally. Indeed, certain groups of people were engaging with alternative approaches to life and death in ways reflected in both burial contexts and in the bodies themselves.

Bodies, on a large scale, have histories (Harris and Robb 2013) and it is important to consider how medieval bodies were conceptualized. Christian theology, classical philosophy and medicine, folk traditions, and other contexts shaped ideas about bodies (Figure 1.2). Importantly, however, the materiality of bodies also contributed to how they were perceived. These material bodies could be fraught with contradictions: simultaneously sacred and profane, stable and in flux, indivisible and partible, literal and symbolic (Brown 1982, 1988, 2015; Walker Bynum 1995, 2011; Diem 2010). For example, disease and decay of bodies was perceived as the result of divine retribution or mundane imbalances. Maladies could be remedied through divine intercession or the materially grounded humoral system of medieval medicine because of the body’s perceived ability to respond to both (Kay and Rubin 1994; Gilchrist and Sloane 2005; Walker Bynum 2011; Gilchrist 2012).
Figure 1.2: Man as a microcosm. A 14th-century manuscript depicting the Zodiac (Oxford University, Luminaria.org). This conceptualization of the body merges Christian and classical themes, with human bodies envisaged as microcosms of the universe.

How might we approach the lived experiences contained in these varied and complex bodies? Walker Bynum (1995:7) describes a “cacophony” of medieval bodies and cautions against monolithic or essentialized characterizations of the medieval body. Instead, she and others have proposed that meanings of, and understandings about, medieval bodies can shift depending on the context (Gilchrist 1994; Walker Bynum 1995; Diem 2010; Harris and Robb 2012, 2013; Robb 2013a). Robb (2013a:80) describes such shifts in terms of historical ontology: a “longstanding system of cultural logic (and illogic)” that allows people to conceptualize and experience the material worlds they move between. For example, individuals might pass from a marketplace, to a chapel, to a battlefield, to a family hearth, with each setting requiring different understandings of the relationships between themselves and the material worlds around them.
Flexible movement between vastly different material contexts requires shifts in the meanings of these spaces and the things and bodies that move between them (Harris and Robb 2012). The medieval dead body offers an example. The materiality of the dead body gave it an unusually active afterlife in the medieval imagination. The physical transformations of the body through death and decomposition in part reflected the body’s social change after death. For example, certain social circumstances or types of deaths were thought to result in dangerous revenant bodies returning from the dead (Caciola 2016). On the other hand, relics of the holy dead became sacred objects and were endowed with special abilities such as healing (Brown 1988; Robb 2013a). The dead body could thus shift between different meanings founded in particular material and social contexts (Brown 1988; Walker Bynum 2011; Gilchrist 2012; Robb 2013a).

Touching on some of the broader scales at which bodies are conceptualized suggests some of the many ways that individual bodies could be materially entangled at a local level. The primary aim of this project is to tease out how cosmologies, as ways of understanding the world, intersect with other aspects of people’s lives to shape their bodies. Major questions that I address include: How might variation in mortuary treatment suggest alternate life course pathways or different conceptions of the afterlife? Is it possible to identify skeletal markers of socioeconomic status, and how are these indicators distributed between the two cemeteries? How have particular material and ritual landscapes contributed to the production of different skeletal bodies?

As we will see, both cemeteries exhibit mortuary behaviors that vary from early medieval Christian norms, and yet the Kanín cemetery contains a larger proportion of burials exhibiting unusual attributes. Of course, these findings do not imply that one cemetery at Libice is Christian and the other is not. Rather, they suggest that the Akropole is more tightly entangled within
Christian prescriptions and practices, while Kanín may represent a more flexible engagement with Christian beliefs. Skeletal indicators of health and activity as proxies for socioeconomic status demonstrate that the people buried in these two cemeteries were experiencing many of the same stressors and workloads. However, rather than completely abandoning an explanatory dichotomy of elite/non-elite for the two cemeteries, I suggest that manifestations of status differences are instead present through bodily practices based in nuanced cosmologies.

Particular cosmologies result in distinct material possibilities, including those of the body (Robb 2002; 2013; Fowles 2013). Beyond an osteological comparison between the cemeteries, I focus on three thematic areas that highlight how different bodies might be produced through cosmological conjunctions: 1) birth and the care of living/dead infants are shown to be informed by interrelated forces of family, politics, and religious prescriptions, 2) violent encounters and embodied identities formed through military practices have resulted in bodies marked in both life and death, and 3) patterns of disease and the social context in which they are embedded reveal different bodily experiences of disease ideologies. In probing these themes at Libice, I uncover the influences of changes in Czech political structures, burgeoning Christian institutions, and enduring pagan traditions in both daily life and the burial ground.

Our knowledge of the past is filtered through what sources survive (Zeitlyn 2012), and the lives of most ordinary people are rarely recorded in any detail. A close of reading of small “clues and signs” might allow us to access lost experiences and reconsider how individuals enact and transform historical processes on the ground (Magnússon 2013:107). Through the lens of human skeletal remains at Libice, I seek to understand how large-scale processes become embodied, enacted, and transformed at the level of the individual as they traverse the life course. Such an investigation requires a deeper consideration of bodies themselves, and how they are
entangled in a material world. I propose to access these relationships through a microhistorical bioarchaeology. This multiscalar approach is designed to shift between levels of analysis to address the “intersection of microscale human experience with histories as large scale and long-term phenomena” (Levi 1991; Ginzburg 1993; Robb and Pauketat 2013:3).

Bioarchaeology is uniquely situated to examine how bodies contributed to, and were formed by, historical processes. As such, this project aims to use the (skeletal) body as the starting point for a multiscalar investigation of how medieval life histories might be informed by large-scale political and cosmological transformations (and vice-versa). I argue that bioarchaeology can benefit from the tenets of microhistory, bridging the gap between skeletal histories and macrohistorical processes. For example, microhistory offers an investigative model that is deliberately relational and multiscalar. Using this model, skeletal remains can be examined and contextualized to address how large-scale histories are enacted at the level of daily life. I suggest four theoretical frameworks that can be integrated to create a microhistorical bioarchaeology: social bioarchaeology, a life course approach, osteobiography, and a body-centered mortuary archaeology. Each of these theories will be discussed below, but first we need to understand microhistory and how it can offer bioarchaeology a powerful scaffolding on which to build a multiscalar study of human remains.

1.2 Bioarchaeology as microhistory

This project aims to enhance a bioarchaeological analysis using insights from microhistory. Microhistory is a multiscalar approach to the past that attempts to capture the complex relationship between large-scale histories and the daily lives of individuals negotiating a material world. This approach might be characterized less as a method and more as a style or
practice that engages with historical phenomena at multiple scales of analysis (Walton et al. 2008; Beaudry 2011). With roots in Marxist critical theory, microhistory developed in Italian historiography in the 1970s. Giovanni Levi, Carlo Ginzburg, and other early microhistorians took inspiration from cultural anthropology and its emphasis on small-scale field research, including Geertz’s (1972) “thick descriptions” of contextualized behavior (Levi 1991; Peltonen 2001). The recent, so-called biographical turn among historians has brought new attention to critical narrative approaches, including microhistory, that seek to move between individual lives and broader historical questions (Kessler-Harris 2009; Meister 2017; Renders et al. 2017).

Though variously defined, and often contentiously debated (Magnússon and Szijártó 2013; Szijártó 2017), most microhistorians would agree on several foundational principles. The first is that microhistory requires an in-depth investigation into relatively small-scale subject matter, such as a document, an individual, or an event. Historian Roger Chartier (1982:32) notes that "it is on this reduced scale, and probably only on this scale, that we can understand, without deterministic reduction, the relationships between systems of belief, of values and representations on one side, and social affiliations on another." Next, the objective of a microhistory is to unveil the deeply interconnected nature of our world and approach "great historical questions" (Szijártó in Robisheaux 2017b) Finally, microhistory emphasizes the agency of people in the past and their active roles in shaping history (Magnússon and Szijártó 2013; Szijártó 2017). Using these principles, microhistory is particularly effective at calling attention to competing histories, critiquing dominant narratives, and offering alternative understandings of the past.

One of the earliest and most salient examples of a microhistory is Carlo Ginzburg’s (1980) seminal work, *The Cheese and the Worms: The Cosmos of a Sixteenth-Century Miller*. 
Through a biographical narrative, Ginzburg (1980:6) reconstructs the life of Menocchio, a rather unusual heretic from 16th-century Italy with his cosmogony of “the cheese, the milk, the worm-angels, [and] God, the angel created out of chaos.” Ginzburg illustrates how long-term histories articulate in the life of an individual, synthesizing Menocchio’s understanding of the world within broader intellectual and religious currents, popular culture, oral traditions, and rural life.

Ginzburg’s narrative biography is now one of many forms of microhistory. This approach has been used to contextualize individuals, cultural groups, archaeological sites, types of economies, and specific events (Brewer 2010; Janowitz and Dallal 2013; Walton et al. 2008). Archaeologists have notably focused on incorporating material entanglements and lived experiences into their microhistorical approaches. For example, Mary Beaudry (2013) develops “archaeological biographies,” microhistorical portraits of individuals reconstructed through objects, archaeological sites, and archives.

An additional component of microhistory is an acknowledgment of the role of the researcher and the self-reflexive nature of crafting a narrative (Robisheaux 2017b). Both microhistories and macrohistories require choices and exclusions on the part of the researcher (Trouillot 1995; Brewer 2010). Furthermore, the types of sources available can be limiting in terms of what kinds of reconstructions and explanations are possible (Gregory 1999). Some microhistorians openly acknowledge these “problems of historical knowledge” and “invite readers to join interpretation’s labor” (Cohen 2017:55). Others describe in detail how they came to discover their small-scale subjects and the research process that led them to connect to wider historical themes (Lepore 2001; Beaudry 2008).

Questions of origins, directionalities, and transformations can perhaps best be addressed with a sense of the large scale, but microhistory adds a more textured and multivocal approach to
historical change by reconsidering the ways in which individuals enact and transform historical processes on the ground (Levi 1991; Gregory 1999; Walton et al. 2008; Brewer 2010). Giovanni Levi (1991:96) notes that “even the apparently minutest action of, say, somebody going to buy a loaf of bread, actually encompasses the far wider system of the whole world’s grain markets.”

The development of a microhistorical narrative requires shifting the lens of analysis to engage with networks of things and people as well as deep time histories and large-scale movements (Ginzburg 1993; Szijártó 2002; Robb and Pauketat 2013). Levi’s example of purchasing bread suggests how microhistory addresses the many types of intersections between biography and large-scale and long-term phenomena (Peltonen 2001; Walton et al. 2008). Robisheaux (2017a) draws connections between microhistory and network theory, likening small-scale subject matter to “nodes” embedded in wider networks and meanings. Likewise, Robb and Pauketat (2013) have called for a “relational history” in which individuals are neither subjects nor objects, but rather nodes within networks of relationalities. Humans can thus be entangled with objects, substances, landscapes, and social institutions – each with their own biographies. In such a configuration, macroscale histories are reimagined as a multiplicity of relationships operating at different temporalities and scales.

Like Ginsburg’s biography of Menocchio, many microhistories engage with the individual. But few have considered the potential of the body itself in a microhistorical approach (Cohen 2017). As the following sections will show, bodies are material sites of action and lived experiences, mediating identity and practice within particular historical and cultural contexts. Several bioarchaeologists have noted the similarities between microhistory and bioarchaeology (Baires 2016; Buikstra 2017; Stojanowski and Duncan 2017). However, few have taken seriously
the methodological and theoretical implications of microhistory and employed them to the study of human remains.

Bioarchaeology stresses the biological and social interactions that influence the skeleton across the life course (Agarwal and Glencross 2011; Buikstra et al. 2011; Baker and Agarwal 2017; Buikstra 2017; Larsen 2017). A microhistorical bioarchaeology has the potential to link individual life histories with emergent historical processes. To do so requires attention to material practices and the formative relationships between people and the objects that make up their world. These material connections mark and inform the stages of the life course, guiding people through social and biological transformations from birth to death, and beyond. Osteobiographies, as biographies of skeletal remains, offer microhistorical narratives that weave individual lives together with wider population patterns and historical processes. Finally, this framing requires integrating osteological analysis with other archaeological and historical sources of evidence. In particular, rich temporal, spatial, and material connections can be found within mortuary contexts. Together, these components offer a theoretical foundation for a microhistorical bioarchaeology that emphasizes a relational and multiscalar approach to human remains.

1.3 Social bioarchaeology

Social bioarchaeology contributes a relational perspective to a microhistorical study of skeletal remains. In the wake of the population-based analyses of the late 20th century, social bioarchaeology1 emerged as a leading interdisciplinary perspective that incorporates

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1 The term ‘bioarchaeology’ was coined by Grahame Clark in the early 1970s in reference to zooarchaeology and faunal remains and brought to bear on human skeletal remains by Jane Buikstra and others in the mid-1970s (Buikstra et al. 2011; Sheridan 2017). For an overview of the origins and trajectories of bioarchaeology, particularly in North America, see Baker and Agarwal (2017).
osteological, archaeological, historical, and ethnographic evidence along with social theory to better contextualize skeletal remains (Sofaer 2006; Agarwal and Glencross 2011, Baker and Agarwal 2017). Particularly informed by theories of materiality and embodiment, social bioarchaeology attempts to “transcend the skeletal body into the realm of lived experience” (Agarwal and Glencross 2011:3; Buikstra et al. 2011). This approach also resulted in an increased focus on the individual life course and how, in tandem with population studies, a person’s life history may inform on embodied experiences in the past (Robb 2002; Stodder and Palkovich 2012; Stojanowski and Duncan 2017; Hosek and Robb 2019).

The perspective of social bioarchaeology requires an acknowledgement of the body as a constant process of becoming, a “work-in-progress” of both biological and social origin (Sofaer 2006; Ingold 2011). Bodies are both materially grounded and socially constructed; they are tangibly formed and transformed by social and physical environments (Joyce 2005). Importantly, Joanna Sofaer (2006) proposed a vital intervention to the field by returning “the body” to the archaeological project. Observing that both objects and bodies are part of the material world, enmeshed in social processes, Sofaer approaches the archaeological body as a type of material culture. Plasticity, the potential changes caused by biological and cultural influences across the life course, lends the body a materiality based on process and interaction that is both contextually and temporally dependent (Sofaer 2006). As the focal point of transformations, the body itself may be viewed as an intersection of multiple processes, materials, and histories (Ingold 2011; Robb and Pauketat 2013; Novak 2017a, 2017b).

(Bio)archaeologists including Robb (2002), Joyce (2004; 2005), Fowler (2002; 2004), Sofaer (2006; 2011; 2013), Novak (2011; 2014), and Geller (2011; 2012), have used the concept of embodiment to examine sensory experiences, axes of identity, and representations of the body
in the past. The term embodiment, first explored in phenomenological philosophy, has been applied to the processes and contingencies of human bodies (Lock and Farquhar 2007:1). Early social theories about the body were concerned with ritual and gesture, such as seminal works by Durkheim (1912) and Mauss (1973). Later scholars expanded on these early theoretical formulations by approaching the body as the focus of social action and lived experience (Merleau-Ponty 1962; Douglas 1966; Bourdieu 1977; Csordas 1990; Shilling 2008).

Embodiment theories have been problematized by anthropologists who question assumptions of sociological and biological universals (Lock 1993; Sofaer 2006; Lock and Farquhar 2007; Appleby 2011, 2019). Importantly, bioarchaeologists must heed Sofaer’s (2006:23) advice cautioning against conceiving of the “embodied body” as being “constructed” solely by culture and experience; a real, physical body is the anchor of many of these material transformations. Attention to the physical and biological changes of the body throughout the life course are vital to a more robust, materially dynamic concept of embodiment.

The emphasis on embodiment in social bioarchaeology reveals how practice and identity are mediated through the body. Even further, we can examine how social and biological contingencies come to be reflected in the body throughout the life course (Sofaer 2006; Baadsgaard et al. 2012). By envisioning bodies as relational nodes of biological, social, and material forces, a microhistorical bioarchaeology embraces the plasticity and contingency of skeletal remains.

1.4 The (extended) life course

Social bioarchaeology contextualizes bodies and their histories through attention to the life course, the culturally designated phases of the lives of individuals. A life course approach is
inherently multiscalar, moving between individual lives and the cultural and material milieus that guide them. Biological transitions including birth, aging, and death are encountered through the embodied experiences of age cohorts, transition rituals, and daily practices (Gilchrist 2012). As such, a life course approach offers a microhistorical emphasis on the roles of embodiment, practice, and material culture across a human life (Joyce 2004, 2005; Sofaer 2006; Meskell 2010; Glencross 2011; Gilchrist 2012).

Life course perspectives based in behavioral studies, biology, and evolutionary theory have allowed anthropologists and sociologists to address composite life narratives in terms of the timing of life events, fertility, and mortality (Hill and Kaplan 1999; Elder et al. 2003). Importantly, qualitative inquiries in sociology emphasize how conditions of early life affect outcomes later in life and the ways in which conjunctions of biological, family, cultural, and institutional factors shape the life course (Heinz and Kruger 2001; Mayer 2009; Gilleard and Higgs 2015). Thus, contingency and sequence influence how the life history of an individual unfolds within a particular cultural context (Robb 2019).

For bioarchaeologists, a life course approach involves integrating skeletal data with wider “cultural narratives” (Robb 2002:160) that are nested in sociocultural and material contexts. By shifting between individual skeletal biographies and wider population patterns, bioarchaeologists can identify culturally contextualized phases of life and how individuals are enmeshed within these categories (Robb 2002; Buikstra et al. 2011; Glencross 2011). Numerous edited volumes have demonstrated the efficacy of a life course model for situating human remains in a wider context (Knudson and Stojanowski 2009; Agarwal and Glencross 2011; Baadsgaard et al. 2012; Stodder and Palkovich 2012).
In particular, life course perspectives have deepened our understanding of age and aging in the past (Gowland 2015a; Baker and Agarwal 2017). Appleby (2010:231) notes that “age identity is something that is, of necessity, fluid, changing throughout the life-span.” The aging processes of growth, development, and senescence form the structural backbone of the life course, contextualized by material objects, ritual and practice, and the body itself (Sofaer 2006; Gilchrist 2012; Agarwal 2012, 2016). Social understandings of age and the aging process influence social roles, the possible pathways a life course may take, and individual experiences of age (Appleby 2010, 2011; Agarwal 2012; Sofaer 2013). Greater attention to age in the bioarchaeological project has illuminated the often-marginalized categories of the very young (Halcrow and Tayles 2011; Ellis 2019, 2020) and the very old (Appleby 2010; Gowland 2015a) as well as how intergenerational entanglements unfold (Gowland 2015b; Novak 2017b).

Other axes of identity also potentiate change at particular reference points throughout life. For example, gender roles may crystalize or become more fluid in certain contexts with corresponding biocultural consequences (Sofaer 2006; Agarwal 2012; Gilchrist 2012; Robb 2019). Life events, such as birth, marriage, and apprenticeship, mark transitional periods of within social contexts, while personhood and identity might be mediated through generational relationships and external historical events (Robb 2002; Novak 2017b). As such, a life course model “situates the human life span within social measures of time” (Gilchrist 2004:156).

Microhistorical shifts between scales of analysis draws attention to how the individual life course articulates with different kinds of time. Social time operates on the scale of ritual, annual cycles, and historical landscapes. An individual life within this context is inherently relational, entangled with landscapes, other people, and things (Meskell 2010; Fowler 2013; Watts 2013). The social categories of medieval life were punctuated by transformative thresholds
leading to new statuses, responsibilities, activities, and material associations. These rites of passage were marked and guided by rituals based in material practices (Van Gennep 1960; Turner 1967; Gilchrist and Sloane 2005; Gilchrist 2012). For example, a boy might be given a knife to mark his first hunt and transition into adulthood, or a tonsure haircut to signify entrance into the clergy (Gilchrist 2012).

In medieval Europe, the Christian church and its associated rituals and objects played a very visible role in various life course transitions. Sacraments of the church, including baptism, confirmation, marriage, ordination, and extreme unction guided individuals into new stages of life through transformative material practices (Gilchrist 2012). For example, baptism brought an infant into the Christian social community through a dramatic display and interaction of gestures, clothing, words, salt, and water (Orme 2001; Walker Bynum 2011; Gilchrist 2012).

A life course approach goes beyond static categories of age to incorporate embodied experiences, memory, material culture, and other aspects of social identity along a continuum of human life (Appleby 2011; Gilchrist 2012). However, it is also important to consider how the life course might be extended through notions of the afterlife and extensions of personhood (Robb 2002; Tarlow 2002; Geller 2012; Novak 2014). Devlin (2015) argues that the medieval life course incorporates a person’s social identity beyond the life of the physical body. As such, the life course might encompass some degree of personhood before birth and, most significantly, after death (Gilchrist and Sloane 2005; Gilchrist 2012; Caciola 2016).

Some scholars have addressed the postmortem “life” of the dead (and the dead body) through the lens of the extended life course (Robb 2002; Geller 2012; Novak 2014). Gilchrist (2012) argues that the continued interaction of the living and the dead, particularly in medieval ritual contexts, facilitated the development of this extended life course. Christian
doctrine, with notions of the separate-but-connected body and soul, was necessarily concerned with conception and the “ensoulment” of a new human as well as the afterlife, or the eternal fate of the soul (Duby 1988; Gilchrist 2012). Christian mortuary rites developed to save the soul of the dead, maintain their memory, and to protect the living – all suggesting that the social presence of the deceased continued (Gilchrist 2008, 2015).

The extended life course traverses the boundaries of an individual’s life before birth and beyond the grave. However, it also draws attention to generational influences on the body (Gowland 2015b; Novak 2017b). Gowland (2015b:537) explains: “Our life courses are ‘nested’ and entangled, both socially and biologically, across several generations…People are not biologically disparate, but commingled: bodies within bodies.” These extensions may be articulated through relationships such as a mother’s body nourishing the development of a fetus (Ellis 2020), or the actions of mourners towards the dead body (Scott 2011; Geller 2012). A microhistorical focus on the relationships between people and things illuminates these generational entanglements across the life course and beyond.

1.5 Osteobiography as microhistory

The narrative biographies of individuals allow microhistorians to probe potentially overlooked clues and signs. At the analytical scale of the individual body, I generate osteobiographies, narrative biographies of skeletal remains. The skeleton reflects a lifetime of culturally and socially negotiated activities and processes with corresponding bodily responses (Sofaer 2006, 2011). Osteobiography has emerged as one venue to approach these lived experiences and life course pathways. Initially conceptualized as the life history recorded in human remains (Saul 1972; Saul and Saul 1989), the concept of osteobiography was elaborated
on by Robb (2002) as “the study through human skeletons of the biography as a cultural narrative.”

As a humanistic approach to skeletal remains with a focus on individual life histories, osteobiography has seen renewed interest in bioarchaeology (Stodder and Palkovich 2012; and see literature review in Hosek and Robb 2019). However, osteobiography is often used interchangeably with “case study” to refer to detailed descriptions of an individual life history recorded in bone (Mayes and Barber 2008; Castro et al. 2017). With notable exceptions (Knüsel 2011; Geller 2012; Howson 2013; Mays et al. 2018), osteobiography is often limited to providing an example of a population or showcasing the unusual.

Two issues that microhistory attempts to transcend are the limitations of the case study and the issue of scale. A microhistorical osteobiography will therefore emphasize a relational and multiscalar approach to human remains (Robb and Pauketat 2013; Baires 2016). In this way, the body might be envisioned as a locus of intersecting temporalities, materials, and biographies, thereby combining the lived experience of an individual with other emergent scales. Anchored by the insights of microhistory, an osteobiography may do more than represent a wider population or provide a unique example. Instead, the clues and signs of a particular skeletal body might be employed to probe a dominant narrative or to draw attention to an unnoticed facet of life in the past. Taken a step further, these skeletal biographies might demonstrate how multiple phenomena articulate at the site of body to form new configurations.

Using insights from microhistorical approaches, osteobiography has the potential to illuminate multiscalar intersections at the site of the skeletal body. For example, habitual engagement with particular objects or materials could shape the skeletal body but also implicate many additional connections. A seamstress notch in a tooth might indicate not only work with
textiles but also how gendered labor, the properties of materials, and market forces all converge within the lived experience of an individual (Baker et al. 2012). Following a microhistorical approach, each piece of information gleaned from the skeleton should be considered in relation to other sources of evidence (e.g., textual, archaeological, ethnographic) with the intent of finding hitherto unknown connections.

In later chapters, I present osteobiographies of certain individuals as a means of bridging skeletal data with wider histories and processes at work in the lives of the people of Libice. By conceptualizing the body as a locus of relational intersections, osteobiography as microhistory becomes relational, historical, generational, and contingent (Fowler 2013; Dawdy 2016; Novak 2017b). This framing illuminates how social and material forces at different scales and temporalities inscribe and shape the skeletal body. Of course, skeletal remains are not the only form of evidence available to us in many burial contexts, and osteobiographies are further enriched by insights from mortuary archaeology.

1.6 Body-centered mortuary archaeology

Microhistory emphasizes the connections between people, objects, spaces, and time. Such connections remind us that dead bodies do not exist in a vacuum. Mortuary archaeology further contextualizes some of the social, ritual, and symbolic facets of life and death (Effros 2002, 2003; Ekengren 2013). The burial record can reflect and materialize social identities, ideologies, personal relationships, and community inclusion and exclusion in a variety of ways (Murphy 2008; Reynolds 2009). Funerary rituals might be viewed from a performative perspective, enacting and re-enacting social relationships and social memory (Laneri 2007), while also contributing to process and social change. The analysis of mortuary traditions requires a
consideration of the spaces, the objects, and the bodies that comprise the material record of medieval deathways. The collection of practices that resulted in this record – a “mortuary program” (Robb 2007:287) – is a window into socio-political performances and the significance of death and memory.

The location and organization of burial places has been of growing interest in mortuary archaeology as scholars moved beyond the contents of graves to their wider entanglements in the material world (Effros 1997; Williams 1999). The creation and reuse of monuments, types of burials and grave structures, and the landscape of cemeteries have been investigated throughout Europe (Effros 2003). Williams (2005:211) encourages a view of the cemetery as a “complex spatial and temporal network of ritual action” with attention to the broader context of burial. Indeed, Gilchrist (2012:205) argues that the church and cemetery might be viewed as a “topographical” map of Christian cosmology. The use of space within the church and the surrounding cemetery served as Christian metaphors which guided individuals through the lifecourse, from birth, to marriage, and ultimately death (Gilchrist and Sloane 2005; Gilchrist 2012).

Another focus of mortuary archaeology is the interpretation of the material culture of burials. The social and symbolic significance of burial objects might speak to individual identity, but also to relationships within the community (Joyce 2001; Effros 2002; 2003; Fahlander and Oestigaard 2008; Ekengren 2013). As such, artifacts might be viewed as a “means of symbolic communication and visual expression with socio-political significance” (Williams 2005:204). At a population level, variability in grave goods provides a starting point to approach social organization (Poláček 2008; Gilchrist 2012). However, it is important to consider the meaning and association of objects beyond a mortuary context. As objects traverse different social
contexts over the course of their own biographies, they develop complex relationships to individuals, events, and ideas (Fowler 2004; Hodder 2012; Ekengren 2013). For example, archaeologist Bonnie Effros (2003) examines the social functions and meanings of vessels used for feasting in Merovingian Gaul and how these associations contribute to their significance in mortuary contexts. With careful contextualization, mortuary objects offer insight into identity, meaning, and memory-making at the graveside and beyond.

While mortuary archaeology requires attention to burial artifacts as well as cemetery landscapes, a critical component of burial is too often overlooked: the body itself. Boric and Robb (2008:1) note that “the body is both omnipresent and invisible” in archaeological discourse. Recent interest in returning the body to the archaeological project has resulted in several edited volumes concerned specifically with the dead body (Tarlow and Nilsson Stutz 2013; Devlin and Graham 2015). Fahlander and Oestigaard (2008:5) point out that “the absence of life is physical, material, and real: it is a dead body.” Similarly, Liv Nilsson Stutz (2008:19) observes that “bodies are more than metaphors.” Nilsson Stutz and others encourage a more body-centric mortuary archaeology that takes seriously the powerful emotive presence of material bodies (Nilsson Stutz 2003, 2008; Fahlander and Oestigaard 2008; Devlin and Graham 2015; Graham 2015). Acknowledging Sofaer’s (2006) call for recognition of the body as material culture, many of these scholars aim to “embody” mortuary practices by making the body the focus of mortuary analysis.

In a provocative declaration, John Robb (2014:1) argues that “we have never had an ‘archaeology of death.’” By this, he implies that the focus of mortuary archaeology (as well as much of bioarchaeology) has been on social, political, and economic aspects of life in the past. The study of human remains and their burials is traditionally presented as a window into past life
ways, even though they are accessed through the context of death (Nilsson Stutz and Tarlow 2013). Robb (2014) contends that we must also examine attitudes towards, and understandings of, death through its many cultural representations. Considering the sensory and emotive experience of the dead body draws attention to ways of “being dead” as well as how death is a type of social process (Joyce 2001; Robb 2013c; Graham 2015).

The dead body is most often encountered in archaeology as skeletal remains. However, an analysis of mortuary context must take into account the dynamism of the dead body: a body that has moved through a variety of forms after the cessation of life. The transformative biological processes of death and decomposition are witnessed and experienced to various degrees by others (Hamilakis 2002; Fahlander and Oestigaard 2008; Graham 2015). These different states contribute to the formation of the extended life course (Robb 2002; Geller 2012). In the medieval period, particular characteristics associated with dead bodies came to influence people’s responses to the dead. For example, some individuals might receive unusual mortuary treatment depending on how they died or if the body itself was perceived as dangerous (Hanuliak 2007; Tsaliki 2008; Aspöck 2011). Apotropaic measures (warding off evil) may have developed from medieval interpretations of decomposition (Navrátílová 2005; Caciola 2016).

A body-centered mortuary archaeology emphasizes the emergent relationships between the dead body, the mourners, and the burial context. As a component of a microhistorical bioarchaeology, mortuary archaeology allows us to contextualize the skeletal body within the landscapes and material objects that might surround it. These connections link an individual biography to other temporalities and scales, including that of the extended life course.
1.7 Libice: A microhistorical bioarchaeology

As Ginzburg (1980, 2012) has argued, the larger goal of microhistory is to reveal previously overlooked or concealed aspects of broader structures. It also aims to identify the ways in which large-scale processes manifest at the scale of everyday life. A microhistorical analysis of skeletal remains brings to the fore how these bodies articulate with, and inform, wider historical processes. As Robb and colleagues (2019) note, macroscale histories can struggle to capture the fine-grained social world of ordinary people. A microhistorical bioarchaeology offers a bottom-up view of these histories and their complex intersections in daily life.

This project presents a narrative “biography” of Libice, a story about an early medieval world told through the skeletal remains of the people buried at the site. Some of these individuals will become the subjects of microhistories themselves, as their remains are contextualized through osteobiographies. This microhistorical interplay of bodies, materials, cultural ideas, and practices will provide important insight into some broader historical processes. I explore how Christian practices and local traditions weave together (not always seamlessly) alongside tightening networks of Czech political structures at the site of Libice. Two major questions I address are: 1) What can these material traces tell us about how Christianization altered landscapes, practices, ideological orientations, and life course experiences? 2) How were Christian rituals and practices in tension with other cosmological frameworks, and what did this look like at the scale of daily life?

In this introductory chapter, I have outlined the theoretical underpinnings of this project and how they will contribute to a microhistorical bioarchaeology of skeletal remains and material culture at Libice. As with our view of historical process, these theoretical components remain at
the level of large-scale generalizations. But what does a microhistorical bioarchaeology look like ‘on the ground,’ i.e. through the analysis of skeletal remains?

Social bioarchaeology, informed by embodiment theories, allows us to consider how different cosmologies become embodied throughout the life course by way of material practices and enduring historical landscapes. The emphasis within social bioarchaeology on embodied practice directs us to how skeletal remains might reflect a lifetime of engagement with particular materials and rituals. Skeletal markers of activity, such as enthesal changes and antemortem trauma, reveal patterns of practice within populations. This analysis is important for comparisons between the two cemeteries at Libice, but it is not the only scale at which we can view embodied activities. Individual osteobiographies, on the scale of a single life, may reveal previously unknown connections between activity patterns. For example, in Chapter 5, the osteobiography of a woman buried in Kanín reveals connections between dental activity markers, skeletal indicators of habitual kneeling, and early medieval trade networks.

A life course perspective requires attention to culturally significant phases of aging. This can have important implications for analytical categories used in bioarchaeological analysis. For example, ‘subadult’ typically refers to immature skeletal remains but some individuals with still-developing skeletons might be considered full adults in certain cultural contexts with all the social implications that such a designation entails. Gilchrist (2012) outlines age groupings that are relevant along the continuum of the medieval life course: infancy, childhood, young adulthood, adulthood, and old age. Importantly, these categories correspond more to social milestones (marriage) and changes to the body (adolescence and senescence) than to numbered years. For example, a 28-year-old unmarried male might be socially considered a young adult due to his marital status in spite of his chronological age. I use these interpretations of medieval
age categories as a guide further informed by historical and archaeological contexts to understand life course pathways specific to early medieval Bohemia (See Chapter 5 and Appendix C).

Osteobiography is given further nuance as a microhistorical narrative to address how the individual body and biography changes through wider interactions. Microhistorical osteobiographies are envisioned as relational biographies that emphasize the connection between the individual and large-scale historical processes. To construct these osteobiographies, I integrate skeletal and mortuary evidence, examining how each component might relate to the wider skeletal sample and cemetery context as well as to the larger historical questions at hand. This process requires a consideration of an individual’s age as it relates to a culturally specific stage of the life course, other aspects of identity such as sex, as well as skeletal and mortuary indicators of social status.

Even further, idiosyncrasies of the skeletal body might be found to articulate with other people, objects, and histories. For example, careful contextualization of activity markers or dental indicators of diet could link these skeletal signs to particular ritual and symbolic practices related to Christianization. A good osteobiography should always contextualize an individual within their sociocultural circumstances. However, microhistory is concerned with the specific properties and processes at work at the site of a particular body. For example, a subadult individual might offer insights into different historical configurations (i.e., notions of childhood, family structures, childhood diet and nutrition) than an adult individual from the same mortuary context.

As the life course extends beyond death to encompass the fate of the body and soul in the afterlife, dead bodies are particularly adept at articulating the role of cosmologies in identity,
memory, and social transformation. Mortuary archaeology enables an examination of how these dead bodies are enmeshed in social and material contexts. Although the Libice cemeteries were excavated several decades previously, each skeletal biography is reconnected with the excavation reports, photographs, maps, drawings, and artifact descriptions. These contexts are particularly important when examining variation in mortuary treatment. Some burial customs were influenced by local traditions and alternative conceptions of the dead body considered at odds with ecclesiastical orthodoxy (Aspöck 2011; Gilchrist 2012). Concern with the postmortem presence of the dead is one explanation for the unusual mortuary practices we will see in the Kanín cemetery in particular.

Importantly for the organization of this thesis, microhistory emphasizes narrative and connection. Microhistorians make choices about what threads of inquiry to follow, what sources to include, and how these stories are woven together. Unlike a traditional bioarchaeology dissertation, I do not directly present the osteological findings. Instead, this data and analysis can be found in the appendices. While this data is critical to my interpretations and situates individuals within a wider population context, I carefully chose what skeletal findings to emphasize in my narrative. This evidence is not “cherrypicked” to support my conclusions, as the appendices clearly show the significant demographic and skeletal similarities between the cemetery samples. However, to maintain a sense of narrative and follow certain individual biographies, only some of the skeletal data is elaborated in the text.

In Chapter 2, textual sources and ongoing archaeological investigations help situate the site of Libice in a broader historical context. I focus primarily on political centralization in Bohemia and the development of Christian institutions in Central Europe before turning to Libice as a historical landscape. Chapter 3 returns us to the present with an overview of the
archaeological excavations that uncovered the cemeteries as well as the methodologies that were used to examine the skeletal remains and their mortuary contexts. Chapter 4 presents the deathscapes formed by the two main cemeteries at Libice, Akropole and Kanín. The mortuary geographies, burial artifacts, and body positions within these two cemeteries demonstrate some of the cosmological intricacies at play.

Chapter 5 follows the life course possibilities that emerge from the analysis of skeletal remains at Libice, after Gilchrist (2012). This chapter also addresses the question of how social status might relate to burial location. Some skeletal correlates for health, activity, and diet are compared between the cemetery samples. Few significant differences emerge between the two skeletal samples. Those that do point us to other ritual and cosmological differences that may have channeled people into particular burial spaces.

The next three chapters are microhistorical investigations into particular thematic differences between these burial spaces. Important insights emerge in each analysis which speak to how these cemeteries may reflect complex ritual and ideological negotiations. These chapters also utilize osteobiographies to anchor important connections between bodies and larger historical processes. Chapter 6 explores birth and infancy at Libice, including the ways in which infants in these two cemeteries received care in both life and death. In particular, infant dental remains are brought into articulation with wider Christian discourses on family and morality to demonstrate how families at Libice may have engaged in different dietary and care practices.

Chapter 7 dissects skeletal and mortuary evidence for violence and warfare at Libice, with attention to perceived identities and the treatment of traumatized bodies. Osteobiographies reveal how confluences of political histories and religious justifications may have influenced these bodies across the life course. Chapter 8 approaches the social contexts of disease and
impairment, exploring intersections with religious identity and status. Certain individuals in both cemeteries were “othered” through mortuary practices or through skeletal anomalies and pathologies that would have impacted how they experienced the life course. Finally, I offer some concluding thoughts and future research directions in Chapter 9. As these themes and threads are woven together, this project offers a deeply contextualized glimpse of life in early medieval Europe that is local and particular even as it speaks to broader matters of history and process.

Chapter 2: The distinguished metropolis: Histories converge at Libice

“The distinguished metropolis of this duke was Libice, located where the stream Cidlina loses its name as it enters the freer waters of the River Elbe….Here Duke Slavnik, as long as he lived, lived happily.”

2.1 Introduction

With attention to larger themes of political and religious transformation in early medieval Central Europe, this project concentrates primarily on the interrelated processes of political unification and Christianization in 9th – 10th-century Bohemia at the focal point of Libice nad Cidlinou. Until the second half of the 20th century, the medieval settlement of Libice was known

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2 Cosmas of Prague describes the historical site of Libice nad Cidlinou in his Chronicle of the Czechs (translated by Wolverton 2009:77-78). Wolverton notes that the use of the term metropolis to describe Libice suggests that it was Duke Slavnik’s capital, akin to Prague for the Přemyslids.

3 A note on the terminology used in this project: The time period in which Libice is a significant center of activity – from roughly the 6th through the 10th centuries – is varyingly referred to as early medieval or Old Slavic in Czech scholarship (Gojda 1991). However, I will use the term “early medieval” in accordance with the terminology used throughout much of the rest of Europe to describe this period. Although the Central European lowlands have been occupied since the Paleolithic, it was a Celtic tribe, the Boii, living in the area during the first centuries AD that gave the region the name Bohemia. Classical authors such as Strabo and Tacitus referred to the area as the “land of the Boii” or “Boiohaemum” and this ethnonym continued to be used by later Latin authors (Sláma 1998; Wolverton 2009). Slavic tribes entered the region sometime in the 6th century and material culture suggests that they largely replaced the earlier Celtic groups (Sláma 1998). Because “Slav” is a linguistic term referring to a shared Indo-European language group, it is perhaps more useful to use the chronological term “early medieval” to characterize a people known primarily through archaeological material culture (Brather 2011). Since at least the 10th century, the inhabitants of Bohemia have referred to the region as Čechy and to themselves as Češi or Čech in the singular (the source of the Anglicized word “Czech”) (Sláma 1998; Wolverton 2009). I use the common term Bohemia to describe the region, and Czech to describe the language and the people after Wolverton (2009) and Brather (2011).
almost exclusively through its mention in a handful of extant texts. Large-scale archaeological excavations beginning mid-century expanded, reinforced, and also contested knowledge of the site and its position in early medieval Bohemia. This chapter aims to situate the reader in the early medieval world of Libice through a synthesis of these sources. Importantly, 20th-century scholarship in the region has been largely defined by nationalistic narratives based on political circumstances. While I reference this scholarship, I generally rely on more recent historians and archaeologists who have been able to critically approach their sources to examine how Libice and its people articulate with wider sociohistorical contexts.

Our knowledge of this place and period is filtered through a few sources that have survived the centuries, often as copies of copies, reflecting how contingencies of the archive influence renderings of the past (Zeitlyn 2012). Additionally, it is important to remember that historical knowledge is produced by people in a particular social setting (Trouillot 1995; Barth 2002; Rodseth 2012), in this case, members of a literate, often ecclesiastical, elite. The narrators are as much historical actors as the individuals and groups they describe (Trouillot 1995). As such, these actors should be examined within their own social and historical context to understand how such narratives are created and perpetuated. As a case in point, Cosmas of Prague, a dominant textual source on early medieval Bohemia and Libice in particular, wrote the *Chronica Boemorum* (Chronicle of the Czechs) as dean of the cathedral in Prague in the early 12th century. As the historical events involving Libice occurred over a century prior to his writing, his descriptions take on a near mythic quality. Additionally, historian Lisa Wolverton (2014) argues that Cosmas was subtly, but strongly critical of the current political order, a position which influenced his narrative strategies as he described the development of the Czech state and the rise of the Přemyslid dynasty.
Other historical texts that inform on early medieval Bohemia and Libice include secular chronicles, depictions of saint’s lives (*vitae*), and travelers’ commentaries dating between the 9th to 14th centuries. Providing various (and sometimes conflicting) glimpses into political, economic, religious, and social aspects of the early medieval world, many of these documents are extant copies of originals, subject to flourishes and alterations by many (often unknown) hands. In addition, most of the texts I have accessed have been translated from Latin, Old Church Slavonic, or Arabic into English. It is thus with a careful and critical eye that I approach these texts, guided in particular by historians and translators with much deeper knowledge of the subject material and the biblical and classical allusions therein (see Wolverton 2014 and Kantor 1990 in particular). These sources can be complimentary to archaeological and osteological interpretations, but only when approached with a sense of their origins and transformations.

Archaeological knowledge, likewise, must be handled with a sense of historical context. Czech archaeology, like many European archaeological traditions, had origins in the nationalistic sentiments of the 19th and 20th centuries (Trigger 1984; Tomásková 2003). Archaeologists in the Soviet era used Marxist materialist approaches to develop geographically and temporally distinct units of material culture, with particular interests in identifying the origins and achievements of the “Slavs” as part of a political effort to foster a pan-Soviet identity (Sklenár 1983; Milisauskas 1986; Curta 2008). The majority of archaeological projects before the 1980s were conducted by national and provincial museums focused on large-scale excavations of sites (and often a single cultural horizon) that continued for decades (Milisauskas 1986; Harding et al. 2007). It is important to approach the earliest archaeological research and interpretations at Libice with a sense of the systems and constraints within which these scholars were operating. Like any nation, politics have continued to play a role in Czech archaeology since the fall of the Soviet Union, but
many traditional archaeological cultures, timelines, and models have been challenged or reconsidered in the last few decades.

This chapter begins by exploring the broader context of Bohemia in 10th-century Central Europe. From here, the focus is narrowed to Libice, examining the archaeological site as a historical landscape entangled within these wider histories. Historical landscapes, as “structured worlds of possibilities,” are both materially constituted and continuously emergent from the interplay between people, things, and deep time processes (Robb 2013b:661). In particular, the development of the Libice settlement cannot be understood without a sense of the political transformations unfolding over the course of the 9th – 10th centuries. Finally, I address the emergence of Christian institutions in Bohemia and introduce the two cemeteries at Libice that form the basis of this project. This synthesis of extant historical sources and archaeological research is one means of approaching broader histories of political and religious change.

2.2 Big histories: Early medieval Europe and the Czechs

While the machinations of wider Europe were likely relatively unknown to many of the people living at Libice, it is important to lay out the broad strokes of how we conceptualize early medieval history. This orientation will help address how individual lives at Libice might articulate with wider historical trends or reveal other historical ruptures.

The early medieval period (c. 500-1000AD) in Europe was preceded by transformations in the Western Roman Empire (Cantor 1994; Wickham 2010). The Eastern Roman, or Byzantine, Empire encompassed vast territories extending from an epicenter in Constantinople. In contrast, the beginning of the early Middle Ages in Europe can be characterized by decentralization, population decline, and large migrations of people (Geary 1988). Although the peoples of
Western Europe were not politically unified, the legacy of the Roman Empire left most under the purview of Latin Christendom (Figure 2.1) (Southern 1992).

A patchwork of territorial kingdoms emerged from Germanic tribes settling throughout Western Europe. The largest and most powerful of these, the Kingdom of the Franks, eventually controlled most of what is now France and Germany (Geary 1988; Cantor 1994). Charlemagne (c.742-814AD) expanded and consolidated Frankish territory into what came to be known as the Carolingian Empire. In 800AD, Charlemagne acquired the title of Emperor with the support of the Pope in Rome as a link to the former Roman Empire (Collins 2010). After the death of Charlemagne in 814AD, his empire splintered into West Francia (modern-day France) and the
patchwork of principalities⁴ that eventually made up the Holy Roman Empire to the east (Cantor 1994; Collins 2010).

In Central and Eastern Europe, the beginning of the early medieval period was marked by the arrival and expansion of Slavic-speaking⁵ tribal groups (Sláma 1998, Brather 2001; Geary 2003). East Slavic tribes formed a loose but powerful federation known as the Kievan Rus’ from the Baltic Sea to the Black Sea. The South Slavs, including the Croats and Bulgarians, occupied the Balkan Peninsula. The West Slavs settled in the Central European lowlands in what is now Poland, the Czech Republic, and Slovakia (Dvornik 1964; Curta 2001; Curta 2008).

The West Slavs became most closely associated with the Latin West, as they were adjacent to, and eventually subsumed by, the Holy Roman Empire (Wolverton 2009; Třeštík 2009). By the 8th and 9th centuries, tribal groups had settled and some consolidated into polities, the most powerful of which came to be known as the Great Moravian Empire⁶ (GME) in the region of Moravia (today the eastern Czech Republic) (Sláma 1998; Curta 2009). This influential cultural and political entity was relatively short lived, however, ultimately falling to Magyar invaders from the east in the early 10th century. With the decline of the GME, other Slavic tribal groups in the area sought to expand their territories and connections to European neighbors (Třeštík 2009).

One of these Slavic-speaking tribes was known collectively by the ethnonym “Češi”

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⁴ Beginning with coronation of the Saxon king Otto I in 962, these principalities were part of a nascent feudal economy in which princes and dukes wielded control over their own territories, while subordinate to an Emperor backed by Rome (Cantor 1994).

⁵ The term “tribe” is often used to describe the social organization of various Slavic groups in early medieval Central Europe and connotes kinship-based social groups prior to the development of more centralized administration (Curta 2008, Urbánczyk 2008).

⁶ The term “Great Moravian Empire” (GME) was probably first coined in the 10th century by Constantine VII Porphyrogenétos, Emperor of Byzantium, to refer to the height of Moravian power (as opposed to the diminished contemporary “small Moravia”) (Sláma 1998: 31). The location of the borders of the GME as well as its status as an empire are still hotly debated topics among scholars interested in the political geography of the region (see Curta 2009).
(Anglicized to “Czechs”). In the 9th and 10th centuries, the Czechs inhabited the Central European river basin of the Elbe River, a lowland basin of about 20,000 square miles surrounded on three sides by low forested mountains (Sláma 1998; Wolverton 2009). This region was known as Bohemia and is now the western half of the modern Czech Republic, bordered by Germany, Austria, Slovakia, and Poland (Figure 2.2).

Czech tribes, traditionally understood as kinship-based groups (Curta 2008), found themselves wedged between two powerful forces in the 10th century. Tribal leaders vied for power amid a rapidly growing economy and volatile political atmosphere. This dynamic was created by the recent collapse of the Great Moravian Empire to the east, and power struggles within the divided Frankish Empire to the west (Panek and Tumá 2009). Cities and towns

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7 The Czechs settled in the area around c. 700 based on dendrochronology of early medieval settlement structures (Curta 2008).
8 Humans have occupied parts of Bohemia since the Paleolithic, leaving traces in the landscape from barrow mounds to hillforts (Brather 2011).
underwent an increase in military fortifications and transformations within secular and religious power structures (Gojda 1991).

What we know about these tribal groups is limited to a few sources, primarily chronicles, hagiographies, and charters written and copied during the 10th through 13th centuries (Panek and Tumá 2009; Wolverton 2009, 2014). These sources will be introduced in footnotes as they become relevant throughout the chapter. Integrating material evidence with these textual sources is important as it allows for an emphasis on the lives of the individuals rarely mentioned in chronicles: those who were neither saints, nor dukes, nor kings. Together, these interdisciplinary sources provide a more robust means of approaching the early medieval world of the Czechs. In what follows, I briefly introduce the prevailing political narrative of 10th-century Bohemia. Where possible, I focus on more recent scholarship that employs critical interpretations of textual sources as well as archaeological evidence (see, for example, Sláma 1995 or Klápště 2011).

2.3 From tribes to dukedoms: Transformations in 10th-century Bohemia

Relatively little is known about Bohemia from the mid-7th until the late 8th century, although during this period several family dynasties began to rise in prominence within Czech tribal aristocracies (Font 2008). Each tribe contained a number of elite families that likely did not control territory individually, but instead acted as representatives of the tribe. The tribal leaders intermarried extensively to create kinship ties but also married beyond local tribes into neighboring regions for political alliances (Font 2008; Třeštík 2009). As we will see, this practice was not necessarily disrupted by the arrival of Christianity, and exogamous marriage to Christian women became a new source of legitimacy and alliance within Christendom.

Around 830, Mojmír (r. 830–846), a Slavic tribal leader, established what came to be
known as the Great Moravian Empire (GME) along the Morava River to the east of Bohemia (Curta 2009). The emergence of the GME resulted in significant changes to the tribal societies of both Moravia and nearby Bohemia as the latter became subordinate to the GME in the mid-9th century (Třeštík 2009). However, scholars have more recently questioned “core-periphery” models as meaningful ways of describing the complex interaction between the GME and surrounding regions, including Bohemia. The relationships between Moravian and Czech elite have been reinterpreted based on the archaeological record as one of primarily cultural influence rather than military conquest and over-arching state control (Curta 2009).

In the shadow of the GME, many new strongholds were constructed in Bohemia after 850, resulting in a reorganization of social structures and physical space. The fortifications of the elite served as focal points with surrounding clusters of settlements. The *duces*, the elite ruling class referred to in early medieval sources, have been identified archaeologically from the rise of these new fortified settlements. These spaces included palace-like residences surrounded by palisades and other structures, and cemeteries with elaborate burials containing goods from around Western Europe, Great Moravia, and further east (Sláma 1998; Curta 2009).

In less than a century, however, the powerful political and cultural entity that was the Great Moravian Empire collapsed under pressure from eastern Asiatic raiders (Dvorník 1974; Třeštík 2009). In 906, the Magyars (from the steppes of southern Russia) attacked Moravia and shattered the Moravian army. Tribal leaders fled to neighboring regions and the local political structure was effectively destroyed. Despite their victory, the Magyars only occupied southern Slovakia leaving much of Bohemia spared from their raids (Třeštík 2009).

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9 The term *duces* is used interchangeably with *comes, nobiles, primates*, or *maiores natu* (magnates) by Cosmas to describe the elite ruling class. These terms were likely adopted by chroniclers from Latin descriptions given by foreigners. Essentially the title of a warlord, these terms were applied to the military chieftains and leaders of many Slavic groups in the region (Žemlička 1994; Sláma 1998; Wolverton 2001; Wolverton 2009).
After the fall of the GME, the Duchy\textsuperscript{10} of Bohemia (České knížectví) became an independent principality within the Holy Roman Empire (Figure 2.3). This autonomy was conditional and contentious throughout the 10\textsuperscript{th} century, with the duces of Bohemia facing the growing power of adjacent East Francia, what would become the Holy Roman (Ottonian) Empire (Třeštik 2009). At times paying tribute to the Duchy of Bavaria, at times allying with or opposing the Duke of Saxony, the duces of Bohemia maintained a tenuous independence from their powerful western neighbors (Dvorník 1974; Wolverton 2001).

\textsuperscript{10} Referring to Bohemia as a duchy and its ruler as a duke were titles that indicated the region’s status as a principality. Kingdoms and kingships were reserved for autonomous rulers acknowledged by the Holy Roman Empire with an archdiocese (Wolverton 2001). The Duchy of Bohemia would not become a hereditary kingdom until the reign of Ottokar I in 1198 (Třeštik 2009).
One reason for this semi-autonomy was the unification of the Czech tribes around a single ruling aristocratic family, the Přemyslids, who came to control the title of Duke of Bohemia by the early 10th century (Urbańczyk 2008; Třeštík 2009). The prevailing historical narrative of the early medieval Czechs recounts the rise of the Přemyslid dynasty (Dvorník 1964; Vlasto 1970; Hermann 1975; Panek and Tumá 2009; and see timeline in Appendix A). This narrative, commonly referenced in medieval historiography, draws heavily on the 12th-century account of Cosmas of Prague (c. 1045-1125),11 dean of the cathedral in Prague under the Přemyslid Duke Vladislav I. Most political narratives of the formation of the Czech state follow the outline of this text, an approach critiqued by a number of scholars, including Wolverton (2001) and Urbańczyk (2008), among others.

Some similarities can be drawn between various ruling dynasties in the region to critically explore the development of centralized political institutions in the early medieval period. Traditional historiography depicts various Slavic societies developing from small tribes into larger “states”12 through a gradual process of nation-building. Recently, several archaeologists and historians have suggested that the development of medieval states in this region was due primarily to the relatively rapid rise of powerful individuals and family

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11 *Chronica Boemorum* is one of the most thorough and detailed sources on the period and has been translated into English by historian Lisa Wolverton (2009). A history of the Czechs in three books, Cosmas’ account describes the mythical origins of the Czech people along with the history of the Přemyslid dynasty and the bishopric of Prague. He depicts the gradual consolidation of power by the Přemyslids by stating that in 845AD fourteen Czech *duces* travelled to Regensburg seeking Christian conversion (Sláma 1998; Wolverton 2009). An event in the 870s only involves six *duces*, including Bořivoj I of the Přemyslids. At the time, the Přemyslids controlled a relatively small duchy in central Bohemia. By the 920s the Přemyslid dynasty was recognized both within and beyond Bohemia as the most powerful and influential aristocratic family (Sláma 1998; Urbańczyk 2008).

12 The use of the term “state” is an ongoing discussion in medieval historiography: early medieval political structures do not fit neatly into definitions of the modern state. Broadly, early medieval political power was associated with control of the land and those who worked on it in traditional agrarian European societies (Innes 2000).
dynasties\textsuperscript{13} out of tribal aristocracies (Curta 2008; Font 2008; Urbańczyk 2008). Early medieval ‘states’ were therefore primarily the result of emergent leaders building political capital by mobilizing people and resources, gaining acceptance from other powerful political forces in the region, and developing a mythology and worldview that supported their legitimacy (Urbańczyk 2008).

The Přemyslids, the emergent ruling family in early medieval Bohemia, fit this model of a powerful aristocratic lineage as they created a dynasty that would last for centuries and a narrative that would endure into the modern world. However, their actions should not necessarily be viewed as a grand strategy much less a prophetic destiny. Instead, this long-standing aristocratic family managed over time to accumulate the most economic and military strength in Bohemia along with successful foreign alliances that supported their claim (Sláma 1995; Curta 2008). In the ensuing chaos of the fall of the GME to the east, early competition among the local Czech aristocracy in Bohemia led to a war economy in which petty warfare, plundering raids, and forced payments of tribute resulted in a reduction in elite competitors able to control large areas (Urbańczyk 2008). The Přemyslids eventually exercised total control over the territories of Bohemia by creating new peripheral administrative units and compelling other tribes to pay tribute (Gojda 1991). One of the earliest Přemyslid seats of power was Prague, a growing metropolitan hub in central Bohemia.\textsuperscript{14}

Recent scholarship attributes the unification of the region under Přemyslid rule in part to military incursions by Henry I and later his son, Otto I, of the Duchy of Saxony (Sláma 1998;

\textsuperscript{13} The Přemyslids in Bohemia, the Piasts in Poland, the Arpadians in Hungary and the Ryurikids in Russia all represent aristocratic dynasties that came to power among tribal Slavic groups in the early medieval period (Font 2008).

\textsuperscript{14} According to Cosmas, the Přemyslid leader Bořivoj I built one of the first Bohemian churches, the Church of the Virgin Mary, on the site of an old pagan sacrificial field that formerly served as an assembly location for Bohemian tribal leaders. Later, his son, Spytiňňev, built a castle on this site and laid the foundations for Prague (Wolverton 2009; Třeštik 2009).
Bachrach (2013). A unified territorial administration could counter these activities better than semi-independent *duces* with smaller military retinues. Revenue from local taxes and trade fees supported the establishment and training of a large military retinue headed by the Přemyslids. The army, an equestrian core assisted by infantry, was sustained primarily through booty gathered and tributes paid during conquests of other Czech tribes and external neighbors (Žemlička 1994; Třeštík 2009). Military life became central with all *duces* and commoners expected to participate in the war economy to some degree, including as part of military retinues or defense garrisons (Sláma 1998; Wolverton 2009).

In place of former tribal administrative institutions, a territorial system gradually developed in the 10th century, governed by the Přemyslid duke and his subordinate *duces*. This governing system involved the collection of taxes and a new organization of defense, including a restructured military and heightened settlement fortification (Gojda 1991). Those elite loyal to the Přemyslids were supported by offices and benefices connected to the emergent network of hillforts that served as nodes of administration (Žemlička 1994; Gojda 1991). Libice was likely one such fortified settlement under the administration of a less-powerful aristocratic family, known historically as the Slavníkids (see section 2.5).

By 950AD, many earlier settlements had been abandoned or destroyed during centralizing military activity and new strongholds appeared near the ruins. The Jewish Andalusian traveler-explorer, Ibrahim ibn Ya’qub, describes how the Slavic peoples he met

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15 All freemen in Bohemia were required to pay a peace tax for protection which could be paid in silver coins (dinarii), or fine-woven scarves (ten to a dinar). Additionally, merchants on the roads through Prague paid ten percent of the value of their goods for protection (Třeštík 2009).

16 Land was confiscated by the Přemyslids and given to subordinate *duces* after subduing the rival tribal groups (Žemlička 1994).

17 Ibrahim ibn Ya’qub at-Turtushi travelled through Bohemia in the 960s. Born to a Jewish family in Muslim-controlled Spanish Tortosa, he was sent as an envoy of Cordoban caliph Abdarrahman III to meet with the Emperor Otto the Great in Magdeburg (Kropiček, 1996; Charvát 2000). Ibrahim ibn Ya’qub’s report, possibly commissioned as part of a diplomatic mission, describes commercial and economic activities on his journey from Bordeaux to the
constructed fortified spaces throughout the landscape: large round meadows were cleared and surrounded by a trench. Heaps of earth formed bastions and walls with wooden supports and a wooden bridge for entry (Rapoport 1929; Bažant et al. 2010). Archaeological investigations at Libice suggest that the inner bailey (elite enclosure) matches such descriptions, with a trench surrounding raised earth and the remains of a wooden palisade (Mařík 2009a). The centralization afforded by such sites was integral to the development and consolidation of Přemyslid power through satellite subordinate settlements (Gojda 1991). A stronghold’s sphere of influence included not only the fortified elite residence, but also the surrounding settlements and rural hinterland sites. At Libice, the outer bailey (adjacent settlement) as well as many small satellite settlements in the hinterland demonstrate this core-periphery model (Mařík 2009a).

During the reign of Přemyslid Boleslav I (r. 935-972), territory claimed by the Czechs expanded as far east as the frontiers of the Kievan Rus (Sláma 1998). In the final years of Boleslav II (r. 972-999), this territory also reached from the Bohemian basin north into Poland (Zdeněk and Mezník 1998). However, considering how sparsely populated most of these areas would have been, only a relatively small military force would have been required to conquer them. The most significant implication of this territorial acquisition was the control of vast expanses of trade routes (Hermann 1975). Indeed, several important trade routes made Libice a commercial hub, including the overland road into Poland which crossed the Elbe River (via the Cidlina River) at Libice (Sláma 2000; Kozáková et al. 2014).

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18 Silver dinar coins bearing the marks of both Boleslav I and Boleslav II have been found in these regions and suggest that south-north and east-west trade routes were connected through Prague (Hermann 1975).
As the Přemyslid dynasty expanded its reach, it faced encounters with other European forces and the challenges of administrating vast territories. One powerful tool that aided the processes of unification and legitimization was Christianity, including the centralizing institutions and political alliances that accompanied this new religion.

2.4 Spreading the word: Emergent Christianity

By the time Cosmas wrote his chronicle in the 12th century, the Czech people had been exposed to Christianity for a full 200 years and were considered fully “Christianized” (Wolverton 2009:15). Much like the prophetic rise of the Přemyslid dynasty, Cosmas and contemporary hagiographers\(^\text{19}\) describe the Christianization of Bohemia in terms of sweeping conversion events in the second half of the 9th century. This narrative, common throughout medieval Europe, has been complicated by recent scholarship. The widespread conversion to Christianity in the early medieval world was not merely an immediate reorientation of religious beliefs. Conversion altered many aspects of social life, material culture, and ways of approaching the world (Howe

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\(^\text{19}\) The few surviving sources dating to around the 10th century are almost exclusively \textit{vita} (descriptions of the lives of saints) about St. Václav (also known as St. Wenceslas), the most prominent patron saint of Bohemia. A Přemyslid duke, Václav was purportedly assassinated on September 28, 935 by his brother, Boleslav I (Vlasto 1970; Panek and Tuma 2009). One of the earliest extant sources is the so-called \textit{First Church Slavonic Life of Saint Wenceslas}, written shortly after Václav’s death – probably in the 930s – in the Old Church Slavonic language (Kantor 1990). The first Latin legend of Václav, known as \textit{Crescente fide} after its opening lines, was probably written after 973 or 983 (Vlasto 1970). This work was one of the most influential accounts of Václav’s life although scholars now generally agreed that it was based on older Church Slavonic legends and supplemented by details from local oral traditions (Kantor 1990; Wolverton 2001). A second Latin \textit{vita} was written between 989 and 997 by the monk Laurence of Monte Cassino based on Czech visitors to the monastery, although this \textit{vita} was not known in Bohemia (Vlasto 1970; Kantor 1990). A third Latin \textit{vita}, the \textit{Passio Sancti Wenceslai martyris}, was compiled by Gumpold, the bishop of Mantua around 980. This manuscript drew heavily on the \textit{Crescente Fide} but it is important in that numerous early copies survive from the 11th and 12th centuries and it is the most well-known of the legends (Kantor 1990; Wolverton 2001). The Bohemian cleric known as Christian (or Kristián) wrote the longest of the four Latin legends, the \textit{Vita et Passio sancti Wenceslai et sancte Ludmile avie eius}. Also known as the \textit{Legenda Christiani} after its author, this text was probably written around 994 during reign of Boleslav II. This \textit{vita} was concerned with the Cyrrillomethodian roots of Christianity in Bohemia and the martydoms of two Bohemian saints, Václav and his grandmother, Ludmilla. It was dedicated to Bishop Adalbert (later St. Adalbert) of Prague, suggesting the original manuscript dates to Adalbert’s episcopate in the 990s (Kantor 1990; Wolverton 2001). In fact, Kristián (c. 935-996) may have been Strachkvas, a brother of Přemyslid duke Boleslav II, (Bažant et al. 2010). This \textit{vita} appears to have been particularly influential to the chronicler Cosmas in the 12th century (Wolverton 2009; Bažant et al. 2010).
1997; Muldoon 1997; Curta 2008). Closely tied with regional politics, local responses to conversion forces could involve superficial compliance with new rituals and laws without necessarily a fundamental transformation in belief and value systems (Nock 1933; Higham 1997; Curta 2009).

In order to discuss conversion, it is important to consider what “conversion” and “Christian” mean in this particular historical context. The primary sources regarding conversion in the early medieval world tend to come from chroniclers and hagiographers describing large conversion events and radical changes in faith. However, most scholars agree that conversion is represented by a spectrum of activities and processes, rather than an event (Muldoon 1997; Higham 1997). The ritual act of baptism appears to be the first and most performative step in the process (Nock 1933; Higham 1997). The converts themselves are largely voiceless in these historical episodes, although there are other textual clues as to the efficacy of conversion. For example, Cosmas mentions recurring problems with “half-pagans:” baptized Christians who had not given up some of the old ways, including pagan burial traditions and even polygamy (Wolverton 2009:184). A medieval convert thus did not necessarily experience an immediate and profound shift in worldview or belief systems.

Relatively little is known about the religious beliefs and rituals of the Czechs prior to, and concurrent with, the introduction of Christianity. Archaeological evidence suggests that West Slavs (to which the Czechs belong) generally participated in a cult of the ancestors and worshiped an anthropomorphized natural world like many other agrarian societies (Sommer

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20 For example, “all” Moravians were baptized by Bishop Reginharem in Passau in 831 (Kouřil 2014) and Cosmas cites that in 845, fourteen Czech dukes came to Regensburg and the court of Louis the German to ask for baptism (Cross 1963; Vlasto 1970; Wolverton 2009).

21 Nock (1933) defines conversion as deep and profound spiritual change and coins the term “adhesion” to refer to the supplementation of other traditions with a new faith’s rituals and practices. However, most modern scholars continue to use “conversion” to describe the wide range of ways people can express the adoption of a new religion (Muldoon 1997; Higham 1997; Kouřil 2014).
Some early medieval textual sources provide limited information on pre-Christian belief systems, but it must be remembered that the authors of these texts were members of the Christian, literate elite. For example, an 11th-century *vita*, the *Life of St. Adalbert of Prague* written by John Canaparius (see footnote 31), mentions a cult of trees and stones present among Slavic groups (Marinas 2013). Surviving folk traditions, early medieval Christian sources, and Indo-European comparisons suggest that the cosmology of the West Slavs involved a three-tiered world. The realm of deities was positioned at the top and associated with the sky, below was the world of humans and the earth, and at the bottom was the underworld of the dead associated with water (McClelland 2003; Dynda 2014). Ritual and material practices likely included sacrificial offerings and representations of deities as idols (Marinas 2013).

The spread of Christianity throughout Central Europe appears to have been driven primarily by the elite and, in particular, by rulers attempting to firmly establish their sovereignty on the periphery of Western Christendom. Conversion was part of a larger strategy involving consolidating power, claiming legitimacy, and making connections to the wider Christian world (Higham 1997; Urbańczyk 2008). Independent ecclesiastical institutions were crucial for the reinforcement of political independence in wider Christendom, and for protection from powerful neighbors such as the Frankish and later Ottonian Empire, and even Byzantium in the east (Turnock 1988; Font 2008). Upon conversion, Christian leaders were better positioned to assert their authority with imperial assistance and approval from Rome. In the case of the Czechs, the Přemyslid Duke Bořivoj and his followers were purportedly baptized in Moravia sometime

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22 These assumptions are based on studies of Indo-European and Slavic cultural comparisons and provide only broad generalizations although there were almost certainly diverse local traditions (Sommer 2000a).

23 State-building activities often cited “quelling pagan revolts” as impetus for invading a territory and conversion as justification for conquering (Curta 2008:20) For example, Boleslav II received permission from the Holy Roman Emperor, Otto II, to incorporate the territory of the former Great Moravian Empire into the Přemyslid state to keep locals from straying out of the fold of Christendom (Font 2008).
around 885 by Bishop Methodius (discussed below). This and other contemporaneous conversion events are generally agreed to have been primarily political maneuvers on the part of elite Czechs (Maříková-Kubková 2013; Kouříl 2014).

There is little historical or archaeological evidence of Christian influence in Bohemia until the latter half of the 9th century (Vlasto 1970; Třešťík 2009). Evangelizing clergy from Passau and Regensburg appear to have been present in Bohemia and neighboring Moravia, but their efforts remained limited and localized (Halecki 1952; Cross 1963). In the second half of the 9th century, a large and concerted evangelizing mission developed in Moravia led by the Greek clergymen, Cyril and Methodius of Byzantium. As part of their mission, Cyril and Methodius unified and organized ecclesiastical education and practice in Moravia and trained a large number of clergy. Perhaps most significantly, they translated many religious texts from Greek and Latin into the Old Slavonic language in Cyrillic script and used Slavic in the liturgy (Třešťík 2009). The Czech tribes undoubtedly had some exposure to Christian missions during this period, although concerted efforts to convert the Czechs did not commence until the early 10th century. Byzantine influence in Central Europe waned after the Magyar invasions onto the Danube plains in the early 10th century effectively severed links between east and west. Despite

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24 The Archbishop of Salzburg and Bishop of Passau both claimed areas of the GME (including Bohemia) for their dioceses and sent Bavarian missionaries to the region in the 9th century (Halecki 1952).
25 In 861, Rostislav of Moravia (r. 846-870) requested missionaries from Rome to educate priests in Moravia. Receiving no response, he turned to Byzantium (Vlasto 1970; Třešťík 2009). In 863, Emperor Michael II sent two missionaries from Constantinople, Cyril and Methodius. These educated Greek brothers from Salonica trained priests in Moravia and developed the Slavonic script (Cyrillic alphabet) from 863-867 (Wolverton 2001; Třešťík 2009). Cyril (known later as Constantine) and Methodius were eventually recognized as saints by both the Greek and Roman Churches. The oriental schism was not yet complete and so they had interactions with both Photius of Byzantium and the popes in Rome (Halecki 1952).
26 The Western Church followed the tradition of using the holy language of the Church (Latin) in Mass, with little concern for vernacular culture. The Eastern Church, on the other hand, found more success in evangelization when using native languages for services (Cross 1963).
27 As noted, a number of Czech dukes sought baptism in Regensburg in 845. Furthermore, some of the Slavic clergy who left Moravia in 885 after the death of Methodius likely fled into Bohemia with Slavic liturgical material (Cross 1963; Vlasto 1970; Wolverton 2009).
this, Slavic liturgy continued to be present alongside the Latin rite into the 11th century (Dvornik 1964).

Driven by political motivations, the Přemyslids and other aristocratic Czech families apparently converted before the rest of the population. Czech leaders wasted no time in mythologizing their Christian connections. Indeed, Václav (also known as Wenceslas) of the Přemyslids (r. 921-935) and his grandmother, Ludmilla, became the first Czech martyrs and patron saints after their assassinations in the first half of the 10th century.28 The duces were also instrumental in the development of Christian institutions throughout Bohemia (Urbańczyk 2008). They built churches, founded monasteries, and eventually managed to establish a bishopric in Prague.29 Although ecclesiastical structures were incorporated into elite hillforts around Bohemia in the first half of the 10th century, the countryside was influenced more slowly by the new religion (Vlasto 1970). Churches were initially the private chapels of the elite and it was only gradually that the function of churches expanded to involve the rest of the population (Gojda 1991).

Importantly, the spiritual significance and political identity provided by landscapes and natural features in pre-Christian Central Europe required a “conversion” of the physical world with the advent of Christianity (Howe 1997; Brather 2011). Cult centers, sacred spaces, and natural features with symbolic efficacy were often re-appropriated as places of Christian

28 Traditional historiography implies that Vacláv and Ludmila were targeted by pagan adversaries, but these assassinations were likely politically motivated (Font 2008). As patron saint of the Czech state, Václav may have been more influential than he had been as a ruler. Through his relation to, and representation by, the reigning dukes (and later kings) of Bohemia, St. Václav reinforced the legitimacy of the Přemyslids as rulers of the state (Vlasto 1970).
29 Bohemia had originally been subordinate to the diocese of Regensburg. Boleslav I negotiated with Otto II, who became Holy Roman Emperor in 962, until he received bishoprics for both Prague and Moravia (at Olomouc) subordinate to Mainz. Boleslav died in 972 and his son, Boleslav II (972-999) reached a final agreement with the emperor in 973 (Vlasto 1970; Třeštík 2009). With the establishment of the episcopate, the Czech church was now firmly oriented toward the Latin West (Zdeněk and Mezník 1998). The first bishops of Prague were Bavarian clerics; it was not until 982 that a Czech native, Vojtěch of Libice (also known as Adalbert), was consecrated as bishop of Prague (Urbańczyk 2008).
significance throughout the 9th and 10th centuries. Holy sites were incorporated into Christian mythologies and churches were often constructed at these locations (Brather 2011; Dynda 2014). For example, archaeologists have identified a probable pagan sacrificial site near the main Christian basilica in Mikulčice, an important political and religious site in Moravia at the height of the GME (Třeštik 2009). Likewise, Cosmas claimed that an old pagan sacrificial field that served as a tribal meeting place was the site chosen for the Church of the Virgin Mary and the foundations of Prague (Wolverton 2009; Třeštik 2009).

The adoption of Christianity among the elite resulted in a number of significant social changes and introduced some conflicts with old traditions. Pre-Christian tribal society in Bohemia based claims to power on expansive kinship connections rather than on principles of succession. However, under Christian law only children born of marriages legitimate from a Christian perspective were eligible for succession. Converted princes were therefore expected to live in, and promote, such legitimate marriages (Font 2008). It proved rather difficult to fully eradicate tribal political traditions and as late as 1002, Cosmas notes that Duke Oldřich of the Přemyslid dynasty took a second wife without getting rid of the first one (Wolverton 2001, 2009). The turbulent career of St. Adalbert, the first Czech bishop, draws attention to some of the challenges facing Czech clergy. According to the vitae of St. Adalbert (see the next section), after being appointed Bishop of Prague on February 19th, 982AD, he struggled to regulate Christian morality and practices among the Czechs. Criticizing the sale of Christian slaves to Jewish merchants and discouraging marriage among the clergy, Adalbert left his diocese after only four years and went to Rome (Wolverton 2009; Třeštik 2009; Maříková-Kubková and Mařík 2015).

The Christianization of the Czechs can be characterized by a patchwork of responses with gradual local transformations of rituals and landscapes. There is also evidence that political elites
were employing the networks and rhetoric of Christendom to advance their agendas through foreign alliances as well as justifying expansion and violence. But much less is understood about how nascent Christian institutions were encountered and negotiated by ordinary Czech people. Focusing now on the site of Libice, we will see some of the consequences and possibilities engendered by the convergence of centralizing political forces and Christianization at a single locality in the early medieval period.

2.5 Libice nad Cidlinou

Libice nad Cidlinou ("Libice on the Cidlina [river]" and hereafter shortened to Libice) is located about 60 km east of Prague on two sand-gravel terraces above the floodplain of the river Cidlina near its confluence with the Elbe in central Bohemia. The modern landscape still reflects some of the early medieval activity in the layout of streets and the borders of fields (Figure 2.4). Nestled within a quiet meander of the Cidlina, the site is both protected and connected via the river (Mařík 2008). Archaeological investigations suggest that Libice was a centralized site with a large agricultural hinterland (see Chapter 3). The core of the settlement was two large, enclosed areas. The inner bailey (sometimes referred to as the Akropole) was a palisaded enclosure with fortifications as well as elite and ecclesiastical structures. To the east, the outer bailey was a densely used settlement area that is now the location of the modern village of Libice (Mařík 2009a). This area appears to have been under continuous occupation throughout the Middle Ages and beyond, including after the fortified inner bailey west of the village fell out of use sometime in the 12th century (Princová and Mařík 2006; Křivánek and Mařík 2009).

A small village today, the significance of Libice has waxed and waned over the previous millennium. The earliest surviving artistic depiction of Libice comes from a 17th-century
engraving ascribed to Karel Škréta depicting the sacking of the village of Libice by the Saxon army in 1634 (Figure 2.5). Importantly, the remains of the early medieval fortifications and church are visible in this image, reflecting the enduring presence of the site in the historical landscape (Mařík 2009a; Maříková-Kubková and Mařík 2015). In fact, the medieval ruins were used as building stones as late as the 18th century and the site was well-known to local historians (Turek 1981; Mařík 2009a).

Figure 2.4: Aerial view of Libice nad Cidlinou (via Google Earth). The yellow dashed lines represent the rough boundary of the early medieval inner bailey, enduring in the landscape as a raised area of plowed agricultural fields. The blue dashed lines represent the rough boundary of the outer bailey, whose footprint is still visible in the roads that encircle the modern town. The reconstructed foundations of the Akropole church are visible within the inner bailey enclosure (red arrow) as is part of the Cidlina River in the bottom right corner of the image.
Figure 2.5: Libice around 1668 (viewed from the north, so the orientation is the inverse of Figure 2.4). Note the besieged town over the location of the outer bailey and to the right the plowed fields over the former inner bailey “A” with the still-visible ruins of the early medieval church labeled “B” (Mařík 2009b; Mařík 2014).

Historical Libice is first referenced in relation to the Slavníkids, one of the few other Czech tribal families named by Cosmas of Prague (see timeline in Appendix A). This tribal dynasty likely governed an area of Bohemia with a network of dependent tribes and land resources centered on their seat at Libice30 (Font 2008). Much of what we know about the Slavníkids and Libice comes from hagiographical descriptions31 of the first Czech bishop of Prague and later Czech patron saint, St. Adalbert (Maříková-Kubková and Mařík 2015). Adalbert was born Vojtěch, the son of Slavník, who was head of the Slavníkid dynasty in the mid-10th century. Vojtěch eventually took the name Adalbert after his mentor, the Archbishop Adalbert of

30 The family and associated tribe are known as the Slavníkids, after Slavník, the father of St. Adalbert and head of the dynasty in the mid-10th century. The Slavníkids were likely one of numerous aristocratic families that governed large swathes of Bohemia in the name of the Přemyslids (Dvorník 1974; Sláma 2000).

31 A few vitae exist for St. Adalbert (first Czech bishop of Prague, originally Vojtěch of the Slavníkids of Libice). The most well-known and cited is Bruno of Querfurt’s Life of Saint Adalbert written in the 11th century, possibly as early as 1004 (Vlasto 1970; Dvorník 1974; Maříková-Kubková and Mařík 2015). A slightly earlier manuscript, the Life of St. Adalbert of Prague, was written by John Canaparius, a Benedictine monk from Rome, just after Adalbert’s martyrdom on the coast of the Baltic Sea (Vlasto 1970; Maříková-Kubková and Mařík 2015).
Magdeburg where Vojtěch was trained (Dvorník 1974; Wolverton 2009). Soběslav, Adalbert's brother and eldest son of Slavník, became head of the family upon the death of their father, around 981 (Třeštík 2009).

Cosmas and the hagiographer Kristián name the metropolis of Libice as the Slavníkí seat of power (Wolverton 2009; Bažant et al. 2010). Prior to its function as the Slavníkí administrative center, Libice may have been a lesser center as part of the Zličane principality in the 9th century (Princová 2000). In reorganizing Czech political structures, the Přemyslids entrusted local or imposed duces with the administration of large areas. The Slavníkíids appear to have governed nearby Poděbrady, Kutná Hora, and other neighboring areas which were connected to major trade routes to the east (Sláma 2000).

The Christian influences on Libice are apparent in historical narratives as well as features of the landscape. As noted above, St. Adalbert was born at Libice. He became one of the most celebrated Christian figures of early medieval Central Europe, a patron saint of the Czechs as well as the Poles and Prussians. The settlement boasted a number of ecclesiastical structures that also attest to Christian influences on Libice. Within the stronghold, a stone, single-aisle church was constructed in the Ottonian style along with a two-story timber and mortar palace for the ruling family (Princová 2000). Other possible ecclesiastical structures have been identified in the inner and outer baileys based on artifact association. These structures suggest that main church in the inner bailey was not the only Christian building in the vicinity (Princová 2000; Mařík 2009a).

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32 The church had a cruciform plan with a rectangular chancel and semicircular apse. The exact construction period is unknown, but probably between 930-950 (Princová 2000; Mařík 2009b). Mařík (2009b) has identified the Walbeck am Aller church near Magdeburg (Saxony) as the likely inspiration for the Ottonian-style church at Libice. The ground plans of churches have been linked to missionary activity with some churches in Bohemia showing similarities to ecclesiastical structures in the Frankish Empire and others with more Byzantine influences (Herold 2012). In the case of Libice, the architectural connection to Magdeburg is reinforced by the fact that Adalbert was sent there as a youth for religious education (Dvorník 1974; Wolverton 2009).
In addition to architectural features, cemeteries held significant positions in this landscape as sites of performance and memory. The burial places of the dead, closely intertwined with the emergence of Christian institutions, became particularly salient sites of negotiation between old regimes and new. The early medieval dead were typically buried in cemeteries, sometimes around religious buildings (see below), but also in grave-field cemeteries with no associated structures (Klápště 1991; Barford 2008). By the 10th century, churchyard cemeteries were increasingly common, particularly for the elite (Barford 2008). The two largest cemeteries at Libice are examples of both types of mortuary sites. The Akropole cemetery surrounds the early medieval church within the enclosed inner bailey at Libice. The Kanín cemetery is some distance away, located on the other side of the Cidlina River with no associated ecclesiastical structures. These two contemporaneous burial grounds form the basis for this study.

Even in sanctioned Christian burial grounds it appears that Christian and alternative rituals existed alongside one another in the 10th century. Offerings of food, preventative measures against revenants, amulets, and items of wealth and status are found scattered throughout the uniform row-graves of early Christian cemeteries in Bohemia (Sommer 2000b; Unger 2002; Farrell 2011). Persistent traditions were often incorporated into Christian ritual activities ranging from burial rites to fertility rituals (Sommer 2000a). Others were challenged by ecclesiastical and lay legislation through efforts to end practices such as polygamy, sexual misconduct, the use of...

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33 Clandestine burials in fields and at crossroads would also continue at least into the 12th century (Sommer 2000b).
34 Like Libice, several of the burial places identified archaeologically around Prague Castle were not associated with a church. The artifacts found among the graves in these cemeteries were similar to those found in churchyard cemeteries, including high status jewelry and weaponry (Maříková-Kubková 2013).
35 The Libice site complex has yielded eight separate early medieval burial sites. Most of these burial places were relatively small, containing only a few dozen excavated or estimated burials. The majority of these small cemeteries were excavated very early in the 20th century and the skeletal remains from these investigations have since been lost (Mařík 2008; Mafík 2009a and see Chapter 3).
pagan cult sites, and clandestine burial (Sommer 2000a; Wolverton 2009). This combination of ritual syncretism and tension in mortuary spaces offers an entry point for thinking about how histories influence, but are also constructed by, the actions of ordinary individuals.

2.6 The “fall” of Libice and concluding thoughts

According to Cosmas and the hagiographers, Libice was sacked in the final decade of the 10th century (Dvorník 1974). Traditional historiography uses the purported massacre at Libice to signal the end of tribal aristocrats vying for power in Bohemia and the beginning of the truly unified state under the Přemyslid dynasty (Vlasto 1970; Třeštík 2009). The most extensive account of the massacre comes from Cosmas, but it is also mentioned in both major vitae of St. Adalbert (Vlasto 1970; Wolverton 2001, 2009). As described by Cosmas, the attack occurred during the feast of St. Václav, on September 28th, 995. The dukes of Přemyslid Duke Boleslav II attacked Libice and murdered members of the Slavníkid family including Adalbert's brothers, and plundered the town (Wolverton 2009; Maříková-Kubková and Mařík 2015).

Juxtaposed as rivals to the Přemyslids in these accounts, the Slavníkids were effectively wiped out. Following this event, Boleslav II succeeded in unifying Bohemia under a Přemyslid rule that would continue for centuries (Dvorník 1974). The historical sources suggest that this event left Libice greatly diminished, marking an end to its influence on the region. Libice was

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36 As late as 1092AD, despite the population being at least nominally Christian, the Přemyslid Duke Bretislav II enacted legislation to counter persistent traditional customs and beliefs (Wolverton 2001).
37 This was the 60th anniversary of the martyrdom of St. Vaclav in 935AD
38 Adalbert never returned to Bohemia and died as a martyr on an evangelizing mission in Prussia in 997AD (Vlasto 1970; Wolverton 2009).
39 In fact, even Cosmas' account of the massacre avoids laying blame on Boleslav II. Instead, he claims that the duke was ill and it was his followers who carried out the deed (Wolverton 2009). Wolverton (2001) suggests that Cosmas' ambivalence here is due to his allegiance to the current Přemyslid ruler, Bretislav II. Alternatively, he may have been seeking to demonstrate how the exercise of power often involves violence or has a violent reaction; sometimes ruthlessness is expected in a strong leader. The violent actions of the current duke were thus justified by highlighting the necessary violence of his predecessors.
not listed as a current stronghold in Cosmas’ 12\textsuperscript{th}-century account and in 1227, it was recorded in ledgers as merely a village belonging to St. George’s monastery of Prague Castle (Princová 2000; Maříková-Kubková and Mařík 2015).

The relationship between the archaeological record at Libice and historical accounts is complicated at best. Archeological evidence suggests that the population of Libice decreased sharply at the end of the 10\textsuperscript{th} century and the fortified area fell out of use apart from the burial ground. This decline in population may be related to the massacre event recorded in 995, but other than this demographic shift there is little archaeological evidence to support a sacking of the stronghold (Princová 2000; Mařík 2009a). Turek (1981) attributed finds of arrowheads and a burn layer in the inner bailey dating the late 10\textsuperscript{th} century as evidence for the massacre. Recent excavations, however, suggest that the burn layer is not extensive, and most archaeologists contend that there is not sufficient evidence to link the historical event to material remains (Princová 2000; Mařík 2009a).

While early archaeological scholarship reinforced historical narratives of early medieval Czech politics, more recent research has called into question the relative power and influence of the Slavníkid dynasty in the 10\textsuperscript{th} century (Sláma 1995; Beranová 2000). Cosmas introduces the Slavníkids as the rivals to the Přemyslids, and a dangerous threat to be reckoned with. It is more likely, however, that Slavník and his sons were part of the administrative aristocracy loyal to the Přemyslids with a relatively small area of influence. Their historical importance may instead have been exaggerated due to the growth of the cult of St. Adalbert in succeeding centuries (Sláma 1995; Maříková-Kubková and Mařík 2015).

The chronicles of Cosmas and other early medieval writers paint a picture of dynastic destinies and the transformative power of Christianity. Only recently have the political agendas
and biases of these sources been taken seriously and approached more critically. Archaeological research in the region has added immensely to our understanding of this period, as well as the groups of people whose lives are not accounted for in historical sources. However, very little attention has been paid to the bodies of these people. Integrated bioarchaeological research that incorporates the study of human remains with their archaeological and historical contexts has not been undertaken at any of the major early medieval sites in Bohemia.40

Significant questions remain about the process of conversion and the lived experience of Christianization in Central Europe. If conversion was not a wholesale and monolithic experience, what did it look like for everyday people? What is the relationship between large-scale historiographic narrative and individual lives – and can we meaningfully link the two? The early medieval people buried at Libice represent a community with varying responses to the Christian influences and social transformations of the unifying Czech state. These people likely hail from an elite class living in within the fortified walls of the stronghold, merchants and artisans in the bustling town, and agrarian peasants from the surrounding hinterland. These varied backgrounds allow us to approach how cosmologies intersected with other aspects of people’s lives, including social status. In what follows, skeletal indicators of status are integrated with mortuary contexts to understand how people engaged with Christianity as well as how these relationships may have channeled them into particular burial spaces.

The skeletal remains at Libice demonstrate the complex ways people negotiated conversion and the physical and structural violence incurred through early medieval political struggles. These ordinary bodies, and the material contexts they are embedded within, fill some

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40 Most early medieval skeletal collections in the Czech Republic have been subjected to osteological analysis with a focus on biometrics and paleopathology, with relatively little integration of archaeological or historical data (see Stránská 2009; 2010; 2012; 2014; Stránská et al. 2013).
of the silences in the historical record and demand a reconsideration of how history is
(re)presented.

Chapter 3: A tale of two cemeteries: Materials and methods

3.1 Introduction

As a bioarchaeological investigation, this project integrates the study of skeletal remains with their mortuary contexts. Furthermore, a theoretically informed bioarchaeology requires a biocultural perspective, acknowledging the interactions between humans and their broader social, cultural, and physical environment. Such interactions have the potential for transformative impacts on the human skeleton throughout the life course. The skeletal remains of individuals from both cemetery samples at Libice were analyzed using standard osteological methods to create biological profiles that describe individual life histories. Skeletal data from individuals were collated to establish demographic data for the two cemetery samples and examine patterns in health, activity, diet, trauma, and disease. The first part of this chapter introduces biological profiles and some of the methodologies used to analyze these skeletal data sets.

A bioarchaeological approach also involves interdisciplinary engagement with multiple lines of evidence, including skeletal remains, material culture, historical sources, and comparative cases. The skeletal profiles from the Libice samples are contextualized using evidence from archaeological research conducted at the site of Libice along with data from other contemporary sites in the region. The latter sections of this chapter delve into the archaeological history of the site and both cemeteries. Site reports and other publications provide information on burial practices, mortuary artifacts, settlement organization, foodways, and daily life. Contemporary archaeological sites and skeletal series offer comparative data for the region. In
addition, historical sources (introduced in Chapter 2) ranging from medieval chronicles and hagiographies to traveler’s accounts and merchant’s ledgers provide further perspectives on local politics, economics, and worldviews.

A synthesis of these diverse types of data allows for a deeply contextualized exploration of life and death in this early medieval community. Together, these sources address how people at Libice lived, grew, consumed, labored, became ill or injured, aged, and died. In the course of living their lives, these people also engaged in the formation and transformation of large-scale processes such as Christianization and political centralization. Weaving different types of evidence into osteobiographies allows us to see how individual lives articulated with these wider histories.

3.2 Bioarchaeological methods: A brief overview

A bioarchaeological investigation requires eliciting key information about an individual through the analysis of their skeletal remains. A biological profile provides a narration of the life course of an individual, contextualized by culturally specific categories of age, gender, status, and other forms of identity (Knudson and Stojanowski 2009; Buikstra et al. 2011; Agarwal 2012). A biological profile generally consists of a skeletal inventory; descriptions of taphonomy; estimations of sex and age-at-death; identification of skeletal anomalies and pathological conditions; and metric measurements. In addition, markers of activity, nutrition, health, and trauma illustrate how biological and social constructs shape the body (Ubelaker 2016 and see Appendices). Standardized methods based on reference populations have been developed to establish this information.
The methods used in the project are generally congruent with those used to assess other medieval Czech skeletal series (e.g. Kubálek 2008; Velemínský and Poláček 2008; Havelková et al. 2013; Štefan et al. 2016). Appendix C provides a full discussion of the methods used to evaluate the Libice series, including estimations of skeletal age and sex. Other methods are introduced in relevant sections of later chapters, and further discussed in Appendix C. These include assessments of activity, trauma, pathology, and dental health. For example, metric measurements were used to generate estimations of stature and robusticity. These metrics can provide insight into relative activity levels and even social status (see Chapter 5).

Bioarchaeological data were gathered using standardized forms adapted from the Smithsonian coding system developed by Owsley and colleagues (1995). I have modified these forms into digitized versions which include additional methods and descriptions (see example in Appendix B). Metric and non-metric measurements were also standardized according to this system. Pathology and trauma were described for each individual and coded on a separate spreadsheet adapted from the same system. Additional recording forms have been adapted as needed from Buikstra and Ubelaker’s Standards (1994). Photographs were taken of any elements found to be pathological, exhibiting trauma or unique features, meriting comparison (i.e. sexual dimorphism), or of other significance. Radiographs were produced by technicians at Národní muzeum (National Museum of Prague) for a select sample of pathological elements from 39 individuals (27 from Akropole, 12 from Kanín).

For each individual, a narrative description accompanies the quantitative and qualitative data recorded on standardized forms. An example is provided in Appendix B. This element of the biological profile documents similar information to the standardized numerical codes but allows for elaboration on noteworthy anomalies or trends as well as further descriptions and
citations. Additionally, the skeletal data are described in conjunction with mortuary contexts, including artifact placement, grave location, and other subtle details. These skeletal narratives are the framework for the osteobiographies presented in later chapters.

While sex and age estimation methods and demographic comparison between the cemetery samples can be found in Appendix C, it is important to discuss the analytical categories used in this project before introducing the data. Estimating an individual’s age-at-death allows for categorization into various life course stages that can be used to better understand patterns of disease, nutrition, activity, and mortality. An individual’s skeletal age is estimated by determining the stage of growth, maturation, or degeneration, which is correlated with a chronological age describing the number of years of life. The traditional bioarchaeological age categories offered by Buikstra and Ubelaker (1994:9) are useful for comparison with other archaeological populations assessed using the same standards. However, many Central European skeletal series are categorized based on a system developed by Martin (1928) and refined by Stloukal (1999) which differs slightly from the age categories commonly used by other Western bioarchaeologists (see Appendix C, Table C4). With these discrepancies in mind, I do not directly compare the Libice sample demographics with other Czech series.

To examine the life histories of the people buried at the Akropole and Kanín cemeteries, I have developed analytical age categories that roughly correspond to phases of the medieval life course (Table 3.1) (Beňuš et al. 2010; Gilchrist 2012; Shapland et al. 2015). These six age categories provide nuance to the broader life course phases of childhood (infants, younger children, and older children) and adulthood (young, middle, and old adults). This classification system was used for demographic analysis of the cemetery samples at Libice because it focuses on age groupings that reflect culturally significant life stages (Gilchrist 2012).
Table 3.1: Culturally significant categories of age

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Code*</th>
<th>Chronological Age (years)</th>
<th>Medieval Life Course Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td>IN</td>
<td>0.0-1.5</td>
<td>Birth - about 2 years, prior to weaning, walking, talking, etc.</td>
</tr>
<tr>
<td>Younger Children</td>
<td>YC</td>
<td>1.5-6.5</td>
<td>About 2-7 years, post-weaning, social world within the home</td>
</tr>
<tr>
<td>Older Children</td>
<td>OC</td>
<td>6.5-15.5</td>
<td>About 7-16 years, emerging independence, education, and gender</td>
</tr>
<tr>
<td>Young Adults</td>
<td>YA</td>
<td>15.5-24</td>
<td>Youth, extended adolescence and limited social responsibilities</td>
</tr>
<tr>
<td>Middle Adults</td>
<td>MA</td>
<td>25-44</td>
<td>Adulthood, period of greatest productivity and social involvement</td>
</tr>
<tr>
<td>Old Adults</td>
<td>OA</td>
<td>45+</td>
<td>Old age, transformed (sometimes reduced) social and physical activity</td>
</tr>
</tbody>
</table>

*These initials are used in tables throughout the dissertation as shorthand for the age categories.

Of course, linking biological age to social categories and experiences is problematic and must be carefully contextualized (Sofaer 2006, 2011; Lewis 2007, 2018; Halcrow and Tayles 2011). For example, the transition period between older children and young adulthood (youth) in particular is ambiguous (Gilchrist 2012 and see Chapter 5). As is common in bioarchaeological literature, I refer to the immature skeletal remains of children (aged 0.0-15.5 years) as subadult. While the skeletons of some young adult individuals might be aged using subadult aging methods due to their still-developing bones and teeth, these people would have most likely been considered full adults in the early medieval period (Shapland et al. 2015) and so are categorized here as adults.

The information gleaned from skeletal data is enhanced through the integration of mortuary and other archaeological data. The next section introduces the wider archaeological site of Libice before turning to the two cemeteries and the bodies and artifacts contained therein. The archaeological context of the two cemeteries provides an important foundation for comparison between the two skeletal samples.

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41 The terms ‘subadult’ or ‘nonadult’ are applied to immature skeletal remains in much of bioarchaeological literature although the cutoff is a matter of debate and cultural context (Halcrow and Tayles 2011; Ellis 2019). In some literature, subadult refers to individuals up to 17-18 years (Perry 2005; Lewis 2007).
3.3 Archaeological research at Libice

The history of archaeological excavations at the site complex of Libice spans over a century: from amateur digs to large-scale, state-sponsored research, to non-invasive surveys and salvage projects (Figure 3.1). The excavation histories of the two cemeteries reinforce some of the status dichotomies discussed above, as do the ways in which the spaces have been memorialized (or not). The cemeteries were excavated under different institutional authorities and with different project goals in mind. Only the Akropole is marked as a place of significance to the public, demonstrating its relative position in the hierarchy of the site both past and present.

The first archaeological investigations at Libice were conducted in the late 19th century by Jan Hellich, a pharmacist from nearby Poděbrad (Beranová 2000; Mařík 2014). Much of this data and material has been lost over the course of the last century. The first large-scale excavations at Libice were conducted by Rudolf Turek of the Národní muzeum (National Museum) in Prague (1949-1953 and 1967-1973). This project focused primarily on the inner bailey (the elite enclosure) and involved the excavation of 4000 square meters, approximately 4% of the total inner bailey site (Košta and Mařík 2012). Turek identified the foundations of the early medieval church, palace buildings, and the large Akropole cemetery around the church (Turek 1971; Princová and Mařík 2006; Mařík 2014). More recent rescue excavations on the left bank of the Cidlina by L. Hrdlička and the Archaeological Institute in Prague (1961-1971) uncovered portions of the large Kanín cemetery that was being damaged by local sand quarrying (Princová and Mařík 2006). Archaeological investigations have since consisted of salvage excavations and non-invasive surveys by the Research Archaeological Institute ASCR (1974-1997 and 1998-present) primarily in the area of the outer bailey where most modern activity takes place (Princová and Mařík 2006; Křivánek and Mařík 2009).
The archaeological site complex of Libice is approximately 24 hectares in size (Mařík 2014). The core of the site was the two large, enclosed areas (known as baileys): the inner bailey (also referred to as the Akropole\textsuperscript{42}) and the outer bailey (Figure 3.1). The inner bailey, a fortified stronghold with elite structures, is located to the west of the modern village of Libice. This area fell out of intensive use sometime in the 12\textsuperscript{th} century (Mařík 2009a). Beneath the modern village of Libice lie the remains of the outer bailey, a clustered settlement suggesting a town. This area

\textsuperscript{42} The inner baileys of medieval sites were sometimes called Akropole (after acropolis) by archaeologists in the 20\textsuperscript{th} century in reference to their elevated and fortified nature.
appears to have been under continuous occupation throughout the Middle Ages and beyond (Princová and Mařík 2006; Křivánek and Mařík 2009).

At least eight separate early medieval burial sites have been identified throughout the Libice complex. Most of these burial places were relatively small, containing only a few dozen excavated or estimated burials. The majority of these small cemeteries were excavated early in the 20th century and the skeletal remains from these investigations have since been lost (Table 3.2) (Mařík 2008; Mařík 2009a). The two largest burials sites, however, were better documented archaeologically and the skeletal remains have been largely retained. These sites are designated as the Akropole43 cemetery and the Kanín cemetery (Figure 3.1). The two burial grounds are roughly contemporaneous, active from the late 9th through 10th century.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Site Phase(s)</th>
<th>Skeletons present</th>
<th>Excavated burials</th>
<th>Est. total individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akropole</td>
<td>Phase I-III</td>
<td>Yes</td>
<td>~300</td>
<td>552</td>
</tr>
<tr>
<td>Kanín</td>
<td>Phase I-II</td>
<td>Yes</td>
<td>213</td>
<td>2706</td>
</tr>
<tr>
<td>U cukrovaru</td>
<td>Phase I-II</td>
<td>No</td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td>U nádraží</td>
<td>Phase II</td>
<td>No</td>
<td>53</td>
<td>62</td>
</tr>
<tr>
<td>Na růžku</td>
<td>Phase I</td>
<td>No</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Katolický a ev. hřbitov</td>
<td>Phase I-II</td>
<td>No</td>
<td>3</td>
<td>352</td>
</tr>
</tbody>
</table>

Table 3.2: Largest early medieval burial sites in the Libice site complex

Adapted from Mařík 2008

Archaeologists have developed a chronology consisting of three periods to date the site of Libice and situate it within broader phases of Czech archaeology (Table 3.3). Limited absolute dates have been produced using radiocarbon methods and dated coins. These findings have been used as an anchor for the stratigraphy and artifact seriation that largely define the three different periods at the site (Mařík 2009a).

---

43 This cemetery is often referred to as the Libice cemetery due to its close association with the modern village. However, to avoid confusion (as both cemeteries are part of the larger Libice site agglomeration) I refer to the inner bailey cemetery as the Akropole cemetery.
Table 3.3. Chronology of early medieval Libice site complex

<table>
<thead>
<tr>
<th>Designated period</th>
<th>Middle Hillfort</th>
<th>Late Hillfort</th>
<th>Terminal Hillfort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase</td>
<td>Phase I</td>
<td>Phase II</td>
<td>Phase III</td>
</tr>
<tr>
<td>Dates</td>
<td>875-930/950</td>
<td>930/950 – 1000</td>
<td>1000-1150</td>
</tr>
<tr>
<td>Libice site complex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akropole cemetery (use)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kanín cemetery (use)</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Adapted from Mařík 2008 and Mařík 2009a

The earliest phase of intensive occupation is the Middle Hillfort period, spanning roughly 875-950AD. Artifacts linking burials and features to the Middle Hillfort period include comb-decorated pottery as well as Moravian-influenced jewelry and metalwork (Mařík 2008; Mařík 2009a). The Late Hillfort period is most associated with the presence of the historical Slavníkid family and dates from 950-1000AD on the basis of the so-called Slavník ceramics, with a dark red sandy matrix and horizontal decorations, as well as new construction phases in the inner bailey (Princová and Mařík 2006; Mařík 2008). The Terminal Hillfort period extends from the end of the 10th century into the first half of the 12th (c. 1000-1150AD) and is marked by a sharp decrease in population at the site (Princová and Mařík 2006; Mařík 2008; Mařík 2009a).

Several other sites in the region offer comparative mortuary contexts and skeletal collections that help to situate the Libice site complex within wider geographic and temporal contexts in Central Europe. Table 3.4 presents contemporary skeletal series for which there is some published osteological analysis. The sites are mapped in Figure 3.2. These sites and skeletal collections are associated with similar burial practices, settlement organization, and political structures. In addition, many were likely familiar to the people of Libice through kinship, trade, or military activity. Levý Hradec, Klecany, Budeč, and the Prague sites are fortified settlement sites in Bohemia dating primarily to the 10th century (Middle and Late
Hillfort periods). Like Libice, several of these sites contained more than one cemetery.\textsuperscript{44} The site complex of Budeč is particularly relevant as there are a significant number of burials exhibiting unusual mortuary treatment as well as a mass grave containing individuals with perimortem trauma (Štefan and Krutina 2009; Štefan et al. 2016).

**Table 3.4: Comparative sites and skeletal populations in Bohemia and Moravia**

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Source</th>
<th>Site Type</th>
<th>Dates</th>
<th>Total no. Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levý Hradec</td>
<td>Tomková 2012, Stránská 2012</td>
<td>Phase I-II (Middle and Late Hillfort)</td>
<td>c. 850-1000+</td>
<td>126</td>
</tr>
<tr>
<td>Klecan I and II</td>
<td>Profantová 2015, Stránská 2010</td>
<td>Phase I-II (Middle and Late Hillfort)</td>
<td>c. 900-1000</td>
<td>124</td>
</tr>
<tr>
<td>Budeč</td>
<td>Stránská 2009, Štefan and Krutina 2009, Štefan et al. 2016</td>
<td>Phases I-II (Middle and Late Hillfort)</td>
<td>c. 875-1000</td>
<td>152-179</td>
</tr>
<tr>
<td>Střešovice (Prague)</td>
<td>Stránská 2014</td>
<td>Phases I-II (Middle and Late Hillfort)</td>
<td>c. 900-1000</td>
<td>52</td>
</tr>
<tr>
<td>Lahovice (Prague 5)</td>
<td>Stránská et al. 2013</td>
<td>Multiple Phases (Middle, Late, and Terminal Hillfort)</td>
<td>c. 850-1000+</td>
<td>400</td>
</tr>
<tr>
<td>Pohansko</td>
<td>Drozdová 2005, Macháček 2009</td>
<td>Great Moravian</td>
<td>c. 700-950</td>
<td>797</td>
</tr>
<tr>
<td>Mikulčice Agglomeration</td>
<td>Velemínský and Poláček 2008</td>
<td>Great Moravian</td>
<td>c. 800-950</td>
<td>2,500+</td>
</tr>
</tbody>
</table>

The site complexes of Mikulčice and Pohansko are Great Moravian (c. 830-907AD) sites in the southern region of Moravia (in what is now the eastern Czech Republic). The large settlement complex of Mikulčice contains the most thoroughly analyzed and published skeletal series out of all comparative skeletal populations in the region. This urban center was located on several islands among channels of the Morava River. Over a dozen churches and burial grounds are located in the fortified acropolis and its related suburbia, as well as several more distant hinterland cemeteries (Velemínský and Poláček 2008; Velemínský et al. 2009; Havelková et al. 2013). For example, Prušansky I is a 9\textsuperscript{th}-10\textsuperscript{th}-century burial site, located 9km from the center of

\textsuperscript{44} The Prague Castle agglomeration has numerous cemetery locations dating to the 10\textsuperscript{th} century, including several around churches and others located within the town near the bank of the Vltava River (Boháčová 2008).
Mikulčice, that contains 330 burials. Over 2500 burials are associated with the Mikulčice complex, with some osteological and mortuary data published (Poláček 2008).

Figure 3.2: Map of comparative sites and skeletal series in Bohemia and Moravia. Locations approximate. (Source: Lencer, Czech Republic location map.svg).

The sites and skeletal collections introduced here offer comparisons and examples to better contextualize the Libice site and skeletal collections. These data will be referenced throughout the dissertation, along with occasional references to sites in Slovakia, Poland, and further afield. The primary focus, however, remains a comparison of the Akropole and Kanín cemeteries and samples of their skeletal populations. As noted previously, these two cemeteries were excavated under different circumstances and vary in terms of preservation and data recording. The skeletal samples reflect some of these differences and constraints and so these archaeological contexts must be understood before attempting an integrated analysis.
3.4 Akropole cemetery unearthed

The Akropole cemetery (Figure 3.3) was excavated as part of the large-scale research of Rudolf Turek and the Národní muzeum from 1949 to 1953, and again from 1967 to 1973 (Turek 1971; Princová and Mařík 2006; Mařík 2014). The cemetery spanned a use-period of several hundred years beginning in the Middle Hillfort period 45 (late 9th century). The earliest graves, sunken features, and structural foundations date to about 870AD on the basis of mortuary artifacts (Princová and Mařík 2006). Jewelry and ceramics, among other objects, have been stylistically linked to Great Moravia, a political entity of great cultural influence in the region in the 9th century (Mařík 2014).

A leveling layer of loose rock and rubble covered these earlier features (including burials), forming an important component of the stratigraphy of the Akropole site. The foundations of the stone church and many later burials overlaid, or were recessed into, this layer of rubble46 (Turek 1980; Mařík 2008; Mařík 2014). Ceramic styles of the “Slavník” type are associated with the next phase from about 950-1000, with sherds from burial backfills used to date interments (Turek 1980). Burial at the cemetery continued during the Terminal Hillfort period (post-1000AD) even as the other cemetery sites fell out of use around Libice (Mařík 2009a). While the cemetery remained active after the close of the 10th century, the population of Libice declined significantly. Indeed, few graves have been dated to the 11th century based on coins and other artifacts (Mařík 2008).

---

45 Most notably, graves from the Middle Hillfort period (c.875-950) are covered by a leveling layer upon which the stone church and Late Hillfort (c. 950-1000) burials were founded (Mařík 2009a:174).
46 No burials were found within the confines of the church. A sunken feature in center of the transept suggests, however, that an interment may have taken place here. If this were the case, the remains might have been later relocated or destroyed (Mařík 2014).
Figure 3.3: Map of Akropole cemetery (adapted from Mařík 2009). Graves surround the cruciform foundation of the early medieval church. Colored burials were analyzed for this project and are here presented by sex. Blank burials were not part of the sample analyzed.

Turek (1980) describes 288 burials and burial clusters excavated from the Akropole cemetery during the Národní muzeum excavations. Approximately 301 sets of remains in the repository of the Národní muzeum in Prague are associated with the Akropole cemetery. As a full analysis of the collection was not feasible for this project, a sample of 117 individuals was

---

47 Some burials in close proximity to others were given the same burial number and differentiated by letters (for example, Burial 280a-e). This practice was typical when subadults were buried near adults.
48 Although 574 curation boxes are listed in the National Museum catalogue database, many of these entries are redundant due to changes in curation organization over the years. An additional 34 burials are unaccounted for in the catalogue (including Burials 269-288). Finally, inconsistent labeling in the catalogue and curation boxes meant that some remains could not be confidently associated with a designated number-letter combination in a burial cluster.
analyzed for comparison with the skeletal series from the Kanín cemetery. The demographic breakdown of this sample is presented in Table 3.5. Individuals were chosen for the sample based on several factors: likelihood of the burial dating to period of interest (870-1000) based on Turek’s (1980) excavation and interpretations, positive identification of the remains in the repository, and association of the remains with Turek’s records and/or photographs of the excavation. As this sample is not random, the demographics of the sample do not necessarily reflect the wider cemetery population. However, the sample parameters are such that these individuals do reflect burial within the time period of interest and can be confidently associated with particular mortuary contexts.

**Table 3.5: Akropole skeletal sample demographics**

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Range (years)</th>
<th>Akropole sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>% total</td>
</tr>
<tr>
<td>Subadult</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant (IN)</td>
<td>0.0-1.5</td>
<td>26</td>
</tr>
<tr>
<td>Younger children (YC)</td>
<td>1.5-6.5</td>
<td>21</td>
</tr>
<tr>
<td>Older children (OC)</td>
<td>6.5-15.5</td>
<td>9</td>
</tr>
<tr>
<td>Unknown subadult (Unkn SA)</td>
<td>&lt;15.5</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total subadults</strong></td>
<td>&lt;15.5</td>
<td>60</td>
</tr>
<tr>
<td>Adult</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young adult (YA)</td>
<td>15.5-24</td>
<td>8</td>
</tr>
<tr>
<td>Middle adult (MA)</td>
<td>25-45</td>
<td>29</td>
</tr>
<tr>
<td>Old adult (OA)</td>
<td>45+</td>
<td>20</td>
</tr>
<tr>
<td>Unknown adult (Unkn)</td>
<td>&gt;15.5</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total adults</strong></td>
<td>&gt;15.5</td>
<td>57</td>
</tr>
</tbody>
</table>

Despite the chaotic mortuary landscape and grave disturbances in the area surrounding the church, the Akropole remains are largely well preserved (Table 3.6). While skeletal...
completeness and cortical bone erosion do vary widely, most of the poorly preserved Akropole remains belong to subadults (N=10, or 77% of the incomplete remains).

Table 3.6: Preservation of Akropole sample

<table>
<thead>
<tr>
<th>Preservation</th>
<th>Akropole</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Complete &gt;75%</td>
<td>71</td>
<td>61%</td>
</tr>
<tr>
<td>Partially Complete</td>
<td>33</td>
<td>28%</td>
</tr>
<tr>
<td>Incomplete &lt;25%</td>
<td>13</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td></td>
</tr>
</tbody>
</table>

Mortuary data for each Akropole burial is provided by Turek (1980), including excavation notes and descriptions of burial stratigraphy, stone inclusions, mortuary artifacts, and body position. The vast majority of graves at Akropole were extended, supine burials with the head to the west. Grave goods are present in just under one third of the burials. Burial artifacts included jewelry, knives, other weapons and iron objects, and some organic inclusions such as animal bone (Figure 3.4 and Table 3.7). Most mortuary artifacts and other finds from the intensively used Akropole cemetery are curated at the Národní muzeum in Prague. Animal bone, however, was also frequently found to be commingled with human remains in the repository.

---

50 Further collections of excavation records, including photographs, finds records, and plan maps are located in the archive system of the Národní muzeum (OPAS-NM). A lack of consistent labeling and organization confounds the interpretation of many these documents. For example, of 2,608 un-labeled field documentation photographs and negatives, only 890 have been topographically located (Mařík, pers comm), and many burials could not be positively identified in this photographic record.
Table 3.7: Demographic distribution of artifacts at Akropole

<table>
<thead>
<tr>
<th>Artifact type</th>
<th>Infants</th>
<th>Young Children</th>
<th>Older Children</th>
<th>Young Adult Females</th>
<th>Young Adult Males</th>
<th>Middle Adult Females</th>
<th>Middle Adult Males</th>
<th>Old Adult Females</th>
<th>Old Adult Males</th>
<th>Indet. Adults</th>
<th>Total Burials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jewelry</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td>5</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Knives</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Weapons</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Spurs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Buckle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Other metals</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Organic material</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total with artifacts*</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>9</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>36</td>
</tr>
<tr>
<td>% of all Burials</td>
<td>11%</td>
<td>14%</td>
<td>44%</td>
<td>25%</td>
<td>50%</td>
<td>60%</td>
<td>53%</td>
<td>27%</td>
<td>44%</td>
<td>50%</td>
<td>31%</td>
</tr>
</tbody>
</table>

* Note: Some burials contained more than one type of artifact. This total reflects the number of graves with artifacts
Several graves were elaborately furnished with high-status artifacts including weapons and some types of jewelry. These burials belonged to men, women, and children. It is important to note, however, that two thirds of the burials sampled from the Akropole cemetery did not contain any artifacts. It was not uncommon for Christian burials to contain artifacts in early medieval Europe, particularly on the frontiers of Christendom (Effros 2003; Härke 2014).
However, the practice of grave inclusions gradually disappeared in most Christian spaces by the later Middle Ages (Härke 2014). The next chapter will further examine mortuary artifacts and their potential significance.

With its central location, the Akropole cemetery was clearly an important part of the Libice site complex in both the past and present. But it was not the only (or even the largest) burial space at Libice. The Kanín cemetery, a large burial space southwest of the settlement area, was also a significant feature of medieval Libice.

3.5 Kanín cemetery unearthed

The Kanín cemetery was first recognized in the mid-19th century when the construction of a road between the towns of Libice and Kanín disturbed around 200 graves. Located on a river terrace of the Cidlina, the graves are recessed into clay soil above a layer of rough gravel (Mařík 2009a). Burials have been excavated from this site under the auspices of several institutions over the last century (Table 3.8). The first burials were excavated from the Kanín cemetery by amateur Jan Heřmich between 1903 and 1911 near the junction of the railroad and the road between Libice and the hamlet of Kanín.51 Larger-scale salvage research was conducted throughout the 1960s by Ladislav Hrdlička at the Archaeological Institute in Prague in response to sand quarrying damage. These investigations focused on three areas, designated as Kanín I, II, and III (Figure 3.1). Kanín II, located at the junction of the road and railroad track, is the most thoroughly investigated area with 169 burials52 (Mařík 2005).

51 The location of the skeletal remains excavated at this time is unknown, but records note that some graves lacked preserved skeletal material upon excavation. Descriptions of the mortuary artifacts from these burials are present, but I have been unable to locate excavation reports or other documentation.
52 In addition to the excavations of the 1960s, sewer reconstructions in 2003 required further salvage work at Kanín II. Likewise, excavations in 2004 were part of a roadway reconstruction through Kanín II. These projects were conducted under the auspices of the Research Archaeological Institute ASCR (Princová and Mařík 2006; Křivánek and Mařík 2009).
Table 3.8: Status of Kanín skeletal remains

<table>
<thead>
<tr>
<th>Burials</th>
<th>Years excavated</th>
<th>Skeletal remains present</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-15</td>
<td>1905</td>
<td>no</td>
</tr>
<tr>
<td>16-17</td>
<td>~1891</td>
<td>no</td>
</tr>
<tr>
<td>18-173</td>
<td>1961-1971</td>
<td>yes</td>
</tr>
<tr>
<td>174-178</td>
<td>1961</td>
<td>yes</td>
</tr>
<tr>
<td>179-184</td>
<td>2003</td>
<td>no</td>
</tr>
<tr>
<td>185-187</td>
<td>2004</td>
<td>yes</td>
</tr>
<tr>
<td>188-201</td>
<td>1903</td>
<td>no</td>
</tr>
<tr>
<td>203-207</td>
<td>1911</td>
<td>no</td>
</tr>
<tr>
<td>208</td>
<td>1924</td>
<td>no</td>
</tr>
<tr>
<td>209-213</td>
<td>1961-1969</td>
<td>no</td>
</tr>
</tbody>
</table>

Geophysical surveys performed in conjunction with recent salvage activities suggest that a large, unexplored portion of the burial ground is present between the locations of Kanín I and Kanín III. The total area of the cemetery is estimated to be approximately five hectares in size and contain over 2,700 graves (Mařík 2009a). Burials in the Kanín cemetery were dated primarily based on associated features and grave goods, including ceramics. The use-period of this area begins during the Middle Hillfort period and ends around the terminus of the Late Hillfort period (c. 1000). After this time, the general population of the site decreases, and all subsequent burial activity appears to be centered on the church in the inner bailey (Akropole cemetery) or other burial sites (Mařík 2009a).

Of the 213 total burials excavated from the Kanín cemetery, 143 sets of skeletal remains are presently curated in the repository of the Národní muzeum in Prague.53 These remains were excavated from Kanín II, primarily between the years 1961-1971 (Figure 3.5). Although all 143 individuals excavated from Kanín II were analyzed for this project, it is important to remember

---

53 The skeletal remains excavated from Kanín II (Burials 18-178) were initially curated at the Archaeological Institute of the Czech Academy of Sciences. Eventually the skeletal remains were moved to the repository of the Národní muzeum in Horní Počernice (Prague 20).
that this is a sample of a wider burial population. Furthermore, this sample is not random and instead reflects only one area of the Kanín cemetery. All burials, however, date to the same period of interest as the Akropole sample (approximately 870-1000AD). The demographic breakdown of this sample is presented in Table 3.9.

Figure 3.5: Map of Kanín II excavated area of the Kanín cemetery (adapted from Mařík 2009a). This map depicts the excavated area of Kanín II and the burials analyzed for this project. Light gray indicates non-burial features (including storage pits and ovens) that generally predate the use of this space as a burial ground. The linear excavation trenches in the center reflect the sewer and road construction events of the early 2000s.
Different depositional environments led to significant variation in preservation between the two Libice cemeteries. While the Akropole remains were relatively well-preserved, the remains from Kanín exhibited more variation with generally poorer bone preservation (Table 3.10). Most skeletons were less than 25% complete, and in some cases only teeth were preserved. The sandier soil of the river floodplain on which the Kanín cemetery was located may have contributed to the relatively poor condition of the remains. Preservation and bone weathering varied widely, although the vast majority of individuals from Kanín exhibited some degree of cortical erosion on long bone diaphyses and ectocranial surfaces. The limitations of this skeletal series were factored into the subsequent comparative analysis. For example, only individuals with cranial material present were considered when discussing cranial lesion frequencies between the two cemeteries.

### Table 3.9: Kanín skeletal sample demographics

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Range (years)</th>
<th>Kanín sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
</tr>
<tr>
<td><strong>Subadult</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant (IN)</td>
<td>0.0-1.5</td>
<td>17</td>
</tr>
<tr>
<td>Younger children (YC)</td>
<td>1.5-6.5</td>
<td>27</td>
</tr>
<tr>
<td>Older children (OC)</td>
<td>6.5-15.5</td>
<td>11</td>
</tr>
<tr>
<td>Unknown subadult (Unkn SA)</td>
<td>&lt;15.5</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total subadults</strong></td>
<td>&lt;15.5</td>
<td>59</td>
</tr>
<tr>
<td><strong>Adult</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young adult (YA)</td>
<td>15.5-24</td>
<td>4</td>
</tr>
<tr>
<td>Middle adult (MA)</td>
<td>25-45</td>
<td>47</td>
</tr>
<tr>
<td>Old adult (OA)</td>
<td>45+</td>
<td>24</td>
</tr>
<tr>
<td>Unknown adult (Unkn)</td>
<td>&gt;15.5</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total adults</strong></td>
<td>&gt;15.5</td>
<td>84</td>
</tr>
</tbody>
</table>
Table 3.10: Preservation of Kanín sample

<table>
<thead>
<tr>
<th>Preservation</th>
<th>Kanín remains</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>Complete &gt;75% present</td>
<td>30</td>
</tr>
<tr>
<td>Partially Complete 25-75% present</td>
<td>52</td>
</tr>
<tr>
<td>Incomplete &lt;25% present</td>
<td>61</td>
</tr>
<tr>
<td>Total</td>
<td>143</td>
</tr>
</tbody>
</table>

Mortuary data for the Kanín cemetery has been published in the doctoral dissertation of Dr. Jan Mařík (2009) from the Institute of Archaeology of the Academy of Sciences of the Czech Republic (ARUP) in Prague. His thesis contains the archaeological reports from the excavations of the Kanín burials. Each grave is described in terms of its shape, dimensions, orientation, position of the body, descriptions of age and sex if possible, and an inventory of artifacts. Additionally, the library at ARUP contains further excavation reports, maps, photos, and publications related to Kanín as well as other archaeological excavations at Libice. The mortuary artifacts from Kanín are housed at the Polabského Muzea (Elbe Valley Museum) in Poděbrady, and at ARUP in Prague. Similar to the Akropole cemetery, grave goods at Kanín included jewelry, knives, other weapons, metal fragments, and occasional organic inclusions (Figure 3.6 and Table 3.11).
## Table 3.11: Demographic distribution of artifacts at Kanin

<table>
<thead>
<tr>
<th>Artifact Type</th>
<th>Infants</th>
<th>Young Children</th>
<th>Older Children</th>
<th>Young Adult Females</th>
<th>Middle Adult Females</th>
<th>Middle Adult Males</th>
<th>Old Adult Females</th>
<th>Old Adult Males</th>
<th>Indet. Adults</th>
<th>Total Burials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramic Vessel</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wooden Vessel*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jewelry</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knives</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Weapons</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spurs</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buckle</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>4</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Other metal</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Organic material</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total with artifacts</strong></td>
<td>4</td>
<td>16</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>10</td>
<td>7</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td><strong>% of all Burials</strong></td>
<td>23%</td>
<td>59%</td>
<td>27%</td>
<td>50%</td>
<td>100%</td>
<td>53%</td>
<td>36%</td>
<td>64%</td>
<td>46%</td>
<td>53%</td>
</tr>
</tbody>
</table>

*Stave-built wooden vessels, or buckets, were known as věderky

** Note: Some burials contained more than one type of artifact. This total reflects the number of graves with artifacts.
Figure 3.6: Distribution of mortuary artifacts at Kanín II (adapted from Mařík 2009a).

Fewer than half (45%) of Kanín graves contained artifacts. Like the Akropole cemetery, this relative paucity of grave goods may represent a gradual transition away from placing objects in the grave (Härke 2014). Importantly, however, numerous burials at Kanín contained intact ceramic and wooden vessels, a practice not seen at the Akropole cemetery. Fewer graves at
Kanín contained elaborate grave furnishings or large amounts of artifacts. Some high-status mortuary artifacts were present, however, including several burials with weapons. The mortuary contexts of the Akropole and Kanín cemeteries already suggest some significant differences in ritual and practice between these two burials spaces. The next chapter will examine these differences with attention to how Christian institutions and cosmological frameworks could influence burial practices.

3.6 Conclusion

The materials and methods introduced here provide the basis for an integrated bioarchaeological comparison of the two cemeteries at Libice. Skeletal remains from the two cemetery samples are assessed using standard osteological methods to create biological profiles. Archaeological data from site reports, photographs, and comparative sites are synthesized with skeletal data to understand the mortuary contexts and wider archaeological landscapes these people were embedded in. Textual sources, introduced in Chapter 2, offer additional insight into the lived experiences of the medieval world, and are considered within the cultural and temporal contexts in which they were written. Together, these material, spatial, biological, and textual sources provide a rich matrix from which we can approach the lived experiences of people buried at Libice.

As this overview of the materials and methods has hinted at, there are important material and spatial differences between the two cemeteries at Libice. Before turning to the skeletal data, I examine these two mortuary contexts and how they might reflect engagement with difference cosmologies through ritual and practice. The next chapter digs into the cemetery landscapes, mortuary artifacts, and funerary practices that define each of these spaces. With a better sense of
how these two spaces differ, we can then turn to the skeletal data to examine what factors might have channeled people into one burial place or the other.

Chapter 4: Perform[ing] over the dead: Death and mortuary contexts

“So also the superstitious practices which the villagers, still half-pagan, observed…the profane jests, which they performed over the dead, rousing useless ghosts, wearing masks on their faces, and reveling.”\(^5^4\)

4.1 Introduction

Death represents the merging of different kinds of time: an individual biography ends, and, mediated by social rituals, it is entered into the cosmological order (Robb 2002; Geller 2012; Gilchrist 2012). Medieval death was an embodied experience, grounded in material transformations that in part reflected the continuities between the soul in the afterlife and the body in the grave (Binski 1996; Williams 2006; Gilchrist 2015). The analytical possibilities engendered by these transitions make an investigation of death practices particularly salient. In particular, we might look to mortuary contexts for important insights into the relationships between ritual and the body.

Until recently, medieval mortuary archaeology focused on how burials reflected identity in life. The trajectory of mortuary archaeology in Europe has been significantly shaped by historical events and ideologies of the 20\(^{th}\) century. Burials were initially interpreted with regard to ethnicity and religion. In this capacity, mortuary archaeology provided evidence for the presence of Germanic peoples ancestral to modern nation-states and the spread of Christianity through medieval Europe (Effros 2002; Williams 2005). More recent mortuary archaeology has

\(^5^4\) Cosmas of Prague (translated by Wolverton [2009:184]) describing the reign of Duke Břetislav II (r. 1092-1100). He continues, “The good Duke exterminated these abominations and other sacrileges, so they might no longer persist among the people of God.”
been critical of these traditional approaches with a focus on the symbolic, political, and ideological significance of burial practices (Effros 2002; Scott 2011; Chapman 2013). Similarly, a focus on ‘grave goods’ or burial artifacts has been expanded to include issues of landscape, cemetery organization, embodiment, and collective memory (Härke 2001; Williams 2005; Semple and Williams 2015).

Roberta Gilchrist and other medievalists have since approached early medieval mortuary contexts as sites of syncretism between Christian eschatology and older, local traditions (Williams 2007; Gilchrist 2015; Härke 2014). Historian Patrick Geary (1994) notes that early medieval burial rites were often not well-controlled by ecclesiastical or lay legislation. Instead, he suggests Christian rites were enforced at a lower level through local clergy often in tandem with elites eager to display their commitment to Christianity. The mortuary record of the Christianizing periphery of Europe reveals the uneven results of such local enforcement and the potential for syncretism with other traditions.

Tensions between Christian eschatology and older burial rites resulted in a patchwork of mortuary practices across Central Europe. Alongside foundational Christian beliefs in “bodily resurrection, the continuity of embodied experience, and the reality of corporeal transformation in death” (Gilchrist 2015:393), other ritual practices and beliefs persisted. For example, placing amulets with the dead for protection or apotropaic purposes continued throughout the Middle Ages with origins in earlier burial traditions (Blair 2005; Gilchrist 2008). The 11th-century chronicler, Cosmas of Prague, expressed concern about Czech burial practices, noting continuing conflict with “half-pagans” in Bohemia, who he described as baptized Christians continuing to practice some of the old ways (Wolverton 2009:184). As a clergyman, Cosmas was particularly appalled by “the profane jests, which they performed over the dead, rousing useless ghosts,
wearing masks on their faces, and reveling” (Wolverton 2009:184). Cosmas’ complaint also highlights the social and mnemonic importance of cemeteries, acting as busy crossroads of the living and the dead (Semple and Williams 2015; Inall and Lillie 2018).

Several early medieval site complexes in Bohemia and Moravia have yielded multiple contemporaneous burial grounds. Archaeological literature on these sites tends to give central churchyard cemeteries primacy as elite spaces, juxtaposed with more peripheral burial grounds characterized as lower status or peasant cemeteries (Dostál 1966; Velemínský and Poláček 2008; Macháček et al. 2016). Likewise, the two largest early medieval cemeteries at Libice, the Akropole cemetery and the Kanín cemetery, have been characterized as elite and non-elite, respectively (Princová and Mařík 2006; Mařík 2009a). While socioeconomic status undoubtedly plays a significant role in cemetery access and use, the influences of Christianization on burial ritual are also acknowledged in Czech scholarship (Dostál 1966; Macháček et al. 2016).

Elaborating on this theme, I explore the ritual and conceptual differences that emerge in an analysis of mortuary practices at the two cemeteries of Libice. The location and layout of cemeteries, as well as the deposition of objects in graves, reflects different displays of social and ritual power. When mortuary data is enhanced through the integration of skeletal life histories, we can better see how certain individuals might be channeled into one cemetery or the other and how their lives and deaths might be structured differently through myriad relationships to Christianity.

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55 In part, this dichotomy emerged from large-scale archaeological investigations in the early and mid-20th century that focused on these elite spaces as sites of historical significance. More recently, scholarly interest has shifted to a more holistic view of these site complexes and continued archaeological research has identified more peripheral burial spaces.
4.2 Places for the dead: The cemetery landscapes

Mortuary geography offers a landscape perspective on the role of space in representations of status, power, and ritual in burial practices (Härke 2001; Williams 2007; Semple and Williams 2015). Burial in open spaces, known as grave-field cemeteries, was the norm in much of Central Europe prior to the rise of local churches, and continued alongside churchyard cemeteries for several centuries. The tradition of burial near churches only gradually swept across Europe alongside the development of the cult of the saints (Brown 1982; Barford 2001; Effros 2003). Relics of these holy people, in the form of bones, bone fragments, and personal items, were venerated in tombs, shrines, and churches. As churches came to house pieces of these sacred bodies, people sought burial nearby in hopes that the saint would intercede on their behalf (Effros 2003; Robb 2013a). Numerous scholars have pointed out that the shift to churchyard cemeteries likely had less to do with conversion directly, than with changing roles of clergy and the influence of elite families asserting their relationship to the Church (Effros 1997, 2003; Williams 1999; Härke 2001; Gittos 2002).

These dynamics are apparent in the spatial layout of the Libice site complex. The Akropole cemetery is centrally located in the protected space of the inner bailey. In contrast, the Kanín cemetery is peripheral to the main settlement across the Cidlina River (Figure 4.1). These spaces and their relative locations are coded with ritual and religious significance. For example, in addition to its central location, the Akropole cemetery was adjacent to the powerful visual symbol of the stone church. On the other hand, the Kanín cemetery lacks obvious ecclesiastical oversight and its location across the river has pre-Slavic pagan associations. Importantly, it is simplistic to dichotomize these spaces as “safely bounded within churchyards under Christian pastoral care” versus “dead pagan ‘communities’ situated on the periphery and borders of the
living world” (Semple and Williams 2015:4). As we will see, each of the burial grounds represent multifaceted historical landscapes.

Figure 4.1: Libice archaeological site survey (Křivánek and Mařík 2009). Cemeteries circled in red: (1) Akropole cemetery within the fortified inner bailey, (2) Kanín II cemetery area southeast of the settlement across the Cidlina River.

The Akropole cemetery surrounded the church within the fortified enclosure (inner bailey) at Libice. As a result, the burial space was highly visible in a heavily used area of the site. This location made the Akropole cemetery an important space for performative mortuary practices and demonstrations of Christian piety and commitment. Such ritual activity was likely part of a suite of political maneuvers by Czech elite seeking legitimacy and power in western Christendom (Font 2008; Urbańczyk 2008; Kouřil 2014). For example, while no burials were found within the confines of the Akropole church, a sunken feature in center of the transept suggests that an interment may have taken place here. If this were the case, the remains might have been later relocated or destroyed (Mařík 2014). Burial *ad sanctos* near the altar of the
church was a highly sought-after privilege, often reserved for high-status individuals and saintly bodies and their relics (Effros 1997; Hadley 2010).

The archaeological context of the cemetery attests to the intensive activity in this space. Dense clay soil is interspersed with rubble from a series of construction events, including the construction of the stone church over the foundations of a wooden church structure sometime in the mid-10th century. Indeed, many graves were disturbed during either this building phase or when new interments were dug nearby. As a result, the backfill of burials often contained broken fragments of ceramics, metal, bones, and other discarded items. Although the depths of the graves are not included in the excavation reports, noted are the many cases of grave cuts superseding older interments, often with displacement of skeletal remains. Clusters of burials were common, particularly those of infants and younger children whose remains were interred in close proximity to adult graves of both men and women. These clusters and intercut burials may reflect the role of the cemetery as a place of memory and the convergence of generations (Gilchrist and Sloane 2005; Semple and Williams 2015; Inall and Lillie 2018). The close spatial relationships between some burials could signify a combination of family, status, and piety (Sayer 2010; Barbiera 2015).

The topography of the cemetery offers some insight into Christian concepts and practices (Effros 1997; Gilchrist 2012; Semple and Williams 2015). Indeed, Gilchrist (2012) argues that churches and cemeteries might be viewed as maps of Christian cosmology. While burials surround the early medieval church on all sides, relatively few are found north of the church (Figure 4.2). By at least the 13th century, churches were believed to collapse to the north when in ruin, preventing the resurrection of those buried beneath the debris. Alternatively, the northern area of churches was sometimes reserved for marginalized or transgressive individuals (Magi
A roughly linear series of graves projects south of the rest of the cemetery. These burials are aligned with the foundations of older ecclesiastical structures south of the church and are associated with the earliest phase of the cemetery, the Middle Hillfort period (late 9th – mid-10th century) (Turek 1971, 1980; Mařík 2009a). Likewise, burials extending west of the church may have been in positions of significance, lining a walkway leading to the entrance of the nave (Turek 1980).

Even within the chaotic clustering of interments, there remains a sense of order and direction. Nearly all of the rectangular-cut burials examined for this project (99%) faced east.
(i.e., the head to the west). Early medieval Christian burials were typically oriented with the head to the west so that the dead would rise facing final judgement at the Resurrection (Daniell 2005; Gilchrist and Sloane 2005). Occasional rows also suggest there may have been some grave markers, although gravestones were not commonly used until the end of the 10th century\(^{56}\) (Podhorský and Drnovský 2017). Overall, the mortuary geography of the Akropole cemetery reflects engagement with Christian symbolism and relative uniformity of mortuary practices.

In contrast, overt Christian landscape symbols were absent at the Kanín cemetery. For example, no church structure was associated with the cemetery. While it is possible that a church was present nearby but has not been identified archaeologically, this type of church-less cemetery was not unusual in early medieval Central Europe (Barford 2008; Semple and Williams 2015). Known as a ‘grave-field’ cemeteries, these burial spaces were not necessarily rural, but lacked associated ecclesiastical structures (Barford 2008; Buckberry 2010). However, the location of the cemetery on the opposite shore of the Cidlina River from the settlement site may have origins in pre-Christian Slavic beliefs (Dynda 2014). Slavic folklore depicts the land of the dead on the other side of a mythical river. Rivers thus “practically and symbolically” separated settlements from cemeteries, and the living from the dead (Kajkowski 2015).

While the Kanín cemetery was located some distance southeast from the main settlement, it was by no means isolated from the activity of the living. In addition to graves, the excavated area of Kanín II is also interspersed with archaeological features, including kilns and probable storage pits dating to before and after the cemetery use period (Mařík 2009a) (Figure 4.3). These features suggest that the burial space may have had multiple meanings and uses over time. The

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\(^{56}\) Several inscribed tombstones were found at Libice, probably dating to the early 11th century (Turek 1980; Podhorský and Drnovský 2017). However, many gravestones were likely removed and repurposed as building materials by locals in later centuries (Mařík 2009a).
mortuary geography of Kanín indicates general conformity to Christian burial practices, although some ritual and symbolic variation is present. Illustrations and photographs from the 1960s excavations indicate that 78% of burials were extended, supine inhumations typical of Central European mortuary practices in the early medieval period (Mařík 2009a). Additionally, the majority of bodies (89%) were placed with the head to the west, although many of these are skewed on a northwest-southeast axis. While most burials might be considered ‘normative’ for this mortuary context, it is clear that there is more variation here than at the Akropole cemetery. This diversity will be examined in section 4.4.

Figure 4.3: Kanín II excavated area of the Kanín cemetery (adapted from Mařík 2009a). Indicated are burials (black) and archaeological features (gray).
In Figure 4.3, it is possible to see some clustering of graves, suggesting family groups or other associations. As at the Akropole, the smaller graves of children and infants were often clustered in close association with each other or with adult graves. Graves in the most southern excavated area were aligned in rows, suggesting a system of marking graves above ground. There is some linearity to graves in the more northern excavated area as well, although the clusters of non-burial features in this area may have precluded ordered rows. No stone grave markers were associated with burials at Kanín. Taken together, the mortuary geographies of the two cemeteries offer a sense that these spaces were associated with different meanings, memories, and rituals. The mortuary objects found in the graves partly reflect these different landscapes and the ideologies imbricated with them.

4.3 Amulets, eggs, and pots: The mortuary artifacts

The social and symbolic significance of burial objects might include expressions of individual identity, relationships within a community, and beliefs about the afterlife (Joyce 2001; Effros 2002, 2003; Fahlander and Oestigaard 2008; Ekengren 2013). Most of the burial artifacts in the two cemeteries at Libice are fairly typical of early medieval Christian mortuary contexts (Velemínský and Poláček 2008; Štefan and Krutina 2009). As introduced in Chapter 3, these objects include jewelry, knives, other weapons, and iron fittings and fragments.

Even these typical mortuary objects may have had multiple meanings. For example, the most common grave inclusions at Libice are knives, which appear in the graves of men, women, and children. Depending on the context, these blades could represent standard dress components, weaponry associated with warrior burials, medical tools, or even eschatological objects (Härke 2014; Kowalska 2015; Matczak and Chudziak 2018). Knives were considered symbolic of the
spear used to wound Christ during the Passion (Koperkiewicz 2005; Kowalska 2015) and in burials could symbolize death, suffering, and sacrifice (Chudziak et al. 2010; Kowalska 2015). Likewise, the common circlet jewelry known as ‘temple rings’ were based on late Roman fertility symbols in the Danube region and may have retained some pagan meaning in the early medieval period (Duczko 2015). Indeed, connections between fertility, death, and regeneration can be identified in medieval Christian death rituals through themes of the resurrection as well as perceptions of ancestors as sources of wealth and fecundity (Gilchrist 2012; Caciola 2016).

Other burial objects exuded more obvious ritual and religious meaning. For example, the only artifact of overt Christian significance in the sampled graves is an amber cross that was part of a beaded necklace. The necklace was found with Akropole Burial 159, an older child aged 6.5-7.5 years. This unusual, high-status item consists of small glass beads and a flared cross cut from a flat piece of amber (Figure 4.4). Amber was often a component of amulets to protect children from harm (Gilchrist 2012) making this cross a particularly potent example of syncretism by incorporating both a Christian symbol and a substance with magical properties.

Figure 4.4: Amber cross and glass beads in Akropole Burial 159 (http://www.virtualniarcheologie.cz/krasa-veci-minulych/virtualni-vystava/65/).
The necklace was accompanied by numerous other artifacts, including an iron knife, 13 silver temple rings, fragments of a gilded copper gombiky (rounded button), and a flat piece of silver that may have been part of a kaptorga (amulet box, see below). This array of fine jewelry and objects with potential eschatological meaning draws attention to both status and religious identity in mortuary display. Relatively few older children (6.5-15.5 years) were present in the Akropole sample (n=9), and such artifacts may indicate a certain significance associated with the death of an older child. Indeed, a higher percentage of older children’s burials contained artifacts (44%) than the younger children (14%) or infants (11%) in the Akropole sample. These artifacts buried with older children tended to be rather unusual, including two full beaded necklaces.

Artifacts of more complex eschatological significance include kaptorgy, metal amulet boxes worn as pendants on chains or fastened to clothing (Kara 2015; Duczko 2015). Two burials at Akropole contain probable fragments of these wearable containers: Akropole Burial 159, the older child with the amber cross, and Akropole Burial 268, a young adult female with a richly furnished grave.57 One individual at Kanín (Burial 86, a middle adult of indeterminate sex) was also buried with a kaptorga along with numerous artifacts.58 Similar objects have been found in many other Central European burial contexts, and often contain fibers, linen, beads, small bones, and charred wood59 (Klášťte 2011; Duczko 2015; Profantová and Šilhová 2010). With likely origins as pagan apotopeic amulets, these boxes retained protective significance in the Christian era and were considered something akin to personal reliquaries (Duczko 2015; Profantová and Šilhová 2010).

57 Akropole Burial 268, known colloquially as the “Princess of Libice” was buried with 10 earrings or temple rings, a beaded necklace, the probable kaptorga box fragment, a possible iron awl, and several other iron fragments.
58 Kanín Burial 86 was a middle adult individual of indeterminate sex buried outstretched on their side with multiple artifacts including earrings, metal discs, leather and bronze fragments, and metal kaptorga fragments.
59 At the early medieval Polish site of Bodzia, some kaptorgy were found to contain plant material including millet, hemp, flax, and resin. Other materials associated with kaptorgy included linen, wax, clay, bone fragments, and beads (Duczko 2015).
Numerous Akropole burials contain organic artifacts derived from animal bone or botanical remains. Table 4.1 demonstrates the close physical relationship between the skeletal remains and organic artifacts, often located on, under, or next to the bodies. These artifacts, small and often obscured within burials, offer a variety of interpretive possibilities, many of which incorporate both Christian and alternative ritual traditions. For example, eggshells and bird bones have been found in early medieval Czech graves and are typically interpreted as symbolic objects such as amulets rather than as food offerings (Ota 2014). Eggs appeared in Central European pagan eschatology as cosmological symbols and fertility objects as well as in Christian iconography of resurrection (Kajkowski 2015; Kuczkowski and Kajkowski 2012). Bird bones, like those found in the hand of Akropole Burial 32, were even more closely tied with Christian eschatology as the souls of the dead were sometimes represented as birds in Christian art (Slavin 2007; Kajkowski 2015).

Table 4.1: Organic artifacts from Akropole cemetery

<table>
<thead>
<tr>
<th>Burial</th>
<th>Age</th>
<th>Sex</th>
<th>Artifact</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>236</td>
<td>IN</td>
<td>I</td>
<td>faunal bones</td>
<td>mixed with scattered human remains</td>
</tr>
<tr>
<td>190</td>
<td>IN</td>
<td>I</td>
<td>faunal vertebra</td>
<td>under the femora</td>
</tr>
<tr>
<td>158</td>
<td>YC</td>
<td>I</td>
<td>fragments of eggshells</td>
<td>next to the left side of the pelvis</td>
</tr>
<tr>
<td>103</td>
<td>YC</td>
<td>I</td>
<td>deer antler</td>
<td>with a spindle whorl by the top of the head</td>
</tr>
<tr>
<td>70</td>
<td>YA</td>
<td>F</td>
<td>faunal bone, possibly metatarsal</td>
<td>under the right tibia</td>
</tr>
<tr>
<td>264</td>
<td>MA</td>
<td>F</td>
<td>grains of wheat (<em>Triticum</em> sp.)</td>
<td>on the chest</td>
</tr>
<tr>
<td>32</td>
<td>MA</td>
<td>F</td>
<td>two avian long bones</td>
<td>under the right metacarpals</td>
</tr>
<tr>
<td>134</td>
<td>MA</td>
<td>F</td>
<td>two bone fragments, two fruit pits</td>
<td>with earrings and necklace next to the pelvis</td>
</tr>
<tr>
<td>34</td>
<td>OA</td>
<td>F</td>
<td>avian bones</td>
<td>between the knees</td>
</tr>
<tr>
<td>213</td>
<td>MA</td>
<td>M</td>
<td>&quot;cereal grains&quot;</td>
<td>beneath an iron knife in the left hand</td>
</tr>
<tr>
<td>97</td>
<td>OA</td>
<td>M</td>
<td>faunal long bone</td>
<td>parallel with the right lower leg</td>
</tr>
</tbody>
</table>

60 Birds representing the souls of the dead appear on the 12th century Gniezo doors (Kajkowski 2015). Importantly, the doors depict scenes from the life of St. Adalbert, a patron saint of the Czechs born at Libice, who was also a significant Polish saint.
Botanical remains, such as grains of wheat and fruit pits, are associated with feasting at
the graveside, symbols of rebirth, and protective rituals\(^{61}\) (Hansson 2005; Gilchrist 2008).
Likewise, antler and other animal bones may have been associated with funereal feasting or
served apotropaic purposes\(^{62}\) (Kuczkowski and Kajkowski 2012). These organic burial
inclusions were often partially hidden from sight, beneath limbs or tucked in hands. The obscure
placement suggests that at least some of these objects may have been placed surreptitiously in
graves, perhaps in response to the highly visible nature of the Akropole cemetery as a means to
avoid ecclesiastical oversight. Organic inclusions underscore how alternative materials and
practices could be incorporated into Christian eschatology or subtly performed alongside
Christian burial rites.

While few organic inclusions were identified in the Kanín cemetery, other artifacts offer
more overt contrasts to Christian mortuary ritual. The presence of ceramic and wooden vessels\(^{63}\)
at Kanín may be related to funerary traditions of food offerings or mortuary feasting (Effros
2003; Pokorný and Mařík 2006; Poláček 2008; Kajkowski 2015; Wojciechowska 2015; Caciola
2016). Vessels in similar mortuary contexts have been found to contain meat, dairy products, and
other grains (Kajkowski 2015). Indeed, pollen analysis on the contents of one of the ceramic
vessels from Kanín indicated the presence of honey-sweetened grain, suggesting that at least
some of these vessels carried food offerings (Pokorný and Mařík 2006).

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\(^{61}\) Gilchrist (2008) describes later medieval burial practices involving the deposition of hearth remains (including
burned grains) in burials to prevent the dead from returning to the home. Wojciechowska (2015) also notes medieval
Polish rituals involving feeding the dead through spilling or leaving food.

\(^{62}\) Butchery marks on some animal bones found in early medieval graves suggests funerary feasting or food offerings
as provisions for the afterlife (Inall and Lillie 2018).

\(^{63}\) Iron hoops and wood fragments found in six burials at Kanín are evidence of stave-built wooden vessels known as
\(\text{v\v{e}derky}\) (Turek 1980; Barford 2001). V\v{e}derky from the cemetery at the early medieval Polish site of Bodzia were
found to contain meat, corn, and oilseed plants (Krysowski 1995; Zamelska-Monczak 2015). While possibly
related to food offerings (Kajkowski 2015), these vessels have also been linked to the use of horses and the toolkit of
mounted warriors (Choc 1967; Burešová 2007).
Furthermore, at least one miniaturized vessel may be conceived of as a play object. Kanín Burial 148 belonged to a younger child (1.5-2.5 years) and contained a miniature ceramic bottle, 8cm tall and 6cm wide (Figure 4.5). This is the only case of a miniaturized or child-sized vessel at Libice and may have been a toy belonging to this young individual. Mitchell (2014) considers such miniaturized objects in a medieval context as material items that actively contributed to the formation of the medieval child through play, ideology, and substance. Intact vessels are rare in other early medieval Czech mortuary contexts (Štefan and Krutina 2009), and so it is unusual that 13% of burials at Kanín (n=18) contained ceramic vessels. These objects suggest engagement with alternative mortuary practices at Kanín, including potential feasting at the graveside or offerings and belongings for the afterlife.

Figure 4.5: Kanín Burial 148. This younger child (1.5-2.5 years) was buried with a miniature ceramic bottle at the feet (1), and two gombiky beads near the chin (2,3) (Mařík 2009a).

64 The medieval child was conceived of as a “being-under-construction,” influenced not only by social contexts, but also by their material world through things like toys, furniture, and foods (Orme 2001; Mitchell 2014:xxvii;).
In a discussion of mortuary artifacts, it is important to note that most of the graves assessed in both cemeteries were unadorned (55% at Kanín and 69% at Akropole). Recent mortuary archaeology has shown that burials lacking grave goods are not necessarily indicative of lower status (Bayliss et al. 2013; Härke 2014; Semple and Williams 2015; Inall and Lillie 2018). For example, Christian mores of piety may affect mortuary ritual, with mourners eschewing worldly objects and displays of wealth in the afterlife (Effros 2003; Inall and Lillie 2018). Furthermore, social fluctuations in approaches to mortuary displays could influence how certain groups adorned the dead (Cannon 1989; Effros 2003). As such, mortuary objects, or a lack thereof, could reflect social aspirations, memory-making, or political performances on the part of the deceased and mourners rather than a static social identity.

Mourners may have found other ways to indicate care, status, and the religious identity of the deceased. The complex relationship between status and Christian ritual/performance is perhaps best exemplified in the presence or absence of stone and wood burial lining. Stones or traces of wood lining were found in 63% of the burials sampled from the Akropole. In contrast, only 14% of Kanín graves have wood lining and no stones were used at all. At first glance, these findings support traditional archaeological assumptions of status difference as stone lining in particular would have required more resources in terms of both materials and human labor. However, beyond displays of wealth or care, mortuary lining also implies a concern with bodily integrity based in Christian eschatology. Such linings provided a boundary for the grave, protecting the body from damage that might hinder resurrection (Gilchrist 2015).

The general lack of grave inclusions in the cemeteries at Libice may reflect commitment to Christian piety in death. At the same time, more complex traditions are signaled through the occasional presence of small and often hidden organic artifacts at Akropole as well as the
numerous intact vessels at Kanín. Burial linings of wood and stone suggest potentially different levels of concern with the security of the body in death. The variation in grave furnishings within these cemeteries can be understood as partly reflecting social differences, but also as varied responses to Christian authority and influences on burial practices (Dostál 1966).

4.4 Embodied differences: The unusual burials

A body-centric mortuary archaeology addresses the powerful emotive presence of material bodies (Nilsson Stutz 2003, 2008; Devlin and Graham 2015) as well as the extended life course (Robb 2002; Geller 2012). For example, some individuals might receive unusual mortuary treatment depending on particular life experiences, how they died, or how the dead body itself was perceived (Hanuliak 2007; Tsaliki 2008; Aspöck 2011). At Libice, most graves in both cemeteries are aligned with the head to the west and the body in a supine, outstretched position. This body position was typical in early medieval Central Europe even prior to the arrival of Christian institutions, replacing cremation as the primary form of burial during the 8th century (Poláček 2008). While extended, supine inhumations ascribed to Christian mortuary norms (Barford 2001; Gilchrist and Sloane 2005), variation was also present in both cemeteries. The diverse manifestations of unusual burials highlight some of the ritual and practical tensions accompanying Christianization in Bohemia.

Studies primarily of Anglo-Saxon burials in England have identified common characteristics of unusual burials including prone burials, decapitations, isolated burials, stones

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65 Such burials are often referred to collectively as deviant burials. However, due to the negative connotations of the term “deviant,” I employ alternative language after Murphy (2008) and others that draws attention to these mortuary differences without suggesting misconduct on the part of the individual. For example, a burial that deviates from the “norm” may be related to extraneous circumstances such as disease, accidents, or extraordinary kinds of death (Weiss-Krejci 2008; Murphy 2008; Farrell 2011). Alternative designations include non-normative, unusual, atypical, differential, minority, anomalous, and extraordinary burials (Murphy 2008; Knüsel 2014).
placed in the grave, unusual alignments or positions, shallow and undersized graves, multiple interments and so on (Buckberry 2008; Farrell 2011). Archaeologist Eileen Murphy (2008) stresses the need to study unusual burials within the context of the normal burial practices in order to better understand the nature of atypical graves. Social bioarchaeology offers an interdisciplinary perspective to confront the interpretive challenges presented by these burials. Variation in the age, sex, status, and life histories of individuals with unusual mortuary treatment is such that one explanation for these practices is often insufficient (Murphy 2008; Reynolds 2009; Hosek 2019).

The vast majority of graves at Akropole were normative, extended inhumations. Only three graves (2.5%), exhibited unusual body positions (Figure 4.6). Two individuals will be discussed in Chapter 8, as their unusual mortuary treatment may be related to their experiences of disease and impairment. Akropole Burial 249, a middle-adult male with a likely neurogenic paralytic disease, was buried in a relatively small burial pit in a tightly crouched position. Akropole Burial 93, a young adult male with skeletal evidence for probable lepromatous leprosy, was buried with the legs flexed. Bioarchaeological attempts to identify osteological evidence for differential mortuary treatment have met with mixed results (Murphy 2008; Arcini 2009; Reynolds 2009; Hadley 2010; Betsinger and Scott 2014; Gregoricka et al. 2014). However, the unique disease experiences of these two men may have influenced their burial treatment in the otherwise highly consistent Akropole cemetery.

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66 Turek (1980) describes numerous disturbed burials, particularly with displaced limbs. However, most cases could be related to animal activity, subsequent interments, and later grave robbing rather than deliberate non-normative body placement during the primary deposition.
Akropole Burial 20, a young adult male, offers another perspective on mortuary variation at the churchyard cemetery. This man was buried just west of the southwest corner of the nave and was positioned with the head to the east and the arms crossed over the chest (Figure 4.7). Clergy were sometimes buried with their head to the east, the opposite of most Christian graves, so that they could face their congregation on the day of Judgment (Daniell 2005). Additionally, crossed arms may have been a general sign of Christian piety and modesty (Gallagher 2017). The location of this burial near the entrance to the church, the crossed position of the arms, and
the orientation suggest that this individual may have been a priest (Turek 1980). Other interpretations for this position include binding the arms to “cross” the corpse for apotropaic purposes (Daniell 2005; Mattison 2016;). Burying an individual facing west could also prevent them from experiencing the full Resurrection, suggesting a potential punitive measure (Daniell 2005; Gilchrist and Sloane 2005). The many interpretive possibilities of this burial highlight the complexity of early medieval mortuary ritual at Libice.

The Kanín cemetery offers significantly more diversity in mortuary practices. Of the 143 individuals analyzed from the Kanín II area, 32 individuals (22%) were buried in an atypical manner (Figure 4.8). This number includes three multiple interments with eight individuals between them. The observed atypical burial characteristics include flexed, crouched, lying on the side, prone, disarticulated, and multiple interment (Figure 4.9).
Figure 4.8: The unusual burials in the Kanín cemetery (adapted from Mařík 2009a). The 32 unusual burials are marked in red, and the three examples from Figure 4.9 are labeled, including Burial 185(a-c) discussed below.
These types of burial positions are found in cemeteries throughout early medieval Central Europe and the frequency of atypical burial at Kanín is not necessarily unusual for the region (Hanuliak 2007; Mařík 2009a; Čulíková 2011). For example, at the contemporaneous early medieval Czech site of Budeč, close to a third of the burials were considered atypical (Štefan and Krutina 2009). The analysis of skeletal remains can reveal demographic trends in mortuary practices and indicate some potential reasons for differential treatment. Table 4.2 presents demographic and mortuary details of the unusual burials at Kanín. Adult females more frequently received unusual mortuary treatment than males. A third of all female burials exhibited atypical body positions or orientations, while only a quarter of the male burials were

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67 The mortuary context of the Kanín cemetery is unique in other aspects. While grave robbery or other disturbances after burial may account for some cases of unusual body positions (Turek 1980; Drozdová 2005; Štefan and Krutina 2009), archaeological evidence of such practices is rare at Kanín (Mařík 2009a). The use of stones is likewise uncommon at Kanín. Stones could be used for burial lining or for apotropaic purposes placed on the head, chest, or legs to prevent the corpse from moving (Drozdová 2005; Gilchrist 2008; Štefan and Krutina 2009; Čulíková 2011).
atypical. The age distributions among adults are roughly the same for both normative and unusual burials.

Table 4.2: Mortuary contexts of unusual burials at Kanín

<table>
<thead>
<tr>
<th>Burial</th>
<th>Age</th>
<th>Sex</th>
<th>Orientation</th>
<th>Artifacts</th>
<th>Other data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FLEXED</td>
</tr>
<tr>
<td>62</td>
<td>SA</td>
<td>I</td>
<td>NE-SW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>SA</td>
<td>I</td>
<td>W-E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>SA</td>
<td>I</td>
<td>W-E</td>
<td></td>
<td>arm flexed</td>
</tr>
<tr>
<td>81</td>
<td>SA</td>
<td>I</td>
<td>NE-SW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>YA</td>
<td>M</td>
<td>SE-NW</td>
<td>buckle</td>
<td>arm flexed, on side</td>
</tr>
<tr>
<td>139</td>
<td>MA</td>
<td>F</td>
<td>NE-SW</td>
<td>earring</td>
<td>arms flexed, on side</td>
</tr>
<tr>
<td>99</td>
<td>MA</td>
<td>M</td>
<td>W-E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>126</td>
<td>MA</td>
<td>M</td>
<td>W-E</td>
<td></td>
<td>arms flexed</td>
</tr>
<tr>
<td>52</td>
<td>OA</td>
<td>F</td>
<td>W-E</td>
<td>ceramic, iron fragment</td>
<td>arm flexed, legs crossed</td>
</tr>
<tr>
<td>67</td>
<td>OA</td>
<td>F</td>
<td>SE-NW</td>
<td>earing</td>
<td>arm flexed</td>
</tr>
<tr>
<td>48</td>
<td>OA</td>
<td>F</td>
<td>W-E</td>
<td>earing</td>
<td>arm flexed</td>
</tr>
<tr>
<td>59</td>
<td>OA</td>
<td>M</td>
<td>NE-SW</td>
<td></td>
<td>arms flexed, on side</td>
</tr>
<tr>
<td>123</td>
<td>OA</td>
<td>M</td>
<td>W-E</td>
<td>ceramic</td>
<td>arms flexed</td>
</tr>
<tr>
<td>20</td>
<td>OA</td>
<td>I</td>
<td>W-E</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MULTIPLE INTERMENT</td>
</tr>
<tr>
<td>185c</td>
<td>SA</td>
<td>I</td>
<td>W-E</td>
<td></td>
<td>with 185a, 185b</td>
</tr>
<tr>
<td>92</td>
<td>SA</td>
<td>I</td>
<td>W-E</td>
<td></td>
<td>flexed, with 91</td>
</tr>
<tr>
<td>91</td>
<td>SA</td>
<td>I</td>
<td>W-E</td>
<td></td>
<td>with 92</td>
</tr>
<tr>
<td>185b</td>
<td>SA</td>
<td>I</td>
<td>W-E</td>
<td>earrings</td>
<td>crouched, with 185a, 185c</td>
</tr>
<tr>
<td>79</td>
<td>YA</td>
<td>F</td>
<td>W-E</td>
<td></td>
<td>with 78, 80</td>
</tr>
<tr>
<td>80</td>
<td>MA</td>
<td>M</td>
<td>W-E</td>
<td></td>
<td>with 78, 79</td>
</tr>
<tr>
<td>78</td>
<td>YA</td>
<td>M</td>
<td>W-E</td>
<td></td>
<td>with 79, 80</td>
</tr>
<tr>
<td>185a</td>
<td>OA</td>
<td>F</td>
<td>W-E</td>
<td>earrings, bead, knife</td>
<td>with 185b, 185c</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PRONE</td>
</tr>
<tr>
<td>57</td>
<td>MA</td>
<td>F</td>
<td>W-E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>MA</td>
<td>M</td>
<td>SW-NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>OA</td>
<td>F</td>
<td>W-E</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SIDE OUTSTRETCHED</td>
</tr>
<tr>
<td>112</td>
<td>YA</td>
<td>F</td>
<td>W-E</td>
<td></td>
<td>arms flexed</td>
</tr>
<tr>
<td>102</td>
<td>YA</td>
<td>F</td>
<td>W-E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>MA</td>
<td>I</td>
<td>W-E</td>
<td>earrings, metal discs, amulet box, leather</td>
<td>arms flexed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CROUCHED</td>
</tr>
<tr>
<td>120</td>
<td>YA</td>
<td>M</td>
<td>W-E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>OA</td>
<td>F</td>
<td>W-E</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DISARTICULATED</td>
</tr>
<tr>
<td>125</td>
<td>YA</td>
<td>M</td>
<td>W-E</td>
<td>knife, spurs, wooden vessel, buckles, belt endpiece</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>YA</td>
<td>M</td>
<td>W-E</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Most striking is the fact that almost two thirds of older children (6.5-15.5 years) at Kanín were interred in unusual positions (n=7), suggesting that death in this later range of older childhood warranted different funerary rituals. Four of the children were buried in a flexed position\(^{68}\) and three were in multiple interments.\(^{69}\) As I note above, this suggests that death in later childhood required special consideration. These older children survived the relatively dangerous periods of infancy and early childhood only to die on the threshold of adulthood when most of their peers survived. The loss of such children may have been an unusual enough circumstance to necessitate alternative mortuary rituals.

Flexed burial is the most common type of atypical burial at Kanín, with 14 flexed burials accounting for 43% of the atypical burials. In some cases, the legs were also crossed over each other, or the arms were likewise bent or folded in some way. Most of the flexed burials were positioned supine, but several were positioned with the body lying on either the right or left side in addition to bent limbs. Burials in which the body is flexed, crouched,\(^{70}\) or placed on one side are often interpreted as representing residual pagan traditions, particularly in Anglo-Saxon cemeteries (Lucy 2000; Reynolds 2009). However, this explanation is less compelling in Central Europe where cremation was the norm prior to extended inhumation (Sommer 2000b; Poláček 2008).

More robust interpretations for this region are that flexed burials were an accepted alternative to extended supine burials, prescribed by family or community practices, or a means of denoting outsider status (Reynolds 2009; Farrell 2011). Likewise, burial on the side, often

\(^{68}\) Two of these flexed individuals were oriented SW-NE, on a flipped axis from most graves at Kanín.

\(^{69}\) Two older children (Burials 91-92) were buried in same grave, with the older individual flexed directly above the younger. Burial 185(b) was part of a triple interment, crouched at the feet of an old adult female with nearby fetal remains. This 14.5-15.5-year-old had a bronze circlet earring positioned at the left temple.

\(^{70}\) Although the terms can be conflicting in different publications and contexts (see Knüssel 2014), I here use the term “flexed” to refer to bent arms and/or legs, while the term “crouched” describes burials where the limbs are bent more than 90 degrees to the trunk, i.e. “tightly flexed” (Lucy 2000; Sprague 2005).
observed in Anglo-Saxon infant burials, may indicate particular care in burial, possibly representing a sleeping position (Gilchrist and Sloane 2005). The flexed burials of children have also been noted in early medieval Poland and attributed to both a fear of revenants and a symbolic return to the Slavic “womb of the earth” (Gardeła and Duma 2013). The variation in flexed burials at Kanín suggests that more than one of the above interpretations may apply.

Multiple interment refers to the burial of more than one individual in a single grave. These burials may be contemporaneous, in which the bodies are interred at the same time, or consecutive, in which the grave is reopened for additional interments (Stoodley 2002). Interpretations of multiple interments include burial expediency, familial relationships between the decedents, and contemporaneous deaths. Multiple deaths within a short period of time may be indicative of contagious disease (Stoodley 2002; Reynolds 2009). While no multiple interments were found in the Akropole cemetery, this type of burial is the second most common form of atypical treatment at Kanín. Like the flexed burials, the compositions of the multiple interments at Kanín were variable, defying a singular explanation for their presence. Eight individuals were interred among three graves. One grave contained three adult individuals buried together (Burial 78-80), while another contained two children (Burial 91-92).

The third multiple interment at Kanín demonstrates the complexity of interpreting these types of burials. Burial 185(a-c) was excavated in 2004 during the construction of a roadway between the two excavated areas of Kanín II (Figure 4.10). The grave was irregularly shaped and contained three individuals with their heads to the west. All of the skeletal remains were very incomplete and fragmentary. Burial 185(a) was a supine old-adult female buried with an iron...
knife, two bronze temple rings, and a glass bead. Burial 185(b) was the crouched interment of an older child (14.5-15.5 years of age) of indeterminate sex located in the southeast half of the grave. The only artifact associated with this individual was a bronze temple ring. The final set of remains associated with this burial, Burial 185(c), consisted of the fragmentary cranial elements of a perinate (approximately 34-38 weeks) lying to the right of Burial 185(a).

Figure 4.10: Kanín Burial 185(a-c). In situ (left, photo courtesy of Jan Mařík) and burial schematic (right, Mařík 2009a). This multiple interment contained the remains of three individuals, labeled (a), (b), and (c) in the schematic. The extended adult female (a), was buried with two temple rings and a knife, pictured enlarged on the left.

It is not immediately clear that the perinate was an intentional interment with the other individuals or if the fragmentary remains represent a burial disturbed during the deposition of the other two. In the case of the two older individuals, the sequence of deposition is clearer. The older child was interred sometime after the adult female. The removal of the lower legs of Burial 185(a) suggests that the remains may have been at least partially decomposed when the second
body was interred. Burial 185(a) may have been a normative interment, disturbed by the interment of Burial 185(b). However, such overlapping deposition is not seen in any other part of the cemetery and there was no recorded evidence of a secondary pit (Mařík 2009a). All three sets of remains were found at the bottom of the burial pit, suggesting that this placement together was intentional.

The fact that two out of the three multiple interments at Kanín included subadult remains (less than 15.5 years of age) suggests that the burial of children together, or adults with children, was a significant choice. Like Burial 185(a-c), most Czech cases of the multiple interment of children also include adult female remains (Kašparová 2012). The double burial of children (e.g. Burial 91-92), has also been noted in several other archaeological contexts, including in Anglo-Saxon England (Gilchrist and Sloane 2005). No single explanation can account for the variation seen in cases of multiple burial across Europe, particularly because many multiple interments exhibit other unusual practices such as different body positions or orientations (Stoodley 2002).

The diversity present in the multiple interments at Kanín likewise engenders numerous interpretive possibilities. Some children may have been perceived as particularly vulnerable in death, requiring companionship or protection (Gilchrist 2012). On the other hand, the deaths of the young may have added value or spiritual purity to the burial of adults (Crawford 2007; Hadley 2010; Gilchrist 2012).

Several of the unusual burials at Kanín exhibit characteristics that have been interpreted as punishment or fear of the dead, including disarticulation and prone burial. Early medieval Central Europe was rife with anxiety about the dangerous dead (Barford 2001; Navrátilová 2005). Deaths from disease, violence, or accidents, as well as the occurrence of misfortune such as a poor harvest were thought to result in certain dead returning to trouble the living (Hanuliak
In order to address these fears, some traditional practices of dealing with the dangerous dead were reinterpreted and performed alongside Christian rituals with an uneasy relationship to Church doctrine (Dunn 2009; Čulíková 2011; Gilchrist 2012).

Prone, or facedown, burial was less common at Kanín than flexed or multiple interment. Three prone burials represented 9% of the atypical burials. Two adult females were placed prone with heads to the west, and an adult male (Burial 98) was prone with the head to the southwest, on a different axis than most burials at Kanín. The graves of the male (Burial 98) and one of the females (Burial 75) were irregularly shaped and small relative to the size of the body. These two bodies were positioned both face down and slightly flexed. Additionally, both of these individuals were found to have skeletal evidence for a respiratory infection such as tuberculosis, which may have influenced their burial treatment (see Chapter 8). In contrast, the grave of the other female was of normal size and shape for the cemetery, with the body outstretched and prone. Once again, the variation within even these three burials suggests that a prone position may warrant several interpretations in this cemetery context.

Only two disarticulated bodies were identified, and both were of young adult males. The skull of Burial 101 was positioned near the right hip, and the remains of Burial 125 were piled in the center of the grave. While these burials may have been disturbed through grave robbing, it is also possible that, like the prone burials, these individuals were perceived of as dangerous dead. Revenants, or the returning dead, required apotropaic mortuary practices to ward off their evil influences (Navrátilová 2005; Caciola 2016). Potential revenants were often identified in the early medieval period as individuals on the margins of society, those with aggressive or transgressive behavior, or those who died an unusual death (Arcini 2009; Dunn 2009). Measures
to prevent revenants included placing the body facedown or limiting the corpse’s perceived
movements through decapitation, disarticulation, burning, or binding (Tsaliki 2008; Aspöck
2011; Farrell 2011; Caciola 2016). However, not all prone burials necessarily connote
punishment or deviancy. In fact, some prone burials have been interpreted from a penitential
standpoint or one of reverent humility (Gilchrist and Sloane 2005; Hadley 2010; Betsinger and
Scott 2014). In this light, burial facedown may reflect the devout or penitent in a community
rather than the transgressive.

The diverse manifestations of unusual burials at Kanín highlight the complexities of
mortuary ritual and community reaction to particular circumstances or individuals. The burial
record can reflect social identities, ideologies, personal relationships, and community inclusion
and exclusion in a variety of ways (Murphy 2008; Reynolds 2009). Outsiders or the socially
marginalized might receive different mortuary treatment reflecting their position within (or
outside of) a community (Lucy and Reynolds 2002; Charlier 2008; Tsaliki 2008; Farrell 2011).
Alternatively, unusual burials may represent mortuary traditions in competition with, or
complementary to, more dominant practices (Cherryson 2008).

It is, of course, significant that while all the burials discussed here exhibit variation in
body position, they have one thing in common: burial in a cemetery among other, normally
interred individuals. The implication is thus one of differentiation, rather than exclusion (Hadley
2010). Cosmas of Prague complained about the continued practice of burial by crossroads or in
forests (Wolverton 2009). Indeed, several clandestine burials have been found throughout the
Libice site agglomeration (Mařík 2009a). In contrast, the individuals described above were
interred within this community space, albeit in unusual ways. As this discussion has shown, the
range of unusual burial positions at Kanín invites many interpretive possibilities. The variability
present in the Kanín cemetery suggests that this space, away from the more densely populated settlement area, afforded more opportunities for alternative mortuary rituals.

4.5 Conclusions

Cemetery landscapes, burial artifacts, and body positions tell a story that complicates how social status and religious syncretism might influence burial practices at Libice. Overall, the Akropole cemetery exhibited remarkable uniformity in burial positions, with only three individuals deviating from this norm. Most individuals were buried without mortuary artifacts, and of those that were, the majority contained typical grave goods. A few grave inclusions at Akropole stand out in terms of the types of artifacts, their relatively small size, and their obscured locations in the grave. From bird bones clutched in a hand, to grains of wheat sprinkled over a chest, to a small amulet box around a neck, these diminutive artifacts with complex eschatological significance suggest subtle and even clandestine ways that alternative mortuary rituals may be performed under the shadow of the nearby church.

Across the river, the Kanín cemetery exhibits more overt mortuary diversity. Ceramic vessels placed at the head or feet of the dead likely contained food offerings. This practice would suggest alternative conceptions of an afterlife potentially at odds with some aspects of Christian eschatology. Over one fifth of the burials at Kanín exhibit a variety of body positions and other unusual treatment of bodies. This variation cannot be accounted for by a single ritual or practice. As such, a number of ritual alternatives were likely employed in the space of the Kanín cemetery, distanced both physically and conceptually from ecclesiastical authority. Such literal and figurative separation may have allowed for more overt displays of unorthodox mortuary rituals, at least during the time of burial.
The burials of older children (6.5-15.5 years of age) at Libice suggest different ritual possibilities at these two cemeteries based on the life course. Older children, past the dangers of earlier childhood, may have required different funerary practices to deal with their unusually timed deaths. For example, older children’s burials at Akropole were significantly more likely to contain artifacts than younger children and infants, including rare objects such as full beaded necklaces and a cross. At Kanín, almost two thirds of the older children were buried with unusual body positions (all aged 9.5-15.5 years), suggesting that death in this later range of childhood warranted different ritual responses. The deaths of these older children, perhaps unexpected and particularly jarring to their families and communities, appear to have necessitated certain mortuary activity at both cemeteries. In both instances, these deaths were marked as distinct, through high-status and unusual artifacts at Akropole, and through unusual body positions and configurations at Kanín.

Chapter 2 raised some questions about the lived experiences of conversion. Due to the diversity and complexity of early medieval burial traditions, it can be difficult to tease out the politics of Christianization in mortuary contexts. A close reading of cemetery landscapes, burial artifacts, and body positions has offered insight into how Christian and other ritual experiences were represented at the early medieval graveside. As the cemeteries at Libice have shown, burial in Bohemia continued to be influenced by local practices, likely fostering both tensions and syncretism with Christian eschatology. However, several important questions remain. In particular, how were these tensions between local practice and ecclesiastic oversight experienced in daily life? Bioarchaeology enables an integration of mortuary contexts with skeletal data, to examine how some of these relationships might have been incorporated into the bodies themselves during life. Relatedly, do the differences in burial practices at Libice reflect the social
status of people buried at the church versus the grave-field? As we will see through the skeletal data, the location of burial does not solely indicate relative status or privilege, but rather a convergence of cosmo-
lologies, politics, status, and evolving ritual expressions.

Chapter 5: Men and women, great and small: Life at Libice

“An innumerable crowd of people gathered - men and women, great and small, rich and poor... foreigners and countrymen, the ailing and the healthy - and accompanied him with candles”

5.1 Introduction

The early medieval people living around Libice traversed many life course paths. One goal of this project is to investigate how these life histories may have channeled people into different burial locations at the site. Archaeologist Jan Mařík (2008) calculated that roughly 600-900 people lived at and around Libice in the 10th century based on cemetery data, the extent of settlement activity, and paleoecological evidence. These people may have been farmers, craftspeople, traders, soldiers, clergy, and more. As focal points for many political, economic, and religious activities, the fortified settlements of 9th – 10th-century Bohemia were large and multi-fea- tured complexes (Figure 5.1). Villages and larger towns were often clustered around these walled sites with connections to various crafts and mercantile activities. Smaller settlements were scattered throughout the hinterland and associated primarily with agriculture (Brather 2011; Herold 2012).

72 The vita of Methodius (translated by Kantor 1983:127) describing Czech people of all walks of life gathering to mourn the death of the saint in Bohemia around 885AD.
This chapter integrates skeletal, archaeological, and historical data to examine how people lived at Libice. In other words, how did they grow up, grow old, work, eat, move about the landscape, and engage with wider material worlds? These questions also address the ways socioeconomic status might be reflected in burial location at Libice. Socioeconomic status, in terms of relative position in a community, is a complex intersection of age, gender, politics, power, education, occupation, family, and other cultural factors (Ashby 2002; Trautman et al. 2017). Skeletal indicators of health and activity have been used as a proxy for, or comparison with, social status (Vercellotti et al. 2010; Havelková et al. 2013; Trautman et al. 2017). At the same time, the relationship between skeletal health/activity and social status as understood through mortuary context can be complex and should be approached critically (Robb et al. 2001; Strott et al. 2008; Quinn and Beck 2016).
The skeletal data from the Libice series suggest that people buried in the Akropole and Kanín cemeteries grew up with similar health challenges, experienced similar occupational stressors, and ate similar foods. Some pertinent examples are examined in detail throughout the chapter, other data are provided in Appendix C. Many studies of early medieval Central European skeletal populations have placed an emphasis on centralized elite versus rural/lower status comparisons (e.g., Velemínský et al. 2009; Beňuš et al. 2010). However, the two cemeteries at Libice may have served overlapping segments of the wider population living at and around Libice rather than circumscribed socioeconomic groups. Indeed, the cemeteries are quite near to each other in the landscape (approximately 1.5km). We will see that traditional skeletal markers of status difference do not map neatly onto the mortuary landscape. Instead, this bioarchaeological investigation uncovers insights into childhood health challenges, diverse labor activities, and gendered diets that span both cemetery samples.

5.2 Growing up at Libice

Accounts of miracles occurring on behalf of children at saints’ shrines, as well as toys and games identified in archaeological contexts, attest to the social significance of childhood in the medieval period\(^73\) (Shahar 1983, 1990; Orme 1995, 2001; Finucane 1997; Měchurová 2010). Archaeologically, material evidence of games and toys have been found throughout Europe (Orme 2001; Gilchrist 2012), including some artifacts from Bohemia.\(^74\) Archaeological finds at

\(^{73}\) Recent scholarship on medieval childhood has countered the longstanding claims of influential French historian, Philippe Ariès; namely, that childhood was not a social category recognized by medieval people (Ariès 1962; Heywood 2001; Classen 2005). The seminal work of historian Šhelamith Shahar (1990), in particular, demonstrates a medieval awareness of different stages of childhood with distinct characteristics. Historians and archaeologists have since produced a preponderance of evidence of the cultural recognition of childhood and the social investment in infants and children (Shahar 1990; Heywood 2001; Orme 2001; Garver 2005; Gilchrist 2012).

\(^{74}\) Finds in medieval Czech contexts include game pieces such as chessmen and dice, stone game boards, balls, rattles, miniature ceramics, and figurines including horses and knights (Měchurová 2010; Dvořáková 2015).
Libice include a stone playing board for the “mill” game, a strategy game of ancient origins, a carved “playing stone,” and a bone carving of a dog (Figure 5.2) (Dvořáková 2015).


Medieval sources stress the role of the Church in structuring children’s lives. As life course stages were in many ways delineated by Christian rites of passage, two sacraments in particular were related to children: baptism and confirmation (Orme 2001; Gilchrist 2012). Medieval ecclesiastical leaders and scholars also provided guidance to parents in terms of how best to raise Christian children. For example, Carolingian clerics considered the nurturing of children to go hand in hand with Christian piety as they were “advocating for prayer, psalms, and the discipline of the monastic life” for the children of the Carolingian elite (Garver 2005:84). The presence and prescriptions of Christian clerics is a continual theme throughout medieval childhood.

Distinct phases of medieval childhood had thresholds at roughly the ages of two, seven, and the beginning of adolescence that were marked by changes in ritual, social roles, independence, and materials such as clothing (Shahar 1990; Heywood 2001; Garver 2005). I employ analytical age categories that roughly correspond to these phases of medieval childhood:
infants, younger children, and older children (Table 5.1) (Beňuš et al. 2010; Gilchrist 2012; Shapland et al. 2015). While the distinctions “younger” and “older” were not made for medieval children, and children were sometimes referred to as infants (*infans*) up to the age of seven years (Shahar 1990), I use these terms to reduce confusion and to demarcate the transitions that occurred around two, seven, and the teenage years\(^7\) into new social spheres and further independence (Shahar 1990; Gilchrist 2012).

### Table 5.1: Childhood age categories

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Code*</th>
<th>Chronological Age (years)</th>
<th>Cultural Age and Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td>IN</td>
<td>0.0-1.5</td>
<td>Birth - about 2 years, prior to weaning, walking, talking, etc.</td>
</tr>
<tr>
<td>Younger Children</td>
<td>YC</td>
<td>1.5-6.5</td>
<td>About 2-7 years, post-weaning, social world within the home</td>
</tr>
<tr>
<td>Older Children</td>
<td>OC</td>
<td>6.5-15.5</td>
<td>About 7-16 years, emerging independence, education, and gender</td>
</tr>
</tbody>
</table>

Children under the age of two years were considered infants in a medieval context (Gilchrist 2012). This range is roughly bracketed by the process of weaning (generally beginning around two years), as well as developments in walking, talking, and social interaction at this point in biological age (Shahar 1990; Orme 2001; Gilchrist 2012; Ellis 2019). Medieval infants were quickly incorporated into Christian cosmology and community through baptism. As the first sacrament of the church, baptism involved spiritual cleansing an initiate, typically an infant, and “marked their entry to the Christian community” (Gilchrist 2012:185). The timing of baptism, and even weaning, could be structured by religious prescriptions. Indeed, skeletal evidence for weaning and mortuary treatment potentially related to baptism suggest important differences in the lives of infants buried at Akropole and Kanín. As it was unusual to find

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\(^7\) Historians are often vague on what is meant by “adolescence” in a medieval context. In part, this ambivalence reflects medieval sentiments about youth and the end of childhood as a process rather than an event. Scholars generally regard the range of 13-16 years as a period of transition out of childhood, depending on the context (Shahar 1990; Orme 2001; Gilchrist 2012).
significant differences between the cemetery samples, infants and their wider relationships are further explored in Chapter 6.

From about two to seven years of age, younger children experienced emerging independence and increased social activity, beginning with weaning. Younger children, regardless of gender, were primarily in the purview of women, including mothers, grandmothers, aunts, sisters, and nurses, and remained relatively close to the home (Heywood 2001; Hanawalt 2002; Garver 2005). For example, medieval accounts of miracles attributed to the intervention of saints often describe the context of children’s accidents. For children over the age of two, accidents tended to occur outside the home, but near enough that they were usually found by parents (Finucane 1997; Hanawalt 2002). Such accounts indicate the expanding sphere of children’s activities and interactions, while also highlighting the close proximity of the family.

Medieval writers generally considered the age of seven to represent the beginning of reason and a time when these older children could move beyond the home into wider social interactions (Finucane 1997). For example, by the later middle ages, both boys and girls could be engaged to marry at seven, and children as young as seven could be charged with a crime (Orme 2001). Confirmation, the second sacrament of the church, typically occurred around this age and completed the bond between the individual and the church that began with baptism (Orme 2001; Gilchrist 2012). Additionally, around the age of seven years, older children began engaging in a more gendered material and social world (Heywood 2001; Orme 2001; Sládek 2010). In part, this transition was marked by gendered clothing; more fitted gowns for girls and tunics for boys (Gilchrist 2012). Sládek (2010) notes that in this transition, both boys and girls began to be groomed for adult life. Boys, in particular, began apprenticeships or educational programs including military training (Forsyth 1976; Orme 2001).
The end of this period, and medieval childhood more broadly, was marked by the biocultural transition of puberty (Gilchrist 2012; Lewis et al. 2016). Although puberty is a process that varies in expression and timing for individuals (as well as between boys and girls), most medieval adolescents would have been experiencing this transition roughly around 15 years of age (Lewis et al. 2016; Mays 2007; Gilchrist 2012). While the age range for older children is rather wide, and clearly represents children at different stages of social and physical maturity, more fine-grained social categories are not evident in medieval sources.

The phases of medieval childhood reflect the expanding spheres of social interactions, activities, and risk factors that children encountered as they aged. As such, we might anticipate difference patterns of skeletal pathology to be present in different age groups at Libice. Three non-specific skeletal lesions were assessed for the Libice series: endocranial lesions, cribra orbitalia, and periostitis. These generalized conditions have no specific etiology but an array of potential causal mechanisms (Blom et al. 2005; Walker at al. 2009; Wheeler 2012; Klaus...

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76 Endocranial lesions include porotic lesions, formative lesions, vascular impressions, and hair-on-end formations on the interior surface of the cranium (Lewis 2004; Sun et al. 2019 and see Appendix C). One type of endocranial lesion, “serpens endocrania symmetrica” (SES), manifests as patches of discoloration or formative grey/pale plaque on the endocranial surface with “serpentine branching surface excavation” and/or porosity (Hershkovitz et al. 2002:202; Lewis 2004). Possibly the result of a bacterial or viral infection, endocranial lesions have been linked to meningitis, tuberculosis, and other diseases (Roberts and Manchester 2005; Lewis 2007; Cecconi et al. 2007; Janovic et al. 2015; Cooper et al. 2016; Sun et al. 2019). These non-specific lesions may also be the result of severe metabolic disorders such as rickets or scurvy (Cecconi et al. 2007; Snoddy et al. 2018) or even trauma (Gaither and Murphy 2011; Sun et al. 2019).

77 Cribra orbitalia presents as lytic lesions or porosity in the eye orbits as the outer (cortical) layer of bone thins and the inner (medullary) cavity expands to produce more red blood cells in response to the body’s deficiency (Lewis and Roberts 1997; Roberts and Manchester 2005; Vercellotti et al. 2010; Hens et al. 2019 and see Appendix C). This condition has been linked to anemia as well as other dietary deficiencies or infectious diseases more broadly (Blom et al. 2005; Walker at al. 2009; Smith-Guzmán 2015; Zarifa et al. 2016).

78 Periostitis refers to inflammation of the periosteum, the osteogenic tissue surrounding the bone. Stimulation of the tissue activates osteoblasts to lay down new bone resulting in pitting, striations, and layers of new bone growth on the surface of the cortical bone (Lewis and Roberts 1997; Ortner 2003; Waldron 2009; Rittemard et al. 2019 and see Appendix C). Such stimulation can be the result of infectious organisms, trauma, or nutritional deficiencies (Wheeler 2012; Klaus 2014) and even subperiosteal growth (Rittemard et al. 2019). Because of this array of potential causal mechanisms, this bony reaction is considered non-specific (Ortner 2003; Wheeler 2012).
2014; Lewis 2017; Snoddy et al. 2018). A more detailed discussion of these lesions can be found in Appendix C.

As expected, the skeletal remains of the children at Libice exhibit changing patterns of pathology reflecting transformations in the social and physical environments of childhood. For example, the overall frequency of pathological lesions decreases for older children in both cemetery samples (see Table C.6 in Appendix C). While this finding could represent a decrease in disease exposure for these older children when compared to younger children and infants, it could also reflect less resilience as they did not survive long enough for bone to be affected. Importantly, however, few significant differences were found between the cemetery samples. As another example, the percentage of children with cribra orbitalia at Akropole (53%) and at Kanín (50.5%) are quite similar. Beňuš and colleagues (2010) argue that such a relatively high prevalence of cribra tends to occur in areas of higher population density with frequent occurrence of infectious disease and high pathogen loads. While Libice was certainly not as large as the city of Prague in the 10th century, its position along trade routes could have facilitated the movement of infectious disease (see section 5.6 below).

Akropole Burial 43 provides an osteobiographical example of the experiences of childhood at Libice. The nearly complete and well-preserved skeleton of an older child was estimated to be 10.5-11.5 years old based on dental development and epiphyseal union. The normative, supine burial was in a prominent location immediately west of the nave of the church. Although no artifacts were associated with the burial, the grave was lined with large stones,

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79 While these percentages are higher than those of the subadults at early medieval settlements in Dolní Vestonice (24.8% and 35%) (Jarošova 2007), Beňuš and colleagues (2010) summarized data from over a dozen Central European early medieval sites and the Libice series fall about mid-range.

80 The remains in Burial 43 were estimated to be a young adult, 16-18 years of age, by the original report (Turek 1980), but subsequent laboratory analysis indicate a much younger age.
including some arching over the body (Figure 5.3). The location of Burial 43 near the entrance to the church and the elaborate stone lining may highlight the social status of their family as well as an emphasis on Christian eschatology.

Figure 5.3: Akropole Burial 43 in situ (Archives of the Národní muzeum). An infant burial, Burial 44, is immediately to the south of the grave. Note: some of the large stones arching over the burial had been removed at this point in the excavation to expose the skeleton.

This older child’s dentition offers a record of growth disruptions and subsequent recoveries throughout childhood. Linear enamel hypoplasias (LEHs) are pits or grooves on the enamel of the teeth caused by a disruption in tooth growth and development in response to trauma, nutritional deficiencies, or acute and chronic diseases (Liebe-Harkort 2012; Berbesque and Hoover 2018). Although LEHs are a non-specific indicator of stress, their presence may point to compromised health and increased risk of mortality for particular individuals. Nearly nine out of ten adults (89%) from both cemetery samples at Libice exhibited at least one LEH, indicating that most people who survived to adulthood at the site experienced growth disruptions during childhood, regardless of burial location (see Appendix C).

81 Armelagos and colleagues (2009) provide bioarchaeological evidence in support of the Barker Hypothesis, which states that childhood stress contributes to poorer health later in life. If this hypothesis is accepted, then it can be inferred that individuals who developed enamel defects in early childhood were more likely to die at earlier ages. As such, health issues in childhood can affect mortality rates throughout the life course (Boldsen 2007; Armelagos et al. 2009; Miszkiewicz 2015).
It is possible to estimate when stress events occurred based on the stage of dental development (Goodman and Rose 1990; Lewis 2007; Liebe-Harkort 2012). LEHs present on the mandibular canines and premolars of Burial 43 indicate disruptions in growth around 2.9, 3.5, and 4.3 years of age. Importantly, these health challenges occurred during the phase of younger childhood, after the period associated with weaning (around two years). While this child survived and recovered from each of these events, the presence of multiple LEHs indicate repeated serious biological stress at a time of expanded social involvement within the medieval family and wider community. In particular, Burial 43 could have been exposed to more infectious pathogens as they encountered more people and consumed potentially tainted foods after weaning.

Several other skeletal pathologies provide further insight into past and ongoing health challenges for Burial 43. Both healed and active periosteal lesions are widespread (though mild) on the shafts of the tibiae and fibulae, indicating repeated systemic infections including at the time death. Mild, healed cribra is present in the left orbit, like over half of the children at Akropole. Obertová and Thurzo (2008) report a high rate of co-occurrence of LEHs and cribra orbitalia at an early medieval Slovakian site and suggest that these earlier health challenges compounded other conditions to affect mortality.

Burial 43 also exhibits some activity markers uncommon for older children at Libice. Activity changes throughout the skeleton include mild porosity and osteophytes on the facets of the thoracic vertebrae as well as asymmetry in the upper limbs (Figure 5.4a). Perhaps most unusually, Burial 43 exhibits blunt force trauma to the occipital (Figure 5.4b). The fracture is well-healed but retains a distinct rectangular shape, indicating that it is more likely an injury from an object rather than the more diffuse trauma that would result from a fall (Galloway and
One explanation for this trauma and activity could be participation in military training. Instruction of boys began during older childhood and would have involved intensive habitual activity and the potential for injury from training with weapons (Forsyth 1976; Knüsel 2011).

As social spheres and responsibilities expanded for older children, their bodies were subject to new types of experiences, activities, and biological stressors. Akropole Burial 43 allows us to see the accumulation of growth disruptions, strenuous habitual actions, and trauma that occurred across the short life of this young person. Perhaps part of an elite family based on their burial location, this individual was, nonetheless, marked by skeletal and dental anomalies. While Akropole Burial 43 provides only one example of the lived experience of childhood at Libice, skeletal evidence suggests few major differences in childhood between those buried at Akropole and Kanín. Unlike Akropole Burial 43, those adolescents who survived would enter social and material worlds of adulthood, with life course possibilities that expanded significantly.
5.3 Being and Becoming Medieval Adults

Medieval men and women’s lives could take many forms over the life course, influenced by intersecting factors including status, gender, family background, and so on. For example, a cleric, a merchant, a noblewoman, and a farmer would all have had very different life course paths within the broader contours of medieval aging. At the same time, medieval adults typically moved through several distinct social phases (Gilchrist 2012). Here I briefly outline the social significance of three stages of adulthood relevant to the people of Libice: youth, adulthood, and old age (Table 5.2).

Table 5.2: Adulthood age categories

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Code*</th>
<th>Chronological Age (years)</th>
<th>Cultural Age and Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young Adults</td>
<td>YA</td>
<td>15.5-24</td>
<td>Youth, extended adolescence and limited social responsibilities</td>
</tr>
<tr>
<td>Middle Adults</td>
<td>MA</td>
<td>25-44</td>
<td>Adulthood, period of greatest productivity and social involvement</td>
</tr>
<tr>
<td>Old Adults</td>
<td>OA</td>
<td>45+</td>
<td>Old age, transformed (sometimes reduced) social and physical activity</td>
</tr>
</tbody>
</table>

The entrance into adulthood for medieval adolescents was a relatively gradual shift marked by continued growth and expanding social responsibilities throughout their late teens and early twenties. Young adulthood refers to a relatively narrow age range of extended adolescence and youth, which reflects the onset of puberty and the beginning of physical and social maturity (Beňuš et al. 2010; Gilchrist 2012). Variability in this process would be influenced by nutritional stress or other social and biological disruptions that could delay growth and maturation (including menarche) for many medieval people into their twenties (Sayer and Dickinson 2013).

As childhood was considered the “spring” of life in a cosmological sense, young adulthood was viewed as “summer” and characterized by extended adolescence (Hanawalt 1993; Phillips 2003). Many young adults were unmarried and had yet to take on other social responsibilities of later adulthood (Gilchrist 2012; Shapland et al. 2015). For young men, this could mean subordinate positions of apprenticeship or lower status military positions. The low
mortality of young adults\textsuperscript{82} at Libice might be understood in part as a reflection of this extended adolescence for young medieval people (see Chapter 3 for demographics). For example, the relative dearth of young adult males may be related to participation in the war economy (see Chapter 7). If young men died on campaign, they would have been most likely buried in clandestine battlefield graves (Novak 2000; Nicklisch et al. 2017).

Young unmarried women were often referred to as ‘maidens’ in medieval literature and historiography and occupied a unique social position (Phillips 2003). Historical sources in Anglo-Saxon England suggest that women of lower status (i.e. non-nobility) delayed marriage and children into their twenties, in part due to a delayed start of menarche (Sayer and Dickinson 2013). This deferral allowed young women a degree of social latitude, experiencing relative social autonomy but also potentially increased economic uncertainty (Shapland et al. 2015). Importantly, while young medieval women might be expected to face higher mortality due to the dangers of childbirth, many women did not have children until somewhat later in life. Medieval women at Libice may have married and borne children into middle adulthood (25-44 years), represented by an increase in the number of women in their late twenties and early thirties when they died.

Middle adulthood encompassed the peak age of productivity and social involvement from a medieval standpoint, roughly from 25-45 years. Also called \textit{iuventus} in reference to an individual’s contributions or help (\textit{iuvare}) to society, this period was linked to the height of Christ’s life and ministry, as well as his death (Gilchrist 2012). Marriage was one threshold into this life course stage with legal and spiritual implications, deemed a sacrament of the church by the 12\textsuperscript{th} century (Duby et al. 1988; d’Avray 2005; Goldberg 2006; Gilchrist 2012). Of course,

\textsuperscript{82} All four young adults buried at Kanín were aged 15.5-16.5 years. There were no individuals between the ages of 16.5-24 years in the Kanín cemetery sample. Eight individuals at Akropole were categorized as young adults.
this age range yielded the greatest plurality of life course paths, with peoples’ lives contoured by secular, religious, military, labor, and gendered parameters, to name a few. As a gross generalization, medieval adult men tended to occupy positions of social authority, in both the private and public spheres. While some women held prominent social positions, particularly in ecclesiastical institutions, medieval gender norms generally placed adult women subordinate to men. Women’s roles within the family centered on raising children and providing care for older generations, as well as performing various forms of domestic labor (Klassen 1985; Hanawalt 1986; Gilchrist 2012).

Finally, old adulthood is characterized as a period of relatively less productivity and increasing bodily degeneration, extending through senescence to death. The elderly, while often holding positions of social importance and respect, could also be characterized as returning to a more childlike and dependent state (Shahar 1997). The onset of “old age” appears to have varied considerably, ranging from 35-72 years in some medieval age schemas. However, generally beginning around 45 years of age, social and physical changes ushered adults into their later years. For example, medieval women have been estimated to reach menopause around age 50, similar to modern populations, with a decline in fertility in preceding years (Gilchrist 2012). Of course, many medieval adults went on to live into their 70s and beyond (Shahar 1994; Gilchrist 2012).

Importantly, like other stages of adulthood, old age was not necessarily marked by chronological age, but rather by social and physical capacities (Shahar 1994). For example, St. Ludmila (c. 860-921 A.D) was described as a powerful older women acting as regent of Bohemia with great influence on her grandson, St. Wenceslas, before her death in her 60s through a family plot (Kantor 1983). At the same time, others, such as Cosmas of Prague,
lamented their decline. Cosmas poignantly complains about his advanced age at the conclusion of his chronicle, describing the ways in which his body has changed: “Old age now bends my back, wrinkled skin now disfigures my face, my weary chest breathes now like noisy feet, my hoarse voice now hisses like a goose, and sickly senility now weakens my faculties” (translated by Wolverton 2009:249). As these two examples show, medieval adults moved through these broad life course phases as they aged, but there were many trajectories within this framework. The next section explores some of these possibilities within the context of labor and daily life at Libice.

5.4 Toils and troubles: Labor and daily life

Before examining skeletal data, other sources of evidence offer clues about daily life in and around the medieval settlement of Libice. People likely participated in several types of labor, particularly agriculture and craft production. The medieval communities living in and around fortified settlements in Bohemia relied on agriculture in the surrounding hinterland (Beranová 1984:19). Paleoecological research has reconstructed the early medieval landscape around Libice as one of meadows and pastures surrounded by forests (Kozáková and Kaplan 2006; Kozáková et al. 2014). The open spaces of the terraced floodplain to the east would have been used for grazing or haymaking with the agriculturally arable land located farther afield (Mařík 2008; Mařík 2014).

The Jewish traveler-merchant, Ibrahim ibn Ya’qub, described Bohemia in 965 in terms of its agrarian bounty: “Their is the best land of the north, most abundantly provided with foodstuffs. For one kinshar one may buy there a quantity of wheat sufficiently to feed one man for a full month. For one kinshar one may buy there a quantity of barley sufficient to nourish one
horse for forty nights. One kinshar will buy ten hens” (translated in Beranová 1984:7-8). This testimony, while perhaps hyperbolic, offers insight into types of agricultural produce and economic activities in early medieval Bohemia. Paleobotanical evidence from Libice indicates that gardens with vegetables and fruit trees were present in the outer bailey (Princová-Jusotová 1999; Čuliková 2006; Mařík 2009a). Cereals, including wheat, millet, rye, and oats, were grown and processed at Libice, as well as pea legumes, hemp, and flax (Beranová 1984; Čuliková 2006; Bažant et al. 2010; Brather 2011). Tilling the soil and harvesting using sickles would have been typical activities associated with cultivating these crops (Havelková et al. 2011). Faunal remains excavated from the outer bailey at Libice indicate that livestock consisted primarily of pigs, but also cattle and sheep/goats (Mlíkovský 2006).

In addition to agriculture, there is clear evidence of craft production at Libice. Villages adjacent to fortified settlements have been interpreted as “service settlements” or artisan centers relying on fortified elite spaces for protection while supplying them through crafts such as metalworking or glassmaking (Henning 2008; Brather 2011). The settlement area of the outer bailey at Libice was likely one of these merchant/artisan sites with archaeological evidence for metalwork with iron, gold, and silver (Princová and Mařík 2006; Mařík and Zavřel 2012; Mařík 2014). Although ceramics are abundant, large pottery kilns are absent and vessels appear to have been made in simple fire pits (Mařík 2009a; Brather 2011). Furthermore, archaeological finds corroborate historical mentions of a mint at Libice (Hásková 1976; Mařík 2008; Mařík 2009a). Indeed, small quantities of coins associated with the 10th-century Slavník family of Libice have been found throughout Europe (Hásková 1976; Tomková 1996).

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83 Intensive agricultural systems, such as three-field rotation and the use of heavy wheeled plows, did not appear in Bohemia until the 12th century (Curta 2008). More likely, peasants used a natural grass-field system with fields cultivated for three to six years then repurposed as fallow pastures for five to ten years (Beranová 1984; Brather 2011).
Other common occupational activities at Libice may have included masonry and construction (Havelková et al. 2011). The leveling layer of rubble in the inner bailey that marked the construction of the stone church in the mid-10th century offers material evidence of extensive building activity (Mařík 2009a). Furthermore, historical sources suggest that large military retinues contributed to Czech conquests of neighboring regions as well as domestic protection (Třeštík 2009; Wolverton 2009 and see Chapter 7). The fortified stronghold of the inner bailey at Libice likely had a local garrison offering military support (Sláma 1998; Wolverton 2009). While construction and military occupations were male-dominated, women, too, were involved in agriculture and craft production. Other typical activities undertaken by medieval women included gardening, grinding grain, loom weaving, and spinning (Beranová 2000).

The types of labor described above put different kinds of stress and strain on the body and bones. Markers of occupational stress (MOS) reflect habitual activities or behaviors that are repetitive enough or physically demanding enough to result in bony changes (Santos et al. 2011; Villotte et al. 2016). Two examples I focus on in this section are musculoskeletal stress markers (enthesal changes) and antemortem trauma to understand intersections of labor patterns and social status (and see Appendix C for other analyses). The skeletal changes wrought by everyday activities offer insight into potential types and levels of habitual activity as well as occupation distribution (Havelková et al. 2013). Of course, all changes to bone have “multifactorial etiologies,” and therefore must be carefully contextualized (Jurmain and Villotte 2010; Villotte et al. 2016).

Skeletal analysis of the Libice series suggests few major differences in levels and types of activity performed by people buried at Akropole and Kanín. For example, the relative presence
of enthesal changes, bony growths at musculoskeletal insertion sites, were examined in the upper and lower limbs of adults. In addition to showing an expected general increase with age, the percentages of adults exhibiting at least one enthesal change in the long bones of the upper and lower limbs were not significantly different between the cemetery samples. As Table 5.3 demonstrates, a comparable percentage of males from both cemeteries have enthesal changes in both the upper and lower limbs. Furthermore, males in both cemetery samples were more likely to have enthesal changes than females. This is to be expected based on the generally more labor-intensive activities associated with medieval masculinity such as farming, construction, and military activity. However, it is important that this data does not show status-based differences in activity between the men buried at Akropole and Kanín.

Table 5.3: Enthesal changes to upper and lower limbs in adults at Libice

<table>
<thead>
<tr>
<th></th>
<th>Akropole</th>
<th>Kanin</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA Male</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>MA Male</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>OA Male</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Total Male</td>
<td>29</td>
<td>18</td>
</tr>
<tr>
<td>YA Female</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>MA Female</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>OA Female</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Total Female</td>
<td>23</td>
<td>13</td>
</tr>
<tr>
<td>Total Adults</td>
<td>52</td>
<td>31</td>
</tr>
</tbody>
</table>

Note: Only long bones exhibiting at least one musculoskeletal insertion site for observation were counted. Pink shaded cells indicate significant differences between Kanín females and other groups.

84 Enthesal changes, sometimes termed musculoskeletal stress markers, or enthesopathies, are bony growths at musculoskeletal insertion sites (entheses) (Jurmain et al. 2012; Becker 2019 and see Appendix C). These bony changes have been linked to activity-related stress from certain habitual activities or movements (Havelková et al. 2013; Villotte and Knüsel 2013). However, other predisposing factors such as age, genetics, diet, disease, and hormones can also affect the musculoskeletal system (Cardoso and Henderson 2010; Henderson and Cardoso 2013; Becker 2019). Aging, in particular, is linked to the development of enthesopathies, and must be taken into consideration in analyses of occupation (Cardoso and Henderson 2010).

85 Because other early medieval Central European populations have been analyzed primarily using methods developed by Villotte (2006) (see Havelková et al. 2011 and Havelková et al. 2013), direct comparisons to other populations cannot be made. However, we can compare general findings. For example, Havelková and colleagues (2011) found that males from the hinterland population at Mikulčice had higher rates of enthesal changes than males from the castle population. The fact that comparable percentages of males at Libice show enthesal changes in the upper and lower body suggests little variation in labor intensity between the cemetery samples.
One notable difference is the significantly lower percentage of Kanín females with entheseal changes in the upper limbs. This finding suggests that while men from the two cemeteries were performing similar levels of habitual strenuous activity, the women buried at Kanín were involved in different, and generally less strenuous upper body labor than their counterparts at Akropole. Havelková and colleagues (2011) found that females from the Mikulčice castle population also had significantly higher rates of entheseal changes than their hinterland counterparts. They conclude that the females in the castle population were not necessarily of a privileged social class and thus engaged in more strenuous activities, including craft production such as weaving on vertical looms. Women buried at Akropole may also fit this model of a mixed-status group participating in different kinds of labor. We also see that more Kanín women had entheseal changes in the lower limbs (30%) relative to the upper limbs (23%), a finding in contrast to the other groups. The women buried at Kanín may have favored activities that involved the lower limbs, such as carrying loads over distances. In a rural, agricultural context, this could include transporting water, kindling, or produce.

Skeletal patterns of traumatic injury can reflect how different types of accidents and occupational hazards impact individuals and communities (Larsen 1997; Allen et al. 2007; Agnew and Justus 2014; Martin and Harrod 2015; Gilmour et al. 2015). Modern clinical evidence suggests that most fractures are not the result of unusual events or interpersonal violence (although see Chapter 7), but rather from daily activities (Lovell 1997). While it can be difficult to determine if injuries were accidental or the result of interpersonal violence, most of

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86 Fisher exact tests were conducted due to the small sample sizes. The Fisher exact test statistic for the presence of entheseal changes in the upper limbs for the Akropole and Kanín females is 0.0331, significant at p < .05, meaning that a relationship exists between burial location and activity levels. The Fisher exact test statistic comparing presence of entheseal changes in the upper limbs for Kanín males and females is 0.0077, significant at p < .05, meaning that a relationship exists between sex and activity for the adult individuals in the Kanín sample.

87 Differentiating between skeletal evidence of accidental injuries (caused by unexpected events that happen in the course of daily activities) and violence (implying physically harmful interaction between people) requires careful
the healed injuries observed in the Libice series are consistent with patterns of accidental trauma.

A higher percentage of adults buried at Akropole exhibit healed (antemortem) fractures than at Kanín (Table 5.4), although this difference is not statistically significant. Such a result might initially be surprising, as we would expect more individuals of ‘lower status’ to participate in types of labor that could result in traumatic injuries. But as with other activity markers, people buried at Kanín were not necessarily engaged in more strenuous or more injurious activities.

Table 5.4: Adult individuals exhibiting traumatic injury at Libice

<table>
<thead>
<tr>
<th>Adults</th>
<th># Indiv.</th>
<th>Antemortem</th>
<th>% Ante</th>
<th>Perimortem</th>
<th>% Peri</th>
<th># Indiv.</th>
<th>Antemortem</th>
<th>% Ante</th>
<th>Perimortem</th>
<th>% Peri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>30</td>
<td>8</td>
<td>27%</td>
<td>3</td>
<td>10%</td>
<td>42</td>
<td>9</td>
<td>21%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Female</td>
<td>25</td>
<td>6</td>
<td>24%</td>
<td>1</td>
<td>4%</td>
<td>28</td>
<td>6</td>
<td>21%</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Indet.</td>
<td>2</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
<td>14</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>14</td>
<td>25%</td>
<td>4</td>
<td>7%</td>
<td>84</td>
<td>15</td>
<td>18%</td>
<td>1</td>
<td>1%</td>
</tr>
</tbody>
</table>

Medieval trauma studies have shown higher frequencies of fracture in rural populations as opposed to urban groups, interpreted as the result of a greater risk of injury associated with agricultural activities (Krejsová et al. 2008; Šlaus et al. 2012). Farming continues to be among the most hazardous occupations in the industrialized world, alongside construction and mining (Lovell 1997). As Table 5.4 demonstrates, the percentage of adults with at least one traumatic injury is fairly high. In fact, 24% of adults at Libice exhibited either antemortem or perimortem trauma. For comparison, Krejsová and colleagues (2008) compiled trauma data from 48

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attention to the timing, location, and type of injury (Walker 2001; Novak 2006; Martin and Harrod 2015). Blunt trauma, depending on its manifestations, can usually be interpreted as the result of falls or other accidents, although certain injuries may be the result of violence in a domestic context (Novak 2006; Kjellström 2009; Redfern 2017a, 2017b). Antemortem skeletal trauma will show evidence of healing. Fractures begin to heal almost immediately (if the individual survives), but the first indicators are difficult to detect. Eventually, a callus (a patch of woven immature bone) forms at the fracture site, followed by the replacement of mature lamellar bone. Further remodeling can occur over time depending on the severity of the injury and loading stresses with the potential for complete re-normalization of bone architecture (Novak 2000; Waldron 2009).

88 A chi-square test of independence was conducted to determine the relationship between burial location and percentage of individuals with trauma. The chi-square test yields X=0.934, p=0.334. This result is not significant at p < .05, meaning that there is not a relationship between burial location and the presence of trauma.
medieval Czech sites and found only 5.3% of adult remains exhibited trauma. Šlaus and colleagues (2012) identified fractures in 23.3% of the individuals from early medieval rural sites in the Adriatic. Urban trauma rates hovered closer to 4-5%, indicating generally less-risky occupations. Libice appears to fit a rural community model with a relatively high potential for accidental injury (Konašova et al. 2009; Šlaus et al. 2012; Agnew et al. 2015). Individuals buried in both cemeteries may have been at risk of injury through building labor, certain types of craft production, military training or action, and farming, including working with large domesticates.

Nearly one third of people at Libice with antemortem fractures exhibited healed, blunt force cranial trauma (Figure 5.5a). Additionally, the most common postcranial injuries at Libice were fractures to the clavicles or ribs, a typical finding for early medieval populations (Figure 5.5b). A) Kanín Burial 98, a middle adult male with diffuse, healed blunt trauma to the left side of the cranium at the coronal suture (black arrow). B) Akropole Burial 106, a middle adult male with a well-healed oblique fracture to the midshaft of the right clavicle (black arrow).

Of the 4098 adult skeletons with anthropological data, 217 exhibited skeletal evidence for traumatic injury, and only 21 of these had perimortem trauma (0.5%) (Krejsová et al. 2008). The rarity of perimortem trauma, in particular, has been corroborated by more recent publications (see Štefan et al. 2016).

There is an expected trend of the percentages of adults with fractures increasing by age for both cemetery samples (See Appendix C for more detailed tables). Regardless of labor divisions, the biosocial consequences of ageing likely placed older individuals from both cemetery samples at higher risk of both falls and poorer bone health that could result in ‘fragility fractures’ (Brickley and Ives 2008; Curate et al. 2011). For example, rib and clavicle fractures were the most common postcranial injuries identified in older adults at Libice and were likely the result of falls. Of course, it is difficult to estimate the timing of healed fractures and these injuries could have occurred earlier in the life course. As such, this pattern could also reflect the longer period of time these older individuals had in which injuries could occur and accumulate.
5.5b) (Roberts and Cox 2003). Such traumas are consistent with accidental or occupational injuries such as falls or kicks from draft animals (Redfern 2017a).

Other relatively common fractures in both cemetery samples included the joint surfaces of knees and elbows. Fractures in these locations can result from falls from a height but also from repeated weight loading to the joints. In adult labor patterns, men may have been more involved in physically demanding labor like plowing, carpentry, masonry, and working with large domesticates. However, women may have shared some of these duties as well as other tasks, including carrying heavy loads and working with textiles and associated equipment (Havelková et al. 2013). Neither cemetery sample at Libice exhibited differences in antemortem trauma rates by sex, a finding that correlates with other early medieval Czech sites (Krejsová et al. 2008). While there was likely at least some sexual division of labor at Libice, the analysis of entheseal changes has also demonstrated that both men and women performed labor-intensive tasks.

The skeletal data reflecting labor and activity at Libice complicates the narrative that socioeconomic status dictated burial location. As the ostensibly lower-status cemetery, it would be expected that adults buried at Kanín would show more activity markers and injuries indicating an active lifestyle primarily associated with agricultural labor. Instead, there are few skeletally

91 Galloway (1999) notes that fractures to the clavicle usually result from a fall in which the force of impact travels up the arm or a fall to the side on the shoulder resulting in a transverse midshaft fracture of the clavicle. Interestingly, only right clavicles were fractured in both cemetery samples. This finding may reflect instinctive use of the dominant arm in stopping a fall. Likewise, fractures to the ribs are typically the result of a fall but could occur during an assault or other types of accidents (Brickley 2006; Redfern 2017a).

92 Interestingly, one old-adult male from each cemetery sample (Akropole Burial 267 and Kanín Burial 168) exhibits a Shepherd’s fracture to the posterior process of the talus, the result of forced plantar flexion of the foot. These talar fractures, also known as ‘nutcracker’ fractures, tend to occur due to hyperplantarfexion or forced inversion of the foot crushing the posterior process between the distal tibia and the calcaneus (Galloway 2014; Boston 2014). Such fractures have been found in ballet dancers, football players, and 19th-century seamen as a result of forcefully pointing the toes (Boston 2014).

93 Fisher’s exact tests were performed due to the small size of each of the samples. For both Kanín and Akropole samples, the test statistic value is 1, and the results not significant at p < .05, meaning that a relationship was not found between sex and the presence of traumatic injury in either cemetery sample of adults. See also Appendix C.
visible differences in activity between adults at the two cemeteries. Indeed, farm labor may not accurately represent the work performed by the Kanín adults. Skeletal changes may be the result of a range of life course paths for people in both cemeteries. Building activities, military training, or farming could account for the high rates of antemortem fractures in both samples. More sedentary, safer occupations such as merchants, artisans, or craftspeople might be represented by more people with enthesal changes in the upper limbs and relatively limited sexual dimorphism in the samples. In any case, the data suggest that burial location at Libice (as a proxy for social status) is not strongly connected to relative activity types and levels.

5.5 Our daily bread: Dentition and diet

Like skeletal markers of activity, the dentition of the people at Libice show few differences in diet and dental health between the cemetery samples. Instead, other patterns emerge that connect diet to particular life course paths and cosmologies. Medieval diets reflected more than just the consumption of food for bodily sustenance; what people ate could have profound implications for their morality, spirituality, and identity. Medieval humoral theory held that food influenced a person’s habits, behaviors, and even the state of the soul (Resnick 2011).

Christian dietary discipline was most prominent among the clergy and monastic orders; however, some lay practices were encouraged such as abstaining from red meat during the many fast days of the Christian calendar (Pearson 1997; Grumett and Muers 2010; Resnick 2011). Such prescriptions may not have been followed, as archaeological evidence suggests that poultry and fish played fairly minor roles in early medieval Czech diets (Beranová 1984; Brather 2011; Halffman and Veléminský 2015) and there is limited evidence for the consumption of these animals at Libice (Mlíkovský 2006). Alternatively, vegetarian diets or cheese may have served
as a meat replacement during these periods (Pearson 1997) with dairy provided by cattle and sheep/goats at Libice (Mlíkovský 2006).

Bread and other cereal products were substantial components of the medieval diet, comprising up to 70% by some accounts (Beranová 2007; Šlaus et al. 2011; Eslassan et al. 2015). Breads were composed of coarsely ground wheat or rye and likely contained abrasive inclusions such as bran and grit from the milling process (Beranová 2007; Stránská et al. 2008). Archaeologists have identified many cultivated plants at Libice, including wheat, millet, rye, and oats, as well as pea legumes, hemp, flax, and dill (Beranová 1984; Čuliková 2006; Bažant et al. 2010; Brather 2011). Mashes and meals made of these cereals would also have been common, with honey or dried fruit used as sweeteners (Stránská et al. 2008; Halffman and Veléminský 2015). Indeed, a ceramic vessel in a grave at Kanín was found to contain a mixture of oats and honey⁹⁴ (Pokorný and Mařík 2006) and archaeological evidence for fruits at Libice includes grapes, apples, strawberries, and other berries (Princová-Jusotová 1999; Čuliková 2006). The consumption and use of animals are indicated by faunal remains excavated from the outer bailey. Zooarchaeological analysis concluded that the remains were primarily from pigs, but also cattle and sheep/goats⁹⁵ (Mlíkovský 2006).

It has been suggested that medieval diets may have differed in preparation rather than composition, with certain classes, genders, or ages eating more abrasive and/or more cariogenic preparations of the same foods (Beranová 2007; Eslassan et al. 2015). For example, Stránská and colleagues (2015) report that children’s diets in Central Europe were primarily milk-based for infants and then gradually supplemented with solid foods. These early childhood foods could

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⁹⁴ Pokorný and Mařík (2006) report on the analysis of the contents of a ceramic vessel from Burial 184. Skeletal remains were not preserved in this grave, but the burial also contained a sword, spurs, belt fittings, and other iron fragments, suggesting the accoutrements of a mounted warrior (see Chapter 7).

⁹⁵ The remains of roe deer and domestic dog were also identified in small quantities at Libice (Mlíkovský 2006).
include fermented wheat or rye bread, and cakes or mash made from various cereals such as millet, barley, or oats. Children’s foods were often sweetened and softened by honey or meat broths. Older children eventually incorporated meat and a wider array of foods into their diet (Orme 2001; Stránská et al. 2015).

While isotopic investigations of diet were beyond the scope of this project, the dentition of the people buried at Libice offers some clues as to what they were eating and how. Dental pathology provides insight into diet as well as overall health, as links have been identified between poor dental health and cardiovascular diseases, pulmonary infections, and cancer (Lukacs 2007; Molnar 2008; DeWitte and Bekvalac 2010; Turner 2015; Ullinger et al. 2015). Four indicators of dental health were evaluated for the Libice samples: dental caries, abscesses, antemortem tooth loss, and attrition (Figure 5.6). Dental caries is the result of fermenting food sugars on the surface of the tooth by plaque bacteria (Hillson 1996; DeWitte and Bekvalac 2010). Softer and sweeter foods (including carbohydrates) stick to tooth surfaces and contribute to demineralization of the enamel (Prowse 2011; Gamza and Irish 2012).

Subsequent infections can enter the pulp chamber and spread to the bone surrounding the tooth, resulting in an abscess – an inflamed and pus-filled pocket around the tooth (DeWitte and Bekvalac 2010; Šlaus et al. 2011). Abscesses may result in tooth loss and bone resorption, here referred to as antemortem tooth loss (Hillson 1996; DeWitte and Bekvalac 2010). Attrition, or tooth wear, commonly occurs through the consumption of harder, more abrasive food over time (Prowse 2011). A gritty diet of abrasive foods wears down the enamel of teeth, but also cleans them and tends to keep teeth relatively free from caries (Gamza and Irish 2012).

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96 While diet has perhaps the most significant influence on dental disease, other systemic, social, and environmental factors can affect the dentition including hormonal changes, dental care, and stress (Hillson 2008; Nystrom 2013; Hosek et al. 2020).
97 If the attrition is significant enough, the pulp chamber will be exposed to bacteria, leading to an abscess.
Dental analysis of subadult remains suggests some dietary differences based on children’s burial location. Nearly half of the children buried at Akropole exhibited at least one dental carie. Indeed, across childhood age categories, the Akropole children were more likely to have carious lesions than those buried at Kanín (see tabulations in Appendix C). Likewise, Stránská and colleagues (2015) examined frequencies of dental caries in elite and non-elite cemeteries at Mikulčice and found that while the diets of children up to age of six were similar, older children and adolescents exhibited differences in diet based on social status. The higher percentage of subadult remains with carious lesions at Akropole could reflect greater consumption of soft carbohydrates and sweet foods such as honey among higher status children. While honey was locally produced at Libice (Pokorný and Mařík 2006), it was highly valued and difficult to harvest so may have been restricted to elite consumption (Pearson 1997).

In contrast to the children, few significant differences in adult dental health were found between the cemetery samples. For example, the distribution of carious lesions by age category

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98 Stránská and colleagues (2015) based assumptions of status on both burial location (i.e. castle or hinterland cemeteries) and the presences and type of grave goods.
is relatively constant for both cemetery samples (see tabulated data in Appendix C). We might expect more carious lesions in older individuals due to the progressive nature of dental disease. However, old adults at Libice more frequently exhibited periodontal disease and severe attrition, suggesting that they lost some of their compromised teeth or caries were abraded away with enamel wear over time. Other studies of medieval Czech dental health offer contrasting evidence that indicates a status difference in diet. For example, Stránská and colleagues (2008, 2015) found lower rates of carious lesions in the castle cemetery at Mikulčice compared to the more rural cemeteries. On the other hand, Beňuš and Thurzo (2001) found higher rates of caries in the castle population of Děvin-Hrad compared to the hinterland. Such differences in dental health by burial location are not reproduced in the Libice cemetery samples, suggesting less dietary variation between the two groups than those at other Czech sites.

Interestingly, for all age categories at both cemeteries, males were more likely to exhibit dental attrition than females. This finding suggests that, in general, men from both cemetery samples were consuming a more abrasive diet than women, regardless of burial location. Several studies of medieval dental wear also found that males generally had more attrition than females (Esclassan et al. 2015). Šlaus and colleagues (2011) hypothesize that a harder, more fibrous, and abrasive diet could explain higher attrition frequencies in early medieval males. Women may have been consuming a generally softer diet, more akin to that given to children, including breads soaked in honey or broth (Beranová 2007; Stránská et al. 2015). These gendered dietary differences could have roots in the teachings of the early Church Fathers, which argued that women’s temperaments required certain food restrictions and fasting, while men should merely exercise moderation in their consumption of food and drink (Pearson 1997).

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99 Stránská and colleagues (2008, 2015) attributed these differences to a diet higher in dairy and animal fats, as well as better dental hygiene and maintenance (such as pulling affected teeth) among the elite sample.
The dental remains at Libice show few differences in diet and dental health between the cemeteries, suggesting that social status did not result in significant dietary differences. Alternatively, of course, social status may not have been the driving factor in burial location, with people from many backgrounds (and diets) buried in each cemetery. As some scholars have hypothesized (Beranová 2007; Esclassan et al. 2015), we see some gender and age differences in food preparation and consumption at Libice with women and children eating softer, more cariogenic foods when compared to the more abrasive diets of men. This variation could be in part due to religious prescriptions and humoral theories about temperament and the properties of food. While most of the food consumed at Libice was produced locally, some consumables may have been part of a network that spanned Europe and brought people and things into different articulations.

5.6 **Strange bodies, strange objects: Circulating people and things**

The production of crafts, produce, and other goods at Libice draws attention to how people and objects traversed the medieval landscape. Several significant regional trade routes\(^{100}\) intersected at Libice. Perhaps most importantly, an overland road into Poland crossed the Cidlina River at Libice, facilitating the movement of people and materials through the site (Sláma 2000). Archaeological evidence for long distance trade and other contact at Libice is abundant. For example, a Hungarian-style bow, cowrie shells, and decorative belt fittings found at Libice are

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\(^{100}\) Excavations throughout Bohemia - but most notably in Prague - have identified artifacts from Carolingian Western Europe, the Mediterranean, Italy, Byzantium and even the Near East (Charvát 2000). Prague was situated along a major trade route that stretched as far as the Cordoban Caliphate in the west to Cracow and even further east (Zdeněk and Mezník 1998). By the second half of the 10th century, Prague was considered one of the largest and most important centers of trade in Central Europe, a critical link between east and west known in particular for its slave market (Hensel 1969; Curta 2003). Ibrahim ibn Ya’qub described Prague as a city built of “stone and lime” where merchants from Cracow and the “land of the Turks” could come to purchase slaves, tin, and furs. Bringing spices, perfumes, incense, silk, and jewelry from Byzantium and beyond, traders journeyed through Prague (and other urban centers) on their way further west (Bažant et al 2010).
indicative of trade to the south, such as the Carpathian basin (present-day Hungary) (Tomková 1992; Mařík, pers comm). Small decorative objects including a fibula pin and a bronze needle likely originated in northwestern Europe, such as the Rhine region or potentially as far as the British Isles and Scandinavia. Eastern regions are represented by more belt fittings and a silver coin from Constantinople (Mařík, pers comm).

Commerce was not the only driving force in the circulation of people and things. Czech military retinues traveled to conquer neighboring regions and provide domestic protection (see Chapter 7) (Třeštík 2009; Wolverton 2009). Non-local individuals likely passed through Libice as part of these military activities. Chronicles also describe the movement of people through social and political alliances (Curta 2008; Font 2008; Urbańczyk 2008; Třeštík 2009). For example, Cosmas of Prague notes that dukes of Bohemia were linked in marriage to Polabian Slavs, Poles, Hungarians, Burgundians, Bavarians, and possibly even the Anglo-Saxons (Wolverton 2009). While far-ranging political marriages would not have involved the peasant classes, some individuals at Libice may reflect these exogamous marriage trends. In particular, marriage to elite Christian women became a new source of legitimacy and alliance-building within Western Christendom. For example, the Přemyslid Duke Vratislav married Drahomíra, the Christian daughter of a Slavic chieftain of Brandenburg, in the early 10th century (Vlasto 1970). This union reminds us that religious beliefs and practices could accompany travelers as well.

One burial at Kanín highlights the material consequences of Libice’s position as a crossroads in this busy early medieval landscape. Kanín Burial 139 was the atypical burial of a middle-adult female located in the southwest corner of the excavated area of Kanín (Figure 5.7). A coiled bronze earring located next to the left temple was the only artifact associated with this
burial. While jewelry was relatively common in the Kanín cemetery (see Chapter 3), the style of this particular earring is unique to the cemetery, and unusual to the region. Unlike the simple circlets with curled ends common to early medieval Czech contexts (often referred to as “temple rings”), this style of coiled earring was more typical of early medieval jewelry in Moravia, the Central European region to the east of Bohemia (Ungerman 2005; Mařík 2009a).

Figure 5.7. Kanín Burial 139 (Mařík 2009a). The middle-adult female was buried flexed with the head to the east. The only artifact was a coiled bronze earring (a) enlarged.

The woman’s body was positioned flexed on its left side with the head to the east, in opposition to most other graves at Libice. Her left hand lay in front of her face while her right arm was outstretched. Her left leg was bent sharply at the knee beneath the flexed right leg. Burial practices in early medieval Moravia were similar to those in Bohemia (Drozdová 2005; Poláček 2008) and so it is unlikely that this unusual treatment reflects a “foreign” mortuary tradition. However, as noted in Chapter 4, flexed burial may have been an indicator of outsider status, among other interpretations\(^\text{101}\) (Reynolds 2009; Farrell 2011).

\(^{101}\) Flexed burials have engendered numerous interpretations, including as an accepted alternative to extended supine burials, a unique family or community practice, a response to a fear of the dead, or a means of denoting outsider status (Reynolds 2009; Farrell 2011; Gardela and Duma 2013). Likewise, burial on the side, often observed in Anglo-Saxon infant burials, may indicate particular care in burial, possibly representing a sleeping position (Gilchrist and Sloane 2005).
The mild degenerative joint disease present throughout the incomplete skeletal remains of Burial 139 is typical of middle-adult females in this population. However, a squatting facet on the distal right tibia (the left was not present) indicates hyperdorsi-flexion of the ankle as a result of habitual squatting or kneeling (Boulle 2001). Furthermore, the teeth of this individual record relatively unusual activity and suggest habitual engagement with abrasive materials. The maxillary and mandibular incisors exhibit severe occlusal attrition with pulp exposure (Figure 5.8a), unusual for middle adults in this sample. Small notches are also present on the occlusal margins of the maxillary left incisors and canine. Chipping around these notches has resulted in the loss of small flakes of enamel (the largest 3mm in length) on the labial surface of the incisors (Figure 5.8b).

![Figure 5.8: Kanín Burial 139 maxillary dentition (photos: author). a) Occlusal surfaces of incisors show severe attrition with pulp exposure. Activity-related notches are visible on left incisors and canine (red circles). b) Anterior-lateral view of the notches with chipping (red circles).](image)

While these notches are not grooved like seamstress or tailor notches (Scott 1997), it appears that this individual was using her teeth as tools, suggesting an engagement with materials that wore down the enamel and caused chipped notches. A total of nine adults at Libice
exhibit similar notching in the anterior dentition (two at Kanín and seven at Akropole). Most of these individuals were female,\textsuperscript{102} suggesting a gendered activity may have contributed to the development of these notches. One explanation may be work with textiles, such as holding needles, awls, or other tools in the mouth (Březinová 2007; Březinová and Přichystalová 2014). Weaving tablets and netting needles have been found in several nearby archaeological contexts (Charvát 1996; Březinová 1997). Indeed, textiles played a significant role in early medieval Bohemia, one that went far beyond clothing the body. Traveler’s accounts from the 10\textsuperscript{th} century note that fine, locally-woven scarves were used as common currency alongside metal coins. In fact, the Czech word “platit” (to pay) comes from “platno” (linen) (Bažant et al 2010:15).

The squatting facet and chipped teeth of Kanín Burial 139 could indicate that this woman worked with textiles, kneeling at vertical looms and holding tools in her mouth (Březinová 2007; Březinová and Přichystalová 2014). While this is only one possible explanation for these skeletal markers of activity, it draws attention to much wider networks of people and things coalescing at Libice. People in both the Kanín and Akropole cemeteries were evidently participating in these networks through the production of crafts and circulating goods. Furthermore, the flexed position and unusual orientation of Burial 139, along with her unusual earring, suggest possible links to distant communities or particular socioeconomic roles. This burial offers one example of the potential life course paths for women at Libice and how the body might be shaped through habitual activities, engagement with materials, and participation in wider social and economic networks.

\textsuperscript{102} One of the two male individuals at Akropole with notched dentition was Burial 20, a young adult male who may have been a member of the clergy based on his unusual burial (see Chapter 4). The chipped notches on his teeth as well as Akropole Burial 204(a) indicate that some men were participating in the same (or a similar) activity. However, the mortuary treatment of Burial 20 also suggests that he may have had an unusual life course path relative to other men in this cemetery.
5.7 Conclusions

As the people of Libice grew up, grew old, and died, their life course trajectories altered their bodies. Influenced by other aspects of identity, we have seen how childhood stress, social roles, labor, and diet could leave traces in bone. The skeletal analysis of the Libice series has yielded few major differences in the lives of people buried at Akropole and Kanín. Activity markers and trauma suggest that people from both cemeteries were participating in occupational activities of similar intensity and relative risk of injury. Likewise, dental analysis uncovered few dietary differences between the cemeteries. Instead, we have seen how age and gender might influence preparation and consumption of food across the site. Other aspects of identity, including adherence to Christian prescriptions, likely informed how people lived and died at Libice.

Should we continue to approach these two cemetery spaces as markers of relative social status? Conventional understandings of these types of cemeteries tend to emphasize ‘elite’ versus ‘peasant’ or ‘rural’ designations. The mortuary contexts explored in Chapter 4 suggest some status differences between the cemeteries but also significant ritual variation. As this chapter has shown, traditional skeletal markers of status, including relative activity and diet, do not map onto burial location. If these cemeteries represent distinct social strata, then differences in social status at Libice do not appear to result in significant bodily differences. Instead, inclusion in one cemetery or the other appear to reflect more subtle ways that people engage with particular cosmologies and historical phenomena.

The following chapters explore this possibility thematically, beginning with how birth and infancy were influenced by family choices and Christian practices. By probing some of the few skeletal and mortuary differences identified between the cemeteries, these later chapters
explore how cosmologies could influence bodies across the life course and help channel people into particular mortuary spaces and ritual practices.

Chapter 6: [She] hung from her breasts a tender child: Birth, infancy, and infant care

“The wife of the noble Duke Svatopluk bore and hung from her breasts a tender child. After five months King Henry sent for him and raised him from the sacred font of baptism and called him by his own name, Henry.”

6.1 Introduction

Historian Frederick Paxton (2014:385) notes that of all components of the early medieval life course, birth and death, in particular, were “family matters.” Intergenerational concerns over bloodlines, property, and performance meant that the Christianization of practices surrounding these events were negotiated within local contexts, often in conjunction with older traditions. These family interests also provide a reminder of the relational nature of the life course. Pregnancy and birth incorporate both the mother and fetus, with intertwined nutritional, developmental, and social consequences (Gowland 2015b; Gowland and Halcrow 2019; Ellis 2020). Beyond birth, infants and children are enfolded within other generational relationships of care, health, education, and socialization (Baxter 2005; Gilchrist 2012; Ellis 2019; Gowland 2015b).

In this chapter, I further explore how the uneven integration of Christian practices at Libice played out across individual lives. This dynamic influenced the care of infants in both life and death, revealing different cosmologies at work in the two cemeteries. Framed within the

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103 Cosmas of Prague (translated by Wolverton [2009:208]) describing the birth and infancy of Václav Jindřich of the Přemyslid family.

104 The age category of infancy refers to individuals under the age of two years (see Chapter 5). Bioarchaeological age standards are divided into one-year increments after the first six months. Therefore, the age category of infants under the age of two must include a range of 0.0-1.5 years. The next nearest age category ends at 2.5, exceeding the range of infancy.
biosocial contexts of medieval birth, infancy, and death, I examine how wider relationships and histories might shape, and even be shaped by, these young individuals.

Skeletal and mortuary data are integrated with other sources to approach medieval birth and infancy and examine how these experiences might be negotiated in various ways at Libice. As we will see, there are predictably high rates of infant mortality in both cemetery samples. This pattern likely reflects the risks faced by infants in the first years of life from disease, malnutrition, and weaning stress (Lewis and Gowland 2007; Bourbou et al. 2013). Some of these factors may have contributed to the high frequency of endocranial lesions documented in the infants from both sites. At the same time, the two cemetery samples show notable signs of status difference in the timing of weaning as well as exposure to disease and other risk factors. Finally, while infant burials are present in both cemeteries, their graves were the least likely to contain mortuary artifacts. This pattern suggests that the deaths of infants may have been perceived of in different ways than the deaths of older children. Infants received a range of mortuary care largely within the purview of Christian funerary practices. A few divergences provide further insight into the social significance of infants at Libice.

Carefully chosen osteobiographies illustrate how these infant bodies might articulate with wider historical processes. While osteobiographers tend to focus on older individuals with longer and more detailed life histories, I argue that infants make for powerful examples of microhistorical narratives with a focus on often-overlooked minutiae. However, osteobiographies of infants are complicated by the short time frame in which these skeletal bodies were living and developing. Contextualizing these life histories requires a consideration of several components of the life course, namely, pregnancy, birth, and infancy, as well as the biological and social
relationships implicated therein. Attention to these relationships is particularly important when thinking about infants, individuals whose agency is necessarily deeply entangled with caregivers.

6.2 Quickened life and the medieval infant

Even before birth, the medieval fetus was endowed with a degree of personhood and social identity (Walker Bynum 1991; Gilchrist 2012; Mitchell 2014). In Hockey and Draper’s (2005:2) discussion of the extended life course, they note that “the materialities of the foetus and the corpse are thus resonant, and indeed can become powerfully emotive within both public and private arenas.” The social “lives” of individuals before birth and after death\(^{105}\) are revealed through cultural and material practices surrounding pregnancy, birth, death, and bereavement.

Following Greek scholars, the medieval unborn were thought to be “ensouled,” or brought to life, not at conception, but rather through a gradual process culminating in the quickening. This threshold marks when the movements of the fetus are perceived by the mother during the second trimester (Orme 2001; Mitchell 2014; Stensvold 2015). Cosmas of Prague expresses a concern for the unborn in a declaration he attributes to Bishop Severus (1030-1067) of Bohemia: “why do they commit adultery and abort their fetuses, which is the worst crime of crimes?” (Wolverton 2009:116). Bishop Severus calls for such criminal women to be anathema, a punishment in canon law in which they are expelled from the Christian community (Wolverton 2009; Stensvold 2015). The social identity of the fetus before birth, although somewhat nebulous, hints at the social value attributed to infant lives.

\(^{105}\) Of course, in a mortuary context, the fetus and the corpse may be one and the same. Burial practices involving stillborn infants draw attention to the peculiar social identity of the fetus (Hockey and Draper 2005; Hens et al. 2018; Ellis 2020).
As profoundly gendered experiences, pregnancy and birth held ambivalent positions in the male-dominated arenas of medicine and religion (Paxton 2014). Largely the purview of women, their female relatives, and midwives, rituals of birth may thus have been more resistant to Christianization. Nonetheless, as a period of physical and spiritual danger for both mother and child, birth was mediated by the rituals and materials of both home and Church (Orme 2001). Women typically gave birth in the home, but often in close proximity to religious amulets, such as borrowed reliquaries that might protect them in this dangerous process (Gilchrist 2012; Paxton 2014). By the later Middle Ages, infants and their mothers were brought to the church for rituals that would incorporate (or re-incorporate) them into the community both spiritually and physically (Orme 2001; Gilchrist 2012).

In the medieval Christian life course, baptism generally occurred in the first few days of life, a sacramental rite drawing the infant into social and cosmological relationships (Gilchrist 2012; Crawford 2013; Walker Bynum 2011; Hausmair 2017; Scott and Betsinger 2017). Beginning at birth and baptism, infants entered a gendered world. Orme (2001:27) notes that upon arriving at the church, the baptismal party was instructed to place the infant on the right side of the priest if it was male, and the left side of the priest if it was female. Doing so associated male infants with “strength and dominance.” In medieval miracle accounts, some of the greatest expressions of parental distress and grief were for infants who died without baptism, as these individuals could not experience corporeal resurrection and would be denied a place in heaven (Finucane 1997; Hausmair 2017). Archaeologically, this rite of passage is often signified

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106 Seasonal baptisms, taking place at Easter and Pentecost, were also practiced in Central Europe. Concern for the salvation of unbaptized infants increased in the 12th and 13th centuries, meaning that this rite of passage may not have held the same urgency in the 10th century (Hausmair 2017; Curta and Koval 2018).
spatially. For example, Murphy (2008) identifies separate burial sites in medieval Ireland for *cillíní*, infants who were stillborn or died before baptism (see also Crawford 2013).

Despite the familiar image of the Madonna and child, early medieval references to infants, mothering, and infant care are infrequent and typically filtered through literate, male sources (Parsons and Wheeler 1999; Dorger 2015). Extant historical sources from early medieval Central Europe rarely mention infancy, although these references offer important insight. For example, Cosmas recounts the birth of the Přemyslid heir, Václav Jindřich, by noting “the wife of the noble Duke Svatopluk bore and hung from her breasts a tender child” (Wolverton 2009:208), a comment that suggests even elite women nursed their own children in the late 10th and early 11th centuries. Cosmas continues: “after five months King Henry sent for [the child] and raised him from the sacred font of baptism…” (ibid). The late timing of this particular baptism may be due to the travel required and the dangers of moving a newborn as most baptisms occurred very soon after birth to incorporate them into the Christian community (Gilchrist 2012; Crawford 2013).

Infants are also mentioned in contexts of violence. On two occasions, Cosmas recounts nearly identical threats: “By the sword they will slaughter your infants in [your wives’] laps, and they will give them puppies to nurse” (Wolverton 2009:58). While these threats rally men against an enemy, it is not clear if they were ever carried out. In any case, abortion and infanticide may have resulted in some infant and fetal deaths. Bohemian episcopal records from 1373-1407 in Prague report no charges of infanticide (Klassen 1985). This does not mean

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107 This peculiar threat appears twice in Cosmas’ chronicle and also appears in a 13th century *vita* of St. Stanislaus in which adulterous wives are punished by replacing infants at their breasts with puppies (McCracken 2013). McCracken (2013) suggests that this punishment was a degradation to the women, likening them to animals not fit to raise men.
infanticide was not practiced, and notably the ledger dates to a later period, but it does represent some textual evidence against frequent or highly visible instances of infanticide.

Together, these sources outline some of the experiences of medieval infants. We can see that medieval infants were active social agents, incorporated into Christian cosmology and the social sphere even before birth through the ensoulment that accompanied quickening. Rituals of birth and baptism further drew infants into wider social relationships and histories. However, infant mortuary contexts and their skeletal remains offer insight into the health of these individuals and how their lives and deaths might be further structured by conjunctions of family choices, religious prescriptions, and evolving ritual practices.

6.3 Beginning at the end: Infant mortuary contexts

Medieval children, particularly those under the age of two, often received special or unusual treatment in death signaling their liminal status as not-quite-members of the community (Gilchrist and Sloane 2005; Murphy 2008; Gilchrist 2012; Crawford 2013). For example, in some medieval contexts, the very young were buried outside of cemetery bounds (Gilchrist and Sloane 2005; Murphy 2008). However, the burials of infants are commonly found in cemeteries across early medieval Central Europe (Drozdová and Beneš 1997; Štefán and Krutina 2009; Frolíková-Kaliszová 2014; Curta and Koval 2018). As Table 6.1 demonstrates, infants represent the largest group of subadult remains in the Akropole sample (N=26). While younger children make up the largest group of subadult remains from the Kanín sample, infants are second (N=17).
Table 6.1: Subadult demographics at Libice

<table>
<thead>
<tr>
<th>Life Course Phase</th>
<th>Range (yrs)</th>
<th>Akropole</th>
<th>Kanín</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>% total</td>
<td>No.</td>
</tr>
<tr>
<td>Infant (IN)</td>
<td>26</td>
<td>43%</td>
<td>17</td>
</tr>
<tr>
<td>Younger children (YC)</td>
<td>21</td>
<td>35%</td>
<td>27</td>
</tr>
<tr>
<td>Older children (OC)</td>
<td>9</td>
<td>15%</td>
<td>11</td>
</tr>
<tr>
<td>Unknown subadult (Unkn SA)</td>
<td>4</td>
<td>7%</td>
<td>4</td>
</tr>
<tr>
<td>Total subadults</td>
<td>60</td>
<td>100%</td>
<td>59</td>
</tr>
</tbody>
</table>

Infant burials at Libice evoke the significance of their lives to families and communities. At the same time, some mortuary practices suggest particular ideological and ritual complexities in navigating the deaths of infants. In both cemeteries at Libice, many infants were buried in close proximity to other children and adults (Figures 6.1 and 6.2), potentially indicating their relationships to other individuals or social groups (Hadley 2010; Curta and Koval 2017). In medieval Central European contexts, multiple interments involving children also frequently include an adult female (Kašparová 2012). For example, at Złota Pińczowska in Poland, an adult female was buried with a young child and infant on either side in the same grave (Gardeła and Duma 2013). Infants and other children may have been perceived of as particularly vulnerable in death, requiring companionship or protection (Gilchrist 2012). Alternatively, the deaths of the very young may have added value or spiritual purity to the burial of adults (Crawford 2007; Hadley 2010; Gilchrist 2012). For example, the souls of recently baptized newborns were thought to be particularly pure (Hausmair 2017). Such contrasting perceptions surrounding the deaths of infants and children reflect the syncretism of alternative beliefs and mortuary practices with Christian eschatology.
In the Akropole cemetery, many of the infants sampled were buried in the densely used area southwest of the church, but infants and other children were present in all areas of the cemetery (Figure 6.1). Most infants (62%) were buried in close proximity to other graves. However, it is also notable that of the children buried ‘alone’ (i.e., discrete burials not immediately adjacent to other graves), 83% of these (10 out of 12) were infants. Furthermore,

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108 Burials immediately adjacent to, or overlaying, other burials were considered to be in close proximity. Most child (0-15.5 years) burials analyzed from the Akropole cemetery (78%) were found in close proximity to the burials of adults or other children.
deliberate multiple interment of infants (in a single grave as one burial event) was not observed except for one possible case.\textsuperscript{109}

In the Kanín cemetery, nearly all infant burials were clustered in the southeastern and northwestern parts of the excavated areas of Kanín II (Figure 6.2). In contrast to the Akropole sample, most of the Kanín infant burials were discreet, although five infants (29\%) were buried

\textsuperscript{109} Turek (1980) describes Burial 214b as an infant burial 30cm north of Burial 214 with crushed cranial remains and “disturbed/damaged” postcranial remains. The remains in Box 214b were found to belong to at least two infants (0.0-0.5 years), based on an MNI of cranial material and the fact that one individual was slightly larger/older than the other. It is unclear if these individuals were buried together deliberately, or if the second set of remains was scattered in the backfill, although Turek does not mention a second set of remains. It is possible that the excavators did not recognize that two individuals were present given the damaged and disturbed nature of the remains.
in close proximity to, or overlapping with, other burials. In fact, over half of all children at Kanín were buried alone. This may be related to the larger size of the cemetery and more available space, but in many cases the overlapping burials and multiple interments appear organized and intentional in their layout. Like the Akropole sample, there is one possible case of an infant and a younger child interred together at Kanín. Burial 185(a-c), however, is a likely case of multiple interment where an infant was interred with an older child and an old adult female (see also Chapter 4). Overall, however, infants in both cemeteries were more likely to be buried alone than older children, perhaps reflecting some degree of ambivalence towards the deaths of infants when compared to these other children.

The remains of neonates and fetuses, in particular, were frequently buried separately, or even in other locations intended for the unbaptized (Murphy 2008). The presence of neonates or fetal remains in the Libice cemeteries is notable as we would not expect to see these individuals buried in consecrated cemetery grounds (Hausmair 2017). However, Orme (2001) observes that the burial of unbaptized infants on hallowed ground would not have been particularly difficult, especially under the cover of night. In fact, some medieval churchyards were gated and locked to prevent this activity specifically. Lewis and Gowland (2007) argue that medieval urban sites tended to have fewer neonates as there may have been a stricter observance of excluding unbaptized infants, as well as more watchful eyes. As the cemetery located within the fortified settlement, the Akropole site may have been a more difficult place for such burials. Indeed, only one perinate was identified in the Akropole sample.

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110 During laboratory analysis, Burial 177 was found to contain two individuals: an infant aged 0.0-0.5 years (designated in the lab as Burial 177a) and a younger child aged 1.5-2.5 years (designated Burial 177b). Once again, it is not clear if excavators in 1961 did not recognize two sets of remains in this burial (the remains were incomplete and crushed), or if the remains of the two subadults were accidentally commingled post-exavication.
In contrast, three burials at Kanín contained fetal or neonate remains. Two probable newborn infants\textsuperscript{111} were identified in discrete burials in the along the western margins of the excavated areas of Kanín II (Figure 6.2). Multiple interment Burial 185(a-c) contained another perinate, estimated to be 34-38 weeks,\textsuperscript{112} alongside an older adult female and an older child. One explanation for this arrangement could be that this perinate was surreptitiously buried with other bodies in order to inter an otherwise prohibited body in cemetery grounds. Alternatively, this infant may have required protection in death, or offered associative purity to the other decedents (Hadley 2010; Gilchrist 2012; Hausmair 2017). The presence of several perinates in the Kanín cemetery raise questions about the enforcement of mortuary practices in this space and whether or not the unbaptized were buried here. While many of the graves at Kanín conform to Christian mortuary norms, the presence of some unusual burial practices suggests less ecclesiastical oversight. As such, the Kanín cemetery may have afforded more options for negotiating the death of unbaptized infants.

Even with general prohibitions on the burial of the unbaptized, there were some circumstances that could have resulted in the burial of unbaptized infants in Christian cemeteries. For example, unbaptized infants were sometimes buried near the walls of the church in early medieval Christian cemeteries. These so-called “eaves-drip” burials were located under the eaves, potentially to receive the drip of sanctified rainwater from the roof of the church as a form of postmortem baptism (Crawford 1999; Navrátilová 2005; Hadley 2010; Craig-Atkins 2014). Notably, Akropole Burial 27 was a very young infant (0.0-0.5) buried against the south wall of

\textsuperscript{111} Kanín Burial 60 and Burial 146 were the fragmentary remains of probable neonates based on long bone measurements and dental development. In both cases, these burials exhibited typical body positions and orientations for the Kanín cemetery.

\textsuperscript{112} The remains of Burial 185c are in poor condition and consist only of unidentified vault fragments and parts of the occipital and temporals. Based on petrous portion measurements, this individual was a nearly full-term fetus or perinate, approximately 34-38 weeks.
the church transept\textsuperscript{113} (Figure 6.1). There is also some evidence for the baptism of stillborn or neonate corpses (Hausmair 2017). In medieval miracle accounts from continental Europe, dying or dead infants could be brought to the altar or tomb of a saint for intercession. Any movement or sound, including that which might occur during decomposition, was taken for a sign of life. Such “miracles” would be attributed to the saint and warrant a quick baptism of the child before burial (Finucane 1997).

Mortuary inclusions offer further insight into the social significance of infants and how their burials might reflect ritual engagement. As objects move through different social contexts, they form relationships to individuals, events, and ideas (Hodder 2012; Ekengren 2013). The artifacts buried in children’s graves have no less complicated histories and meanings. Importantly, the mortuary artifacts placed with deceased children represent the choices of caregivers and mourners. As such, one interpretation of these objects is as a “comment on the relationship between the generations” (Gilchrist and Sloane 2005:223). For example, certain items, such as jewelry and weapons, may highlight the social status of that child’s family or imagined gendered futures (Klápště 2011).

Alternatively, some objects may have belonged to the child or were funerary gifts from parents or other mourners (Gardeła and Duma 2013). This may be the case for artifacts typically associated with children’s burials such as gombiky beads and certain earring styles (Kašparová 2012). Infants were the least likely of any age category to be buried with artifacts at either cemetery at Libice. As we have seen, the presence of artifacts is not necessarily a reliable indication of social status. Indeed, a lower proportion of infants in the Akropole sample were buried with artifacts (11\%) than those at Kanín (23\%) (Table 6.2).

\textsuperscript{113} In addition to Burial 27, three other infants and two subadults of unknown age were also placed against the walls of the church, but these were not part of the Akropole sample for this project.
Most of the mortuary objects found with infants at Libice are not unique to this age group and may instead reflect more general commemorative or protective practices at either cemetery. For instance, the four infant burials with artifacts at Kanín contained objects common throughout the cemetery. However, even these common mortuary inclusions help us understand how the recent arrival of Christian institutions was negotiated at the level of the individual in nuanced conversation with other practices and priorities. Kanín Burial 117 contained the incomplete remains of an infant in a row of graves on a normative northwest axis (Figure 6.2). The infant was buried with three bronze “temple rings” near the head and a short iron knife (9.3cm long) extending from the right hand (Figure 6.3).

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### Table 6.2: Infant mortuary context data

<table>
<thead>
<tr>
<th>Burials</th>
<th>Burials w/Artifacts</th>
<th>%</th>
<th>Jewelry</th>
<th>Ceramic</th>
<th>Metal</th>
<th>Knife</th>
<th>Weapon</th>
<th>Organic</th>
<th>Wood lining</th>
<th>Stones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akropole</td>
<td>26</td>
<td>3</td>
<td>11%</td>
<td>2</td>
<td>0</td>
<td>1*</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Kanín</td>
<td>17</td>
<td>4</td>
<td>23%</td>
<td>1</td>
<td>1</td>
<td>1**</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

*Akropole Burial 254 contained an iron chisel
**Kanín Burial 157 contained a piece of silver plate

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114 Kanín Burial 117 was represented by fragmentary cranial elements and teeth. This individual was determined to be 0.5-1.5 years based on development of the deciduous dentition as well as a permanent mandibular first molar.
As discussed in Chapter 4, these mortuary objects may have held multiple meanings. For example, knives could be standard dress components, weaponry associated with warrior burials, medical tools, or even eschatological objects (Härke 2014; Kowalska 2015; Matczak and Chudziak 2018). The knife buried with Burial 117 is relatively short, at 9.3cm and therefore was unlikely to be a weapon (Ruttkay 2015). Placed at the infant’s right hand, the knife may have held Christian connotations of suffering and sacrifice (Chudziak et al. 2010; Kowalska 2015). Circlet ‘temple rings’ were most commonly found in women’s graves and had associations with Roman fertility symbolism (Duczko 2015). These gendered objects could indicate the burial of a baby girl, represent a family relationship, or connect to themes of the resurrection as symbols of fertility and regeneration (Gilchrist 2012; Caciola 2016). This infant’s burial attests to the complex mortuary significance of common objects and how mourners may have acknowledged multiple beliefs and practices at the graveside.

While only three of the infants sampled from Akropole were buried with objects, two burials also contained animal remains in close proximity to the human skeletons. Despite the relative paucity of grave goods in Akropole infant burials, nearly half of the graves contained either wood or stone lining suggesting a level of investment and care in these burials similar to that of adult interments. One infant burial at Akropole contained unusual artifacts that offer particular insight into the intersections of identity and religion at Libice.

The mortuary context of Burial 254 suggests certain ways this infant’s life and death were structured by Christian practices and family decisions. The presence of Burial 254 in the

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115 In addition to an amber bead, the infant skeletal remains of Akropole Burial 236 were mixed with unidentified animal bones. Akropole Burial 190 also contained animal bones alongside the human remains. With the occasional exception of eggshells, animal remains were only rarely listed as “artifacts” by the original excavators.
116 Akropole Burial 254 was determined to be an infant (0.5-1.5 years) based on development of the deciduous canines and molars.
sanctified grounds of a churchyard suggests that the infant was most likely baptized before death. The burial was located to the south of the church in alignment with the foundations of other ecclesiastical structures (Figure 6.1). The orientation of the burial was typical for the Akropole cemetery with the body positioned supine and the head to west.

Along with evidence for Christian baptism and mortuary ritual, two unusual artifacts were found with the infant in Burial 254: an iron tip that likely topped a spear or arrow, and an iron chisel (Figure 6.4). Weapons were otherwise found nearly exclusively in adult male graves in the Akropole cemetery along with other accoutrements of a warrior kit such as spurs and buckles. The iron chisel was even more unusual as one of very few possible craft tools found at Libice. Both of these objects, associated with adult occupations and activities, are of uncertain meaning, but draw attention to relational histories at work in the grave. The tool and weapon may represent family trades and provide a material kinship link that references the occupations of parents or family members. Alternatively, these items may reference the social and occupational paths this person’s life could have taken, particularly significant in light of the social prestige associated with early medieval military activity (Curta and Koval 2018).

Figure 6.4: Akropole Burial 254 artifacts (Turek 1980). a) Iron chisel. b) Hollow iron point.

This infant burial further highlights relationships between the Church, identity, and death at Libice. The implied baptism of this infant, as well as the typical Christian burial location and
orientation, indicate adherence to certain Christian mores. However, the mortuary artifacts show the importance of representing other identities and intergenerational relationships alongside Christian mortuary practices. These grave inclusions may have reflected imagined extensions of the life course beyond the young age of this individual or superimpositions of the life course of adults as a component of a family identity and connection. On the other hand, they may have signified resistance or incorporation of alternative funerary rites and beliefs. Burial 254 further implicates a connection between the church and particular social occupations (e.g., military and crafts). This potential association will be explored in Chapter 7. The mortuary contexts of infants at Libice have shown some of the ways that ritual, symbolism, and identity are negotiated at the graveside. Infant skeletal remains offer other insights into how social relationships, as well as Christian practices and prescriptions, might become embodied during life.

6.4 Beyond birth: Infant health and relationships

The social and physical dependency of infants on family and caregivers, particularly mothers, draws attention to the relational nature of the life course. For example, infant skeletal remains may reflect health challenges associated with poor maternal diets and/or the process of weaning (Perry 2005; Bourbou et al. 2013; Gowland 2015b). Of course, weaning was not the only risk that medieval infants faced. Miracle narratives involving children most commonly describe “acute and chronic illnesses, disabilities, and emotional disorders” (Gordon 1991:4), and children under the age of four were the most frequent sufferers requiring saintly intercession (Gordon 1991; Finucane 1997). Chronic illness and disabilities are the most likely conditions to leave their marks on bone. The former, in particular, undoubtedly contributed to the non-specific skeletal lesions identified in the infants at Libice: endocranial lesions, cribra orbitalia, and
periostitis. These generalized conditions have no specific etiology but an array of causal mechanisms (Blom et al. 2005; Walker at al. 2009; Wheeler 2012; Klaus 2014; Lewis 2017; Snoddy et al. 2018 and see Chapter 8) and each will be discussed below in relation to the findings from the two cemetery samples.

Nearly three quarters of all infants at Libice exhibited at least one type of non-specific skeletal lesion (Table 6.3; and see Appendix C). While infants in the Akropole sample were more likely to have at least one type of lesion, the difference was not statistically significant and few other differences were found between the cemetery samples. For example, cribra orbitalia, porous lesions in the eye orbits, is present in over a third of all infants remains at Libice (Table 6.4). This finding suggests that iron or other metabolic deficiencies were fairly common in both groups. The use of iron-poor cereals as a primary weaning food could have contributed to iron deficiency in weaning infants (Redfern and Gowland 2012). A smaller proportion of infants were found to exhibit non-specific periostitis, or new bone growth, on one or more long bones. Once again, the difference between the two cemetery samples was not significant.

Table 6.3: Infant skeletal pathology at Libice

<table>
<thead>
<tr>
<th></th>
<th>Total infants</th>
<th>Infants with pathology</th>
<th>% with pathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akropole</td>
<td>26</td>
<td>22</td>
<td>84%</td>
</tr>
<tr>
<td>Kanin</td>
<td>17</td>
<td>10</td>
<td>59%</td>
</tr>
<tr>
<td>Total IN</td>
<td>43</td>
<td>32</td>
<td>74%</td>
</tr>
</tbody>
</table>

117 A chi-square test of independence was used to determine if there was a relationship between burial location and rate of pathological lesions among infants. The test statistic was X=3.59, with a p-value of .058, which was not significant at p=0.05.

118 Cribra orbitalia presents as lytic lesions or porosity in the eye orbits linked to anemia as well as other dietary deficiencies or infectious diseases more broadly (Lewis and Roberts 1997; Roberts and Manchester 2005; Vercellotti et al. 2010; Hens et al. 2019 and see Appendix C).

119 Periostitis refers to inflammation of the periosteum, the osteogenic tissue surrounding the bone (Lewis and Roberts 1997; Ortner 2003; Waldron 2009; Rittemard et al. 2019 and see Appendix C).
Table 6.4: Non-specific indicators of infant skeletal pathology (by type)

<table>
<thead>
<tr>
<th>Total infants</th>
<th>Cranial present</th>
<th>Endocranial lesions</th>
<th>% with lesions</th>
<th>Observed orbits</th>
<th>Cribra present</th>
<th>% with cribra</th>
<th>Postcranial present</th>
<th>Periostitis present</th>
<th>% with periostitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akropole</td>
<td>26</td>
<td>25</td>
<td>19</td>
<td>76%</td>
<td>20</td>
<td>7</td>
<td>35%</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Kanin</td>
<td>17</td>
<td>15</td>
<td>5</td>
<td>33%</td>
<td>10</td>
<td>5</td>
<td>50%</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Total IN</td>
<td>43</td>
<td>40</td>
<td>24</td>
<td>60%</td>
<td>30</td>
<td>12</td>
<td>40%</td>
<td>36</td>
<td>8</td>
</tr>
</tbody>
</table>

Note: shaded cells indicate a statistically significant difference. In this case, a significantly higher percentage of Akropole infants exhibit endocranial lesions than of infants buried at Kanín.

Only endocranial lesions\(^{120}\) yielded a statistically significant difference between the subadult samples (Table 6.4). Infants from the Akropole sample were significantly more likely to exhibit these lesions than those from Kanín.\(^{121}\) This finding suggests that Akropole infants faced specific health stressors, such as infectious diseases causing inflammation or hemorrhagic metabolic conditions such as scurvy (Lewis 2004; Brown and Ortner 2011; Redfern and Gowland 2012; Bourbou 2014). As noted above, disease was a frequent malady suffered by the infant recipients of miraculous interventions. Furthermore, as we will see in the next section, some Akropole infants were at greater risk of foodborne disease exposure and nutrient deficiencies due to an earlier start to the weaning process.

Importantly, the greater percentage of infants with pathology in the Akropole sample is not necessarily indicative of poorer health for this group. Based on the osteological paradox (Wood et al. 1992; Siek 2013; DeWitte and Stojanowski 2015), weaker or compromised children could have a lower skeletal pathology load because of their inability to recover from periods of stress or affliction. In other words, these children would have died before lesions could develop. As such, the higher status Akropole infants might be more capable of surviving, reflected in the greater frequency of pathological lesions present in their bones. Of course, even these infants are

\(^{120}\) Endocranial lesions include porotic lesions, formative lesions, vascular impressions, and hair-on-end formations on the interior surface of the cranium (Lewis 2004; Sun et al. 2019 and see Appendix C). These non-specific lesions have been linked to several diseases as well as metabolic disorders such as rickets or scurvy (Cecconi et al. 2007; Janovic et al. 2015; Cooper et al. 2016; Snoddy et al. 2018).

\(^{121}\) The chi-square statistic is 7.11 with a p-value of .008, significant at p=0.05. This finding indicates a statistically significant relationship between burial location and likelihood of endocranial lesions among infants.
ultimately non-survivors, but the development of skeletal lesions indicates that they did not succumb immediately to disease or nutritional challenges (DeWitte and Stojanowski 2015). Higher socioeconomic status may have influenced Akropole infant health through better maternal health and nutrition earlier in life (Bennike et al. 2005; Perry 2005; Kendall 2016; Hodson and Gowland 2019).

Women’s bodies too could be shaped by motherhood and infant care (Gowland and Halcrow 2019). For instance, females from both cemetery samples at Libice were found to have lower rates of dental attrition than males, suggesting women were consuming generally less-abrasive diets than men at Libice (see Chapter 5). This gendered consumption pattern could reflect some women’s roles as caregivers, eating softer foods alongside infants and children such as breads soaked in honey or broth (Beranová 2007; Eslassan et al. 2015; Stránská et al. 2015). Additionally, Mays (2010) found that medieval women at Wharram Percy exhibited pre-menopausal loss of bone mineral density that may have been related in part to prolonged breastfeeding. While bone mineral density was not assessed for the Libice series, lactational losses could have been contributing factors to osteoporosis and ‘fragility fractures’ (Brickley and Ives 2008; Mays 2010; Curate et al. 2011). At least three women (two at Akropol and one at Kanín) exhibit macroscopically observed osteopenia (low bone density). Two of these individuals also exhibited antemortem fractures, suggesting probable osteoporosis (Weaver 1998; Brickley and Ives 2008). For example, an old-adult female, Akropole Burial 240, suffered from bilateral fractures to her wrists. Of course, the etiology of bone loss is complex and

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122 In addition to macroscopically-observed osteopenia in the long bones, Akropole Burial 240 exhibited well-healed bilateral fractures to the distal forearms. Known as a Colles fracture, this injury tends to occur in a fall onto outstretched hands and is most commonly seen in postmenopausal women with reduced bone density (Brickley and Ives 2008; Mays 2006). The posterior displacement of the joint surfaces likely resulted in reduced mobility and potential long-term disability for this woman in the later years of her life (Mays 2006).
influenced by plasticity across the life course (Agarwal 2016), but these data remind us that infants are also active contributors to the relational life course and that family choices regarding infant care had other biocultural consequences.

Another example of inter-generational relationships and maternal-infant health can be seen in an infant from Akropole. Burial 100 contained an infant less than six months in age\textsuperscript{123} with multiple skeletal pathologies that likely developed before birth and in the first few months of life. Cranial pathology includes bilateral formative lesions on the orbital roof (Figure 6.5a); new bone formation on the endocranial surface of the occipital; and active periostitis on the anterior surface of the mandible. In addition, all long bones shafts that were present along with the left scapula (the right is missing), exhibited active periosteal lesions (Figure 6.5b).

\textbf{Figure 6.5:} Akropole Burial 100 (photo: author). a) Formative orbital lesions. b) Bilateral, active periostitis on the proximal shafts of the radii.

These lesions may be the result of several conditions including rickets, anemia, scurvy, or a co-occurrence of multiple conditions. However, the bilateral presentation and the location of active, formative lesions in the eye orbits, mandible, and the scapula are particularly suggestive of scurvy\textsuperscript{124} (Ferreira 2002; Geber and Murphy 2012; Krenz-Niebda 2016; Lewis 2017).

\textsuperscript{123} Akropole Burial 100 was determined to be 0.0-0.5 years based on the development of the deciduous molars.

\textsuperscript{124} While lesions on the maxillae and sphenoid would also contribute to a potential diagnosis of scurvy (Geber and Murphy 2012; Krenz-Niebda 2016; Lewis 2017), these elements were not present for assessment.
Reflecting a dietary deficiency of Vitamin C, scurvy affects connective tissue and can result in hemorrhaging and lesions at muscle attachment sites (Halcrow et al. 2014; Lewis 2017).

This case draws attention to the relationships between mothers and infants in terms of health and the transitive potential of nutritional deficiencies (Hodson and Gowland 2019). As Gowland (2015) notes: “the developing fetus is prioritised by the pregnant body in times of nutritional stress, with resources diverted to support the needs of the infant; therefore nutritional deficiencies in the fetus/infant reflect the very poor health status of their mothers” (10). There is some bioarchaeological evidence for infantile and even fetal scurvy (Ferreira 2002; Brickley and Ives 2008; Ellis 2016; Snoddy et al. 2017). Many of these individuals would have been too young to be eating solid foods and as such, their condition may reflect maternal vitamin C deficiency. Such deficiencies may have occurred during pregnancy, early nursing, and while weaning (Brickley and Ives 2008; Snoddy et al. 2017; Halcrow 2019).

The skeletal remains of Burial 100 suggest a compromised maternal environment, although only one other individual in the Akropole sample has osteological evidence suggestive of scurvy. Medieval diets could certainly result in vitamin C deficiency, potentially through highly cooked foods or seasonal limitations. However, the effect of social status on deficiencies in maternal diets is unclear. For example, higher status medieval women likely consumed more meat and fat while lower status women may have relied more heavily on low-nutrient grains, both potentially at the expense of vitamin C-rich foods (Krenz-Niebda 2016). Stable isotope analysis might help clarify this issue in the future.

But for now, the mortuary context of Burial 100 provides further clues to this infant’s social status and family circumstances. Although the remains were partially scattered by

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125 Akropole Burial 258 was a middle-adult male buried with weapons and spurs. Formative lesions on the eye orbits and alveolar bone are suggestive of scurvy (see Chapter 9).
subsequent disturbance, the orientation and placement of the bones suggests a normative burial. The grave is located in close proximity to several other children’s burials within the densely used area southwest of the nave of the church (Figure 6.1). Stones and wood fragments associated with the burial suggest lining or other protective measures (Gilchrist 2015). These characteristics of the burial, and its proximity to the church, suggest that this infant was baptized despite the fact that they did not survive beyond the first few months of life and appears to have been very sickly. As such, Burial 100 may be an example of a family prioritizing Christian ritual during the life and subsequent death of their child.

Unlike the gross demographic and statistical analysis before, this infant’s osteobiography anchors the broader skeletal data to an individual experience. The pathological lesions of Burial 100, while relatively severe compared to other infants, reflect the higher pathological load of the Akropole infant sample. Importantly, many of the Akropole infants were living long enough with compromised health for indicators to be left in the bone. Burial 100 also implicates some of the challenges of correlating nutritional deficiencies with status, as different types of diets can contribute to the development of skeletal conditions. In fact, despite their poor health, this infant was most likely from a high-status family based on their burial location. The presence of Burial 100 in the Akropole cemetery with Christian burial practices and a presumed baptism suggest some of the ways the infant’s family incorporated Christian ritual into the (extended) life course. However, religiously informed choices may have influenced other aspects of infant lives and care. Skeletal evidence for infant feeding practices suggest variation in how families approached the process of weaning.
6.5 Feeding time: Weaning and dental health

Medieval infancy transitioned to childhood in part through the process of weaning, the introduction of solid foods and other substances besides breast milk (Shahar 1990; Gilchrist 2012). Around one to two years of age, the weaning process was accompanied by other developmental and social milestones such as walking, talking, and increased socialization (Shahar 1990; Orme 2001; Gilchrist 2012). This transition was informed by, but also altered in turn, social and physical relationships. Infants became less reliant on their mothers’ bodies for nutrition and sustenance but were also subject to care and feeding decisions by family members and other caregivers. In this microcosm of a medieval life course transition, we can begin to see how particular cosmologies might influence bodies.

Kaupová and colleagues (2014) note the potential role of Christianization on breastfeeding practices and suggest that new prescriptions may have disproportionately affected those under tighter ecclesiastical influence, namely elite and urban populations. Citing Bartoňková and colleagues (1971), they refer to a papal document, *The Responses of Pope Nicholas I to the Questions of the Bulgars* (dated 866) which “recommends sexual abstinence during the entire period of breastfeeding” (Kaupová et al. 2014:642). The Church had a long tradition, dating back to at least St. Augustine, that breastfeeding women should abstain from sexual relations (Newman 2007; Thorvaldsen 2008). Not only was intercourse regarded as sinful outside of procreative purposes, but if a breastfeeding woman became pregnant, she endangered her living child through corrupted breast milk. In humoral theories of medicine, the developing fetus would receive the beneficial properties of blood, while the breastfeeding child would be left with a noxious mix of phlegm and bile (Newman 2007). Such prescriptions may have induced families to cease breastfeeding at earlier ages so that mothers could resume otherwise prohibited
sexual relations. Or, if a woman became pregnant, she may stop nursing to protect her living child from the transformed properties of her own breast milk.

One alternative to weaning was the employment of wet nurses. Although a later date, rulings from the Bohemian episcopal court in Prague (1373-1407) suggest that the prevailing attitude among elites at this time was to have infants in the care of a wet nurse (and thus breastfed) up to two years in age (Klassen 1985). But medieval beliefs about the properties of breast milk – including the transmission of bad humors and even psychological characteristics through nursing – may have also influenced breastfeeding choices (Gavitt 2006; Stevens et al. 2009). Wet nurses, at times portrayed as greedy or negligent, might impart “defects of character” to infants as opposed to the noble qualities of elite women (Gavitt 2006). Such concerns were espoused by Christian thinkers, such as Pope Gregory I (590-604), who complained about the “evil custom” of employing wet nurses rather than abstinence during breastfeeding (Thorvaldsen 2008:291). The early medieval wet nurse was thus an ambivalent figure: while her employment was a sign of family status, it may have also reflected a certain disregard for Christian mores. Furthermore, Cosmas of Prague’s account of the birth and baptism of Václav Jindřich, as highlighted at the beginning of this chapter, provides an example of an elite woman nursing her own child in the early 11th century (Wolverton 2009).

At some point, however, the process of transitioning off of the breast had to occur. Medieval weaning foods were likely softened versions of adult diets such as gruel or breads soaked in honey or broth (Beranová 2007; Bourbou et al. 2013; Stránská et al. 2015). Mashes and meals made of millet, barley, or oats were sweetened with honey or dried fruit (Stránská et al. 2008). Popular medieval prescriptions with biblical origins suggested feeding infants rich foods such as honey and cream (Thorvaldsen 2008). The consumption of honey may have also
exposed vulnerable infants to botulism, a potential contribution to overall infant mortality (Lewis 2007; Bourbou et al. 2013). In any case, sweetened and softened carbohydrates would have contributed to the formation of dental caries through the demineralization of enamel (Prowse 2011; Gamza and Irish 2012). Additionally, even softened bread likely contained abrasive inclusions such as bran and grit that could contribute to dental wear (Beranová 2007; Stránská et al. 2008). Of course, such abrasion could also remove small carious lesions.

The skeletal remains of infants at Libice offer insight into the nuances of weaning and the historical forces that may have shaped this process in the early life of a child. Importantly, infants under six months in age would not have had deciduous dentition erupted and exposed to the environment, and so only older infants (aged 0.5-1.5 years) are considered here. Macroscopic dental markers, including caries formation and dental attrition, were assessed to determine if infants were consuming solid foods. It is important to understand weaning not an event, but rather a process with other substances incorporated into the diet over time to replace breast milk (Kendall 2016). These dental indicators confirm that solid foods formed at least part the diet, thereby signifying the commencement of weaning.

The presence of dental attrition is potentially indicative of solid foods causing wear on the teeth (Prowse et al. 2008; Mays 2016). Wear could be caused by the type of food, such as fibrous vegetables; the preparation of food, such as the use of ashes in storage; or even grit in the surrounding environment, such as mineral particles introduced in the milling process (Stránská et al. 2008; Esclassan et al. 2009). Over half of the infants at Akropole had evidence for attrition as compared to only a quarter of Kanín infants (Table 6.5). These infants’ teeth were encountering more abrasive substances, although diet may not be the only explanation. It has also been noted
that hard substances such as tough roots were sometimes offered to soothe teething infants (Ashley 2001; Mays 2016).

**Table 6.5: Evidence for dental attrition among infants**

<table>
<thead>
<tr>
<th></th>
<th>Infants* with teeth</th>
<th>Dental attrition present</th>
<th>% with attrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akropole</td>
<td>13</td>
<td>7</td>
<td>54%</td>
</tr>
<tr>
<td>Kanin</td>
<td>8</td>
<td>2</td>
<td>25%</td>
</tr>
</tbody>
</table>

*Only infants over six months in age (0.5-1.5 years) are considered here.

Even more indicative of weaning are dental caries, lesions caused by the fermentation of food particles. Softer and sweeter foods, such as those offered to medieval infants during weaning, stick to tooth surfaces and contribute to the demineralization of the enamel (Prowse 2011; Gamza and Irish 2012). Infants exclusively nursing are less likely to exhibit these pathologies due to the properties of breast milk (Danielsson et al. 2009; Stránská et al. 2015; Tham et al. 2015; Scott and Halcrow 2017). Almost one third of Akropole infants over six months had caries on one or more deciduous teeth (Table 6.6). In contrast, no infants from Kanín had carious lesions. These results indicate that at least some infants from the Akropole sample were consuming cariogenic foods and were not exclusively breastfed.

**Table 6.6: Evidence for dental caries among infants**

<table>
<thead>
<tr>
<th></th>
<th>Infants* with teeth</th>
<th>Dental caries present</th>
<th>% with caries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akropole</td>
<td>13</td>
<td>4</td>
<td>31%</td>
</tr>
<tr>
<td>Kanin</td>
<td>8</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

*Only infants over six months in age (0.5-1.5 years) are considered here.

Wear and/or dental caries are evident in erupted teeth from over three quarters (77%) of the older infants from Akropole. This suggests that weaning began for at least some of the infants buried here before two years in age. Infants buried at Kanín, by contrast, were less likely to be in the process of weaning before the age of two years. As a comparison, Kaupová and
colleagues (2014) examined isotopic evidence for weaning patterns in Moravia. Their study found that at rural sites children were breastfed through age two, and gradually weaned by age four. The macroscopic dental data suggests that infants buried at Kanín were typically fully reliant on breast milk before the age of two, similar to the rural, lower status infants from the Great Moravian sites. Longer breastfeeding may have enabled lower status children to survive certain health challenges through nutritional benefits as well as shared, embodied immune systems between mothers and children (Miller 2019). As Kendall (2016:21) notes, “delayed weaning is a recognised maternal response to ill-health and vulnerability in children.” Children from the outer bailey and hinterland at Libice may have benefitted from prolonged nursing, particularly if weaning foods lacked sufficient nutrients.

The situation is murkier for the Akropole sample. If we assume the Akropole sample consists of higher status individuals living within the fortified inner bailey, we might expect to see fewer of these infants commencing weaning for two reasons: 1) women with different labor demands than their lower-status counterparts allowing for longer breastfeeding, and/or 2) the employment of wet nurses to prolong breastfeeding. However, the macroscopic dental evidence at Akropole suggests that this is not the case: most Akropole infants were consuming some solid foods before the age of two. So, what might account for this discrepancy?

Higher status children may have had access to more foods, including more nutritious alternatives to breast milk, leading to earlier weaning times (Kendall 2016). On the other hand, Kaupová and colleagues (2014) found that higher status (as indicated by grave goods) may contribute to a later age of weaning. But the urban, mixed-status Great Moravian cemetery also

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126 Three cemeteries were part of the Great Moravian site complex of Mikulčice. The main Mikulčice cemetery represented a more urban, mixed-status population. The other two sites, Josefov and Prušánky, were rural hinterland cemeteries.
exhibited more variability in weaning times when compared to rural counterparts. Some children began weaning before the age of two, while others exclusively breastfed into younger childhood. The relationship between status and weaning may be influenced by other social factors. Indeed, we have also seen some of the ways Christian prescriptions influenced the choices that parents made about breastfeeding practices.

Religious considerations and performance could account for why some Akropole infants, buried as they were in the more overtly Christian space of the Akropole churchyard at Libice, began weaning before infants buried in the grave field at Kanín. Families may have chosen to wean earlier in order to resume sexual activity or due to a subsequent pregnancy. At the same time, the use of wet nurses does not appear to be widespread at Akropole given that this practice would presuppose a longer nursing period. Some of these families may have avoided this option due to Christian moralistic connotations of wet nurses and the transitive properties of breast milk.

Akropole Burial 182 offers an example of how weaning practices, religious prescriptions, and social relationships might converge at infants’ bodies. The teeth of this infant\textsuperscript{127} suggest the introduction of solid foods. Dentin was exposed on the anterior deciduous dentition (the earliest erupting teeth) and a carious lesion was present on the deciduous maxillary first incisor (Figures 6.6a and b). The infant’s diet was thus abrasive enough to cause dental wear, but also included soft, carbohydrate-rich foods that contributed to caries formation. Like many other infants at Akropole, this infant’s skeletal remains show signs of compromised health in the form of active, bilateral cribra orbitalia and patches of active endocranial plaque and increased vascularization on the occipital (Figure 6.6c). These lesions may point to diseases of deficiency including

\textsuperscript{127} Akropole Burial 182 was estimated to be 0.5-1.5 years based on the development of the deciduous molars.
anemia and scurvy, as well as those that cause inflammation (e.g. meningitis) (Lewis 2004; Brown and Ortner 2011; Redfern and Gowland 2012; Bourbou 2014). The dental data suggest that the infant was not exclusively consuming breast milk. A compromised diet reliant on low-nutrient starches and carbohydrates may have contributed to the subsequent formation of cranial lesions.

The infant’s burial reflects Christian influences, including its location northeast of the apse of the Akropole church in line with several other burials (Figure 6.1). Unique to this infant burial, however, were large, erect stones framing the grave on all sides; a pattern that instead mirrors the nearby graves of adults. While this lining may be partially a status indicator, it also provides a protective barrier around the body with probable Christian connotations (Gilchrist 2015). Bronze temple rings were located on either side of the infant’s head. As noted previously, these adornments were typically associated with adult female graves, and may have been symbols of fertility and regeneration.

The combination of stone lining and mortuary artifacts evokes a concern for both Christian eschatology and status in this infant’s burial. When brought into articulation with the
skeletal data, we can see how caregivers providing Christian mortuary ritual might have also acknowledged religious prescriptions in life through the early commencement of weaning for this infant. Burial 182 thus demonstrates how a confluence of family choices, Christian practices, and medieval notions of bodily properties might contribute to the production of a particular body from the cradle to the grave.

In contextualizing skeletal data and contemplating other historical relationships, we see how infant lives and deaths were mediated by family choices and identities nested within wider Christian practices. Variance in the timing and process of weaning among infants might serve as one indicator of how people at Libice engaged with Christian practices at the level of the individual and family. These findings have drawn attention to how early medieval Christian prescriptions were negotiated on a local scale through choices regarding sexual intimacy, family planning, and infant care.

6.6 Conclusions

This investigation of infancy at Libice has revealed some of the complexities of Christianization and the relationships at play in the earliest phase of the medieval life course. Intergenerational relationships are visible in the mortuary contexts of infants at both cemeteries, illuminating how individuals, families, mourners, and communities actively negotiated burial practices within an evolving Christian landscape. Infants had value and social connections that extended beyond the grave. This is evidenced by the close proximity of infants to other burials, and occasional multiple interments involving infants. The interplay of Christian practices and alternative rituals is apparent in the burial practices and grave inclusions bestowed upon infants in both cemeteries.
The skeletal and dental findings for the infants interred at Libice point to varied ritual and practical responses to birth and infancy. The skeletal pathologies present among the infants at Libice draw attention to how these infant lives were intertwined with other relationships that involve biocultural consequences. Medieval families and caregivers influenced infant lives and deaths, most clearly seen here through the process of weaning and compromised maternal health.

The presence of dental caries and attrition, particularly in the Akropole infant remains, suggest that some of these individuals were being introduced to solid food. Although it might be expected that the infants at Akropole would be nursed longer by their higher status mothers or through the employment of wet nurses, we see instead that many began weaning at younger ages. Christian prescriptions may have played a more significant role in these families’ choices than those of infants buried at Kanín. However, the higher pathological loads of Akropole infants also suggest that they were more equipped to survive stressful periods than the infants buried at Kanín. In this case, bioarchaeological assumptions of status in terms of health and mortuary context might be complicated by competing phenomena.

A closer look at this age group has shown how people negotiated Christian prescriptions and eschatology in the care of infants through both life and death. Together, the skeletal and mortuary data suggests that the families of infants buried at the Akropole were more responsive to Christian practices. In contrast, the families of infants buried at Kanín negotiated a wider range of care and burial possibilities. These findings suggest congruity with the mortuary patterns discussed in Chapter 4. In other words, the lived experiences of infants at Libice (and thus their bodies) were also influenced by differential observance of Christian cosmology and prescriptions. Skeletal remains do indicate that social status played a role in the health and subsequent deathways of infants. However, we have also seen how social status might intersect
with different approaches to cosmology to influence infant lives and deaths, as mediated through family choices in care and mortuary practices. This pattern continues in another thematic area that the arrow tip buried with the infant in Akropole Burial 254 alludes to; manifestations of violence and warfare at Libice.

Chapter 7: The sword should not pierce his soul: Violence at Libice

“It was impossible that the sword should not pierce his soul as well, when he saw his brother cut to pieces by the spears of pagans.”\textsuperscript{128}

7.1 Introduction

Medieval historiography often presents violence as a fundamental part of life in the Middle Ages (Halsall 1997; Mitchell 2014). Brown (2010:5) suggests that rather than asking “how violent were the Middle Ages,” a more significant question could be “how were the Middle Ages violent?” In other words, in what ways did violence manifest in people’s lives, and can we see patterns that might influence other life course paths (i.e. where and how they were buried)?

Violence can take many forms: individual encounters, local groups fighting for territory, long distance raiding, or large-scale conflicts between organized militaries (Knüsel and Boyleston 2000; Knüsel and Smith 2014; Mitchell 2014). I here take violence to refer to a harmful and intentional physical interaction between people (Walker 2001; Šlaus et al. 2012; Knüsel and Smith 2014; Martin and Harrod 2015) and examine patterns of interpersonal violence at Libice from an osteological perspective. When coupled with mortuary contexts and the material culture of warfare, we begin to see how the experiences of some of the people at

\textsuperscript{128} Cosmas of Prague (translated by Wolverton [2009:119]) speaking of Gaudentius’ pain at the death of his brother, Adalbert. These two men were formerly known as Radim and Vojtěch of the Slavník family of Libice.
Libice articulate with wider histories of violence in the context of the Church and the Christianization of Bohemia.

Many violent encounters are described in early medieval sources. For example, Cosmas of Prague relates 22 separate instances of interpersonal conflict, in addition to descriptions of battles and other violent encounters (in Wolverton 2009). One particular instance directly involves Libice: a legendary massacre that purportedly took place on September 28, 995.

Cosmas writes:

On a certain feast day, the comites [noblemen] of Duke Boleslav Přemyslid, secretly broke into the burg of Libice, where the brothers of St. Adalbert and all the burg’s warriors stood, like innocent sheep, celebrating the feast with the holy solemnities of the Mass. Like savage wolves, the comites broke through the walls of the burg, killing everyone to a man, male and female. Having beheaded the four brothers of St. Adalbert with all their children before the altar itself, they burned down the burg, bathed the streets in blood, and returned cheerful to their homes, loaded with bloody spoils and cruel plunder. In the burg of Libice the five brothers of St. Adalbert were killed in the year 995; their names are Soběbor, Spytimír, Dobroslav, Pořej, and Časlav.129

This dramatic episode has been used by historians to mark a temporal shift. It signals the end of tribal aristocrats vying for power in Bohemia and the beginning of a truly unified administration under the Přemyslid dynasty in Prague (Vlasto 1970; Panek and Tumá 2009). Of course, this is one instance of violence among many in Cosmas’ chronicle, but it highlights several important factors. First, the role of organized group warfare in the unification of Bohemia is referenced through descriptions of a large military retinue headed by the Přemyslids. Second, this account implicates the involvement of non-combatants by suggesting that the town was sacked and inhabitants killed. Third, there exists an implicit connection between religious activities and violence as the event purportedly occurred on the feast day of St. Václav.130

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129 Translated by Wolverton (2009:80-81).
130 The sack of Libice allegedly occurred sixty years to the day since the assassination and martyrdom of St. Václav on September 28, 935 (Vlasto 1970; Panek and Tumá 2009). Connecting these two events was significant. The timing associates the demise of the Slavníkidi dynasty with the patron saint of the Czechs while also highlighting the
Cosmas’ account reinforces the portrayal of a violent and volatile Bohemia in the 10th century, in which organized and armed groups attacked local communities. Archaeologists have already questioned this assumption, but bioarchaeological evidence has only rarely been used to address the issue of early medieval violence in Bohemia (although see Štefan et al. 2016). A number of questions prompt us to look beyond the textual sources: In what ways did people experience physical trauma – either through accidental injuries, interpersonal violence, or organized conflict? How were violence and warfare embedded in the cultural landscape? And finally, how might the development of Christian institutions manifest violently? As we have seen in Chapter 5, most skeletal fractures identified at Libice are antemortem and suggestive of accidental injury. However, there is evidence in both cemetery samples of interpersonal violence.131

In this discussion of violence, it is important to think about people in an intersectional way – traumatic injury is only one aspect of their lived experience. When coupled with other types of evidence, we might begin to see how trauma and violence were connected to various aspects of identity, including gender, status, and religion. Osteobiography allows us to approach individuals more holistically and place skeletal trauma in the context of the life course and its contingencies. Several individuals are highlighted in this chapter using osteobiographies to gain a better sense of how their wounds were experienced and embedded in wider political and ideological systems.

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131 Both accidental injuries and interpersonal violence often only affect soft tissue but some trauma can leave traces on the skeleton. Analysis of trauma at Libice involved identifying patterns of injury at each burial site with attention to the distribution of antemortem (before death) and perimortem (near the time of death) injuries (Galloway et al. 1999; Novak 2000; Šlaus et al. 2010).
7.2 The bloodied cross: Warfare in medieval Bohemia

Medieval textual sources often embellish descriptions of warfare with classical references that render battles akin to legendary events (Knüsel and Boyleston 2000). The accuracy of these depictions has been questioned for decades, particularly for the volatile early medieval period (Halsall 1997; Ruttkay 2015). Despite the prominent role that warfare played in contemporary chronicles and annals, it remains unclear exactly how fortified settlement sites such as Libice were involved in military activity (Mařík 2009a; Štefan et al. 2016). A close reading of textual and material evidence at Libice draws attention to how martial ideologies and activities were encountered differently by people buried at Kanín and Akropole.

Historical accounts of Czech domestic and foreign conflicts suggest the local Czech aristocracy competed for regional dominance in Bohemia while also encountering political and military forces of the Frankish Empire to the west and the Great Moravian Empire in the east (Wolverton 2009; Krejsová et al. 2008; Bachrach 2013; Štefan et al. 2016). Military participation in early medieval Czech society required both duces and commoners to contribute to the war economy to some degree, including as part of mobile retinues or garrisons supporting strongholds (Sláma 1998; Wolverton 2009). Armed forces were structured by status with an elite, professional equestrian core reinforced by infantry soldiers including peasants and even hired foreigners (Ruttkay 2015).

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132 Some historians have described a surge of violence across medieval Europe around the turn of the millennium, corresponding with nascent feudalism and the rise of fortified centers and castles. Others more cautiously note that particular genres of historical sources tend to emphasize and focus on violence (Halsall 1997; Ruttkay 2015).

133 Krejsová and colleagues (2008) reviewed historical sources for Czech conflicts between the 9th and 13th centuries, finding 34 internal Czech conflicts, 23 military campaigns against Czechs and Moravians, and 65 campaigns involving Czechs in foreign territory.

134 The term duces, is used interchangeably with comes, nobilites, primates, or maiores natus (magnates) by Cosmas to describe the elite ruling class. These terms were likely adopted by chroniclers from Latin descriptions given by foreigners. Essentially the title of a warlord, these terms were applied to the military chieftains and leaders of many Slavic groups in the region (Žemlička 1994; Sláma 1998; Wolverton 2001; Wolverton 2009).
As outlined in Chapter 2, early medieval political structures were deeply intertwined with ecclesiastical institutions. Early Christian liturgy and the writings of the Church Fathers in Late Antiquity made justifications for warfare against pagans and heretics who threatened the church (Nelson 2002; Friend 2015). In this tradition, early medieval elites often cited “quelling pagan revolts” as impetus for invading a territory and conversion as a justification for conquering a population (Curta 2008:20). Military campaigns were thus linked to the principles and interests of the Church. Additionally, there is evidence that clergy throughout Continental Europe were directly or indirectly involved in warfare (Friend 2015). Indeed, violence against clergy is implicated in accounts of the dramatic martyrdom of St. Adalbert himself, at the hands of Prussian pagans (Kantor 1983).

While historical sources describe numerous instances of domestic and foreign military activity, archaeological evidence of military activity at fortified sites remains somewhat lacking (Mařík 2009a; Štefan et al. 2016). However, some archaeological examples include the destruction of walls and burn layers at fortified sites, artifacts suggesting a military presence, and infrequent mass graves (Krejsová et al. 2008; Štefan et al. 2016). At Libice, for example, a partial burn layer within the fortified settlement and a few weapons found throughout the site provide somewhat circumstantial evidence of local conflict. While previous scholarship (see Turek 1971, 1980) has uncritically associated this archaeological evidence with Cosmas’ account of the legendary 995AD massacre, other archaeologists have been more cautious in attributing this evidence to a large-scale attack (Princová 2002; Mařík 2009a).

The defensive fortifications identified archaeologically at Libice do suggest some association with conflict in the region. The inner bailey, which housed the stone church, Akropole cemetery, and ducal palace structures, was surrounded by a ditch and an earthen
rampart. This structure was constructed out of wood with some stone reinforcement (Mařík 2005, 2009a). Yet it would be simplistic to characterize fortified sites such as Libice as military bases. Both archaeological and historical evidence suggests that they were multi-functional, serving as centers of political power, administration, trade, and religion, as well as for military organization (Herold 2012). Protective features such as ramparts may have provided an element of security while also symbolically demarcating elite space and bestowing prestige (Barford 2001).

The archaeological evidence at Libice for warfare is ambiguous at best, with fortified features and infrequent military artifacts suggesting that defenses may have been at least partly symbolic. However, zooarchaeological evidence at Libice also indicates that larger horses bred for riding rather than labor were present at the site (Vaňkátová 2008). These animals, large and strong enough to carry armored men, may have been used by elites as warhorses. Additionally, in mortuary contexts at both Akropole and Kanín, these is some evidence for involvement in conflict. As we will see, however, even this material culture may reflect elite identities rather than direct evidence for interpersonal violence.

7.3 Where the warriors lie: Weapons burials at Libice

In his history of the Czech people, Cosmas notes “Just as a warrior without arms lacks his office, so a duke without warriors has only the title of a duke” (Wolverton 2009:149). In this analogy, Cosmas acknowledges both the integral assemblage that makes up a warrior, and the significance of this figure to early medieval political and martial institutions. Medieval burials

135 Vaňkátová (2008) identified at least two distinctly different sizes of equine remains in Libice zooarchaeological assemblages. She argues that the shorter, stockier animals would have been used for agricultural work or carrying loads, while the larger, taller horses would have been used as riding animals or warhorses for the elite. Similar differences in horse sizes have been found in Poland (Barford 2001).
containing weapons have been identified across Europe and have long been understood as evidence of warfare and professional fighters (Härke 1990; Ruttkay 2015). However, these “warrior burials” may have reflected masculine identity and mythologized ideals of battle played out in the mortuary treatment of elites rather than direct reference to conflict (Scott 2011; Knüsel 2014; Gentile et al. 2018).

Cosmas describes miles, or mounted professional warriors, as carrying an arsenal of weapon such as swords, axes, knives, spears, and javelins (Wolverton 2009). Weapon styles identified archaeologically in Bohemia reflect local as well as Eastern European (Avar) and Frankish traditions, but most would have been forged by local craftsmen associated with fortified settlements (Ruttkay 2015). Forged out of valuable iron ore, tools and weapons were rarely discarded and many were likely re-forged into new items (Barford 2001). However, weapons were not the only burial markers of the elite warrior. An assemblage of equipment that also included spurs, buckles, bits, and other accessories evoked a particular equestrian warrior identity (Gillingham 1999; Wolverton 2009). For example, Ruttkay (2015) notes that over one third of weapons graves in Moravia were found to contain equestrian artifacts as well. Czech foot soldiers would have been only lightly armed with spears, light shields, and even clubs, while expensive iron weapons were the accoutrements of the elite (Ruttkay 2015). Weaponry was clearly linked to social identity, signifying social categories of age, class, and gender - both in battle and in the grave (Halsall 1997; Knüsel 2014).

Table 7.1 presents adult burials containing weapons in the Akropole and Kanín samples. In addition to these weapons, equestrian artifacts included boot spurs and iron pieces interpreted as probable draw reins (Turek 1980). Buckles and belt end pieces also typically accompanied warrior burials as part of elite dress. Finally, the vědérko, a wooden bucket framed by metal
rings, has been associated with travel by horseback as a more durable alternative to ceramic vessels as a means to feed and water horses (Choc 1967; Burešová 2007). These objects are frequently found in early medieval weapons burials alongside spurs. At Libice, vědérky are only found in the Kanín cemetery. Interestingly, vědérky are not present in any Akropole burials, including those with other equestrian equipment. One explanation for this is that people of higher status may not have been caring directly for horses, and so these buckets would not have been typical equipment for these elites.

Table 7.1: Adult burials with weapons and equestrian artifacts at Libice

<table>
<thead>
<tr>
<th>Burial</th>
<th>Sex</th>
<th>Age</th>
<th>Knife</th>
<th>Sword</th>
<th>Axe</th>
<th>Spear/arrow</th>
<th>Spurs</th>
<th>Vědérko**</th>
<th>Buckle</th>
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*These knives or knife fragments were shorter than 14cm, so may not have functioned as weapons (see Ruttkay 2015) but were noted here if the burial contained other weapons and/or equestrian artifacts.

** A vědérko was a wooden bucket structured by iron rings that has been associated with equestrian activity.

The majority of adult individuals buried with weapons are middle-adult males from both cemetery samples, although one middle-adult female from the Akropole sample was buried with an arrow or spear tip. Several burials stand out at each cemetery with particularly rich assemblages, including two burials with axes and spurs from Akropole, and a man with a sword and spurs from Kanín. However, in general these graves contained only one or two weapons.

136 While the two males buried with spurs at Kanín were also buried with vědérky, five other vědérky are present. These objects were found in the graves of two other males, one female, and two children.

137 One subadult burial, infant Akropole Burial 254, contained an iron spear or arrow tip, along with an iron chisel (see Chapter 6).
and/or equestrian artifacts, suggesting a relationship to warfare, but with few examples of elaborately displayed warrior identities.

Kanín Burial 54 is a mortuary context suggestive of a warrior identity for a man who may not have shared the same elite status of others with similar assemblages. Like many burials in the Kanín cemetery, the sandy floodplain soil has caused significant deterioration of the remains, precluding significant osteological analysis beyond a tentative assignment of middle-adult probable male (Figure 7.1a). However, excavation records indicate that he was buried supine in a normative grave and accompanied by numerous objects, including a sword, a knife, spurs, a wooden bucket with iron fittings (vědérko), at least two iron buckles, and belt end pieces (Figure 7.1b).

Figure 7.1: Kanín Burial 54. a) Fragmentary skeletal elements present indicate middle adult male (photo: author). b) Excavation drawing of in situ remains with sword, spurs, vědérko, knife, and three buckles (Mařík 2009a). c) Artistic interpretation of early medieval Czech warrior with sword, knife, spurs, buckles, and vědérko (Poděbrady Museum display).
These artifacts, as well as fragments of dress accessories including buckles and belt fittings, form the typical accoutrements of the medieval mounted warrior. Hošek and colleagues (2008) conducted an analysis of the contents of Burial 54 and concluded that while these objects are valuable and high-status luxury items, the quality of materials and construction are not comparable to more elaborate grave goods of 9th – 10th-century warrior burials.\textsuperscript{138} Additionally, the presence of the věděrko suggests a connection to equestrian activity, but also that he was perhaps more responsible for the animal’s care than people buried at Akropole (Figure 7.1c). The quality and type of the mortuary artifacts coupled with the location of burial in the more peripheral Kanín cemetery complicates the narrative of elite professional warriors receiving exceptional mortuary treatment.

While both cemetery samples at Libice contain burials with weapons as well as examples of more elaborate “warrior” burials, some subtle distinctions can be seen. For example, only burials at Kanín contain věděrky, or wooden buckets. Additionally, the two burials at Kanín containing spurs yielded other interesting characteristics. In the case of Burial 54, the quality of materials is somewhat lacking. Burial 125, a middle-adult male, received particularly unusual mortuary treatment. The skeleton was partially disarticulated with the grave goods clustered in a pile. This arrangement may reflect grave robbing or postmortem manipulation in response to revenant fears (see Chapter 4). Together, the “warrior” burials at Kanín do not share the same elite materials and positions as those at Akropole, many of which are located very near to the church and are larger burials containing wooden construction. This discrepancy may be

\textsuperscript{138} An archaeometallurgical analysis of the weapons revealed that the sword, a type made in the late 9th century and used through the 11th, was composed of welded panels over an iron core. Hošek and colleagues (2008) note that the large blade was a functional weapon but of lower quality than other contemporary swords. The knife, a high-quality serrated blade, was a relatively common luxury weapon in the 10th-13th centuries. The spurs are common early medieval prick spurs plated with tin, found throughout Bohemia (Fern 2005; Hošek et al. 2008).
accounted for in part by a difference in status between the two cemeteries. However, as we will see in the next section, certain elite warriors may have sought to emphasize their connection to Christianity in both life and death.

In later medieval literature, the mounted warrior is often depicted as an assemblage of a man, his weapons, and his horse (Crane 2012). The concept of the mounted warrior might be understood as an intersection of humans, animals, and materials, enabling new configurations in both life and death. From the mortuary contexts at Libice, it is clear that warrior characteristics are evoked to some degree in both cemeteries, but we do not yet have a sense of how (or if) this identity becomes inscribed on the body. Macrohistories of medieval warfare and violence develop in and through the lived experiences of people. One individual at Libice exhibits a skeleton marked by these histories as he embodied a mounted warrior identity in both life and death.

7.4 Embodying the warrior

Only one person from either cemetery sample was buried with weaponry and also exhibited skeletal evidence of interpersonal violence. The osteobiography of Burial 261(a) offers an example of how an elite equestrian warrior personhood might be embodied at Libice with wider implications for understanding the relationship between violence and Christianity in early medieval Bohemia. His experience may be unique at Libice, but it demonstrates how social identities and material relationships might converge over the course of a life history and a microscale event within that life.

When considering how a particular social identity might become embodied, it is important to take into account the relationships that shape bodies. For example, Malafouris
(2008) presents weaponry as potential agents in the process of Mycenaean personhood, contributing to the lived body and traversing its boundaries. Muscles and bones change in response to repeatedly wielding a sword, and the weapon extends and transforms the body’s position in space. As Malafouris explains, the sword is a body part beyond mere metaphor. There is a material reality to the relationship in that “physical bodies, rather than simply our ideas about bodies, are changing.” Likewise, Knüsel (2011) links patterns of traumatic injuries to physical exertion in youth (such as longbow training or wrestling) that are part of a process of coming of age for a particular gender category through both physical and material transformations. By noting when these injuries occur during the lifecourse (i.e., in youth), Knüsel demonstrates the medieval development of an embodied masculine identity through practice, material culture, and the physical body. Approaching archaeological bodies in terms of the relationships that shape them enables new ways of thinking about the material consequences of these encounters.

Burial 261(a) was determined to be a middle adult, probable male. The individual was buried in the southern section of the Akropole cemetery. While the skeletal data suggests that the life history of Burial 261(a) is fairly typical of adult males at Libice, the mortuary artifacts in Burial 261(a) indicate a particular social identity: an elite equestrian warrior. The artifact assemblage in Burial 261(a) includes spurs encircling the bones of the feet and a barbed hatchet below the right hand (Figure 7.2). The burial also contained a fragment of a knife blade, iron shears, and various iron fragments and fittings, some of which have been interpreted as part of

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139 This burial was part of a cluster of at least four closely associated and overlapping burials all designated 261(a-d).
140 A biological profile of Burial 261(a) outlines an initially unremarkable life history. For example, mild degenerative changes are typical of middle-adult males in the Akropole sample, including mild osteophyte development in the joints of the hip and the presence of a Schmorl’s node in a lower thoracic vertebra. The teeth exhibit mild to moderate occlusal wear and lack dental disease, while linear enamel hypoplasias (LEHs) on the premolars and molars indicate that he survived periods of physiological stress in both infancy and early childhood (Moorees et al. 1963a, 1963b; Goodman and Rose 1990). These skeletal data suggest that Burial 261(a) survived multiple periods of compromised health in childhood with his body undergoing some degenerative changes related to activity in adulthood.
draw reins (Turek 1980). Scott (2011) has pointed out that medieval ‘warrior’ burials might not reflect participation in armed conflict, but rather elite performance of a particular masculine identity and idealized warfare. However, skeletal evidence from Burial 261(a) indicate parallels between the social identity codified in the mortuary context and a particular personhood embodied during life.

Figure 7.2: Burial 261(a) (Archives of the Národní muzeum). A middle-adult probable male buried with a barbed hatchet (white arrow) and spurs at the feet.

An early medieval elite warrior would have spent a considerable amount of time on horseback (Gillingham 1999; Wolverton 2009). Burial 261(a) exhibits a localized periostean reaction on the midshaft of the right femur, medial to the well-developed linea aspera. The location of the periostitis suggests it may be related to activity of the adductor muscles (Molleson 2007). It is important to stress that skeletal activity markers can rarely be linked to particular occupations as similar bony responses can occur from different habitual activities. While any activities that habitually require pulling the legs together would make use of this muscle group, the artifacts buried with this man implicate possible equestrian activity. Indeed, repeated minor trauma to the tendons of the adductor muscles (and subsequent trauma-induced periostitis) has been identified in horseback riders (Molleson 2007; Andelinović et al. 2015). Together, the
skeletal data and mortuary context may therefore suggest a continuity of mounted warrior identity in both life and death.

In addition to these activity markers, there are skeletal traces of wounds that occurred at, or very near, the end of Burial 261(a)’s life which deepens his connection to mounted warfare. Perimortem trauma consistent with sharp force from an edged weapon is present on the cranium (Figure 7.3a), the right innominate, and the right femur (Figure 7.3b). These wounds draw attention to violence in the context of medieval warfare and how injuries might reflect particular styles of fighting. Wounds to the hip, buttocks, and knee are common medieval battle injuries, representing weak points in armor or clothing (Novak 2000). However, the trauma to Burial 261(a) is concentrated on the right side and the postcranial wounds indicate that the blade came from an inferior aspect, less commonly observed in hand-to-hand combat (Novak 2000; Šlaus et al. 2012; Giuffra et al. 2015).

Figure 7.3: Burial 261(a) trauma (photos: author). a) Anterior view of frontal bone with four shallow cuts above the right orbit (black arrows). b) Blade wound (white arrow) on distal joint surface of the right femur. Note the blade sheen visible inferior to the postmortem damage.

All lesions were determined to be perimortem based on the lack of bone remodeling at the fracture margins (Novak 2000; Šlaus et al. 2012). The cranium exhibits four shallow cuts on the right anterior surface of the frontal bone. An additional four likely blade wounds are present on the anterior iliac spine of the right innominate in the form of horizontal chops approximately 10-20mm apart and varying in depth. Finally, the right femur exhibits a blade wound on the medial condyle of the distal joint surface with a characteristic polished surface (Novak 2000) that is partly obscured by postmortem breakage and erosion (Figure 7.8b).
In Ingelmark’s (1939:178) analysis of skeletal remains from the 1361 Battle of Wisby, he reported a high frequency of trauma to the right leg and attributed this in part to the techniques of mounted warfare, noting: “[a mounted man] generally tries to turn the right side of his horse towards his opponent.” While other possibilities certainly cannot be ruled out (e.g. he was lying on the ground), Burial 261(a) may have sustained at least some of these injuries while on horseback, facing an opponent armed with a heavy blade (Giuffra et al. 2015). In any case, this encounter vividly demonstrates how different materials (weapons, armor, flesh, and bone) and entities (human combatants, horses) might converge to leave particular traces in the body.

The skeletal and mortuary data gleaned from Burial 261(a) offer important insights into the scale and impact of early medieval warfare in Bohemia. For example, the fact that Burial 261(a) was buried in the churchyard at Libice, rather than a clandestine battlefield grave, suggests that he most likely died nearby. While medieval bodies could certainly be moved long distances, this practice was typically reserved for particularly special bodies, such as those of saints and kings (Robb 2013a; Tracy and DeVries 2015). This evidence lends credence to contemporary depictions of local military operations against and between fortified sites in the 9th and 10th centuries as Czech polities vied for dominance.

Burial 261(a) also implicates further connections between early medieval Czech military operations and Christian practice and performance. In addition to a normative supine position and west-east orientation, Burial 261(a) has evidence of a wooden construction surrounding the burial. Beyond a likely indicator of high status, these burial linings were also perceived of as protective, securing the body from damage that might interfere with eventual resurrection (Gilchrist 2015). More broadly, while warrior burials stand out as relatively ostentatious in the sparsely accompanied graves of the Akropole cemetery, they are nevertheless frequently found
in close proximity to the church. As we have seen, early medieval military activity was conceptually linked to the interests of the Church. Elite warriors like Burial 261(a) may have validated their actions through divine justifications, promoting this connection to the Church during life but also reinforcing it in death through churchyard burial and Christian mortuary practices.

A confluence of materials, practices, and temporalities have allowed a particular personhood to manifest in Burial 261(a) beyond the presence of martial artifacts in a grave. The skeletal remains have shown how articulations of weapons, spurs, horse, and human can result in certain bodily consequences. These material relationships unfold over the lifecourse – and in particular moments - through the habitual activity they engender and the traumas they enable. In the lived experience of warrior personhood, we can see how Burial 261(a) participated in macroscale narratives of political violence and Christianization. Importantly, his body also becomes a site of intersection between these histories, revealing potential links between warfare and Christian identity at the scale of an individual life and mortuary context. Burial 261(a) has shown how a warrior personhood might be embodied throughout a life history, but also in a single event, through encounters with macrohistories, materials, and other living beings.

7.5 Collateral damage: Other violent encounters

While Burial 261(a) offered a detailed glimpse at how organized conflict can permeate the life course, the interpersonal violence experienced by other people at Libice was not necessarily indicative of warfare. Instead, these encounters may reflect a greater prevalence of other types of violence at Libice, including punitive or gendered violence (Mitchell 2014). A close examination of various individuals exhibiting weapon-related trauma at Libice reveals
different ways that interpersonal violence manifested in this early medieval settlement. Perhaps most interestingly, both males and females at Libice were victims of interpersonal violence, including the use sharp force weaponry.

An analysis of interpersonal violence at Libice requires attention to the co-occurrence of skeletal indicators of deliberate violence, including sharp-force injuries, craniofacial injuries, and perimortem injuries (Jurmain et al. 2009; Geber 2015; Giuffra et al. 2015). The head and face are often primary targets because injuries to these areas are particularly painful and debilitating (Walker 1997; Knüsel 2014). Therefore, craniofacial injuries, focusing on the facial and frontal regions combined, are of interest for intentional trauma. Blunt trauma, depending on its manifestations, can usually be interpreted as the result of falls or other accidents, although certain injuries may be the result of violence, particularly in a domestic context (Novak 2006; Kjellström 2009; Redfern 2017a, 2017b). Sharp force trauma, on the other hand, is rarely accidental and such weapon-related injuries typically indicate interpersonal violence. Finally, perimortem trauma suggests that the person did not survive long after the assault.

Four adults from the Akropole skeletal sample and one adult from Kanín exhibited evidence for perimortem weapon trauma (Table 7.2). A second Kanín adult (Burial 156, discussed below) exhibited lesions suggestive of weapon trauma but the wounds were healed. Importantly, only one of these individuals (Akropole Burial 261(a), discussed above) was buried with artifacts associated with warfare. Composite diagrams of cranial (Figure 7.4) and

\[\text{Description of wounds are based on criteria outlined in bioarchaeological literature. Sharp force trauma involves narrowly aligned force such as a knife, sword, or axe cut. For all sharp force trauma, the direction of the blow was established based on the orientation and appearance of the cut surface (Novak 2000; Giuffra et al. 2015). Blunt force trauma from lower-velocity and large surface area impacts (such as blows from clubs or falls) results in bone breakage due to direct impact or through indirect bending or twisting. Projectile trauma is characterized by a high-velocity impact in a small area, often resulting in entrance- and exit-wounds and extensive radiating fractures (Novak 2000; Williamson et al. 2003; Šlaus et al. 2010). While most projectile trauma in modern and more recent historical archaeological cases is the result of gunshot wounds, in an early medieval context, projectile injuries could occur from arrow or spear wounds (Brodholt and Holck 2012).}\]
postcranial trauma (Figure 7.5) illustrate patterns in the location and type of violence. Most sharp force trauma to the skull (60% of cranial wounds) was concentrated in the facial region (frontal, maxillae, zygomatics, or mandible).

Table 7.2: Perimortem violence-related trauma at Libice

<table>
<thead>
<tr>
<th>Burial</th>
<th>Sex</th>
<th>Age</th>
<th>Number of wounds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cranial</td>
</tr>
<tr>
<td>Akropole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>128</td>
<td>M</td>
<td>OA</td>
<td>0</td>
</tr>
<tr>
<td>169</td>
<td>M</td>
<td>MA</td>
<td>10</td>
</tr>
<tr>
<td>261(a)</td>
<td>M</td>
<td>MA</td>
<td>4</td>
</tr>
<tr>
<td>264</td>
<td>F</td>
<td>MA</td>
<td>6</td>
</tr>
<tr>
<td>Kanin</td>
<td></td>
<td>OA</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 7.4: Composite diagrams of cranial sharp force trauma at Libice (combined Akropole and Kanín samples).
Additionally, three people exhibit a combined total of 26 separate wounds concentrated on the posterior surface of the bones of the left forearm. Within the context of other trauma, these wounds are most likely parry injuries occurring while blocking an attack (Novak 2000; Judd 2008; Šlaus et al. 2012). For example, a young adult female, Burial 264, sustained 14 separate wounds to the left radius and ulna, the result of at least nine separate blows (Figure 7.8b).

Figure 7.5: Composite diagram of postcranial sharp force trauma at Libice (combined Akropole and Kanín samples).
The types and locations of weapon trauma suggest that these people may have experienced violence under different circumstances. Excessive violence, particularly in the form of multiple, fatal wounds to the skull, has been noted in many medieval contexts (Knüsel and Boyleston 2000, Novak 2000, Geldof 2015; Geber 2015; Krakowka 2017; Łukasik et al. 2019). However, not all violent encounters are the result of a military engagement and the interpretation of intentional injury must be made with care (Martin and Harrod 2015). As a case in point, the many shallow cuts and nicks present on the postcranial remains of Akropole Burials 128 and 169 do not fit with a combat explanation but instead suggest possible mutilation of the body (Mitchell 2014; Geber 2015) (Figures 7.6a and b). Indeed, numerous wounds are found in the groin region of both men, and Burial 169 exhibits a slicing wound to the left temporal indicating that the left ear may have been cut off (Figure 7.6b). Historical sources, including Cosmas of Prague, describe mutilating wounds such as cuts to the groin as a means of punishment and humiliation occurring both during and after battle (Wolverton 2009; Geber 2015).

Figure 7.6: Possible mutilation trauma (photos: author). a) Akropole Burial 128 medial surface of right tibia shaft with at least 16 shallow cut marks (along black bracket). b) Akropole Burial 169 left temporal with slicing wound through origin of zygomatic process (black arrow).
Attributing all of this violence to a battle context is speculative without further connecting evidence and other interpretations cannot be discounted. For example, judicial punishment in early medieval Europe also entailed mutilation of facial features or other body parts (Skinner 2015). Alternatively, the dozens of small cuts on the long bone shafts of Akropole Burials 128 and 169 are similar to patterns of excarnation (defleshing)\textsuperscript{143} (Duncan 2011; Bello et al. 2016). However, defleshing and dismemberment are fairly uncommon in medieval contexts and tended to be reserved for European aristocracy who died far from home (Weiss-Krejci 2005). As both of these individuals were buried in normative graves as extended, complete inhumations, this explanation is rather unlikely (Turek 1980). These alternative contexts for interpersonal violence highlight possible intersections between violence and other aspects of identity. In particular, several traumatized bodies at Libice draw attention to manifestations of gendered violence.

7.6 The maidens’ war: Gendered violence

The historical record indicates that women were not spared from violence in early medieval Bohemia. High status women were notably implicated in violent encounters, sometimes as both victims and perpetrators (Wolverton 2009). For example, St. Ludmila, the grandmother of St. Wenceslas, was purportedly strangled during a palace revolt on the orders of her daughter-in-law (Kantor 1983). However, most medieval violence against women appears to be domestic in nature, that is, perpetrated by an intimate partner or family member. Documented throughout medieval Europe in court records, domestic abuse was a relatively common facet of the patriarchal structures of medieval life (Balzaretti 1998; Kjellström 2009; Shapland et al.

\textsuperscript{143} Duncan (2011) notes that cutmarks not related to joints may reflect defleshing rather than dismemberment.
Such intimate violence could be tacitly sanctioned by the Church as a means for men to control women, perceived as an inferior sex (Kjellström 2009). Skeletally, these types of assaults tend to manifest as blunt injuries to the craniofacial region and torso (Novak 2006; Allen et al. 2007; Martin and Harrod 2015).

Three adult females from Libice exhibit antemortem cranial trauma (Table 7.3). These injuries may have been accidental, but a violent incident such as a blow to the head cannot be ruled out (Novak 2006; Redfern 2017a). For example, Akropole Burial 8, an old adult female, exhibited four well-healed depression fractures on the cranium. Two of these fractures had distinct, oval margins suggesting that they may be the result of a blow from an object, rather than a fall (Kjellström 2009). Interestingly, all three women were old adults (45+ years). While these injuries may have occurred earlier in the life course, the fact that all three of these women are old adults may indicate a heightened risk of violence for older medieval women, potentially reflecting elder abuse (Redfern 2017a).

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<tr>
<th>Burial</th>
<th>Sex</th>
<th>Age</th>
<th>Number of wounds</th>
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<td>Cranial</td>
</tr>
<tr>
<td>Akropole</td>
<td>8</td>
<td>F</td>
<td>OA</td>
</tr>
<tr>
<td></td>
<td>233</td>
<td>F</td>
<td>OA</td>
</tr>
<tr>
<td>Kanin</td>
<td>156</td>
<td>F</td>
<td>OA</td>
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</table>

Violence against women entailing the use of sharp force appears to be significantly rarer in a medieval context (Kjellström 2009). However, three females at Libice exhibit sharp force trauma, including one of those with antemortem trauma (Kanín Burial 156, and see Table 7.2). Some possible interpretations of these injuries include women as victims of organized violence (i.e. military attacks), punitive measures including execution, and the possible role of women in combat (McLaughlin 1990; Goodman 2015; Grauer and Miller 2017). The legend of the “Maidens’ War” suggests that female combatants were part of the medieval Czech imagination.
Recounted by both Kristián and Cosmas, this was a mythical uprising of Czech women warriors (Klassen 1999; Wolverton 2009). According to a 14th-century version, a female warrior, Vlasta, raised an army of women against the patriarchal rule of men. One of her lieutenants, Šárka, led a group of women in the slaughter of armed men, in a valley near Prague that is today known as Divoka Šárka (Wild Šárka). The women were ultimately defeated by men at Vyšehrad Castle (Klassen 1999). A closer look at two women at Libice with blade wounds demonstrates how violence may manifest in women’s bodies, as well as how these encounters could have lasting consequences on their lived experiences—and beyond. Importantly, the two women are from Kanín and Akropole, respectively, and their osteobiographies further juxtapose ritual expressions in these two cemeteries.

Kanín Burial 156 contained the flexed remains of an old-adult probable female. She has several indicators of poor health, including severe dental disease with multiple active abscesses. The postcranial remains exhibit moderate degenerative changes, typical of older adults in this skeletal sample. Important here, however, is that she also exhibits several traumatic injuries potentially indicative of interpersonal violence. Most prominent is a large lesion (52x17mm) on the left parietal, just posterior to the coronal suture (Figure 7.7). While the margins are irregular, the anterior margin is roughly linear with reactive bony overhang, suggesting a possible blade wound. The blade would have struck her head from behind and to the side. Significant bony reaction in the area indicates subsequent infection and remodeling of the wound.

In addition to the cranial lesion, this woman also has a large (56x21mm), oval callus of smooth lamellar bone on the lateral surface of the distal right tibia. Radiographs reveal a small

144 All posterior teeth have been lost antemortem with complete resorption. Severe attrition is present on the four remaining teeth.
metal object embedded in the cortical bone, possibly the tip of a weapon (Figure 7.8). Finally, she also has a well-healed, incomplete fracture to the shaft of the left second rib—the same side as the large blade wound to the head. All of the trauma is antemortem with significant bony reaction. As it is difficult to estimate the timing of well-healed injuries, we cannot know if these wounds occurred in a single event or at different points in her life. However, this individual survived each of these injuries and carried the physical results (including incorporating metal remnants into her skeleton) for the rest of her life.

Figure 7.7: Kanín Burial 156 cranium (photos: author). a) Healed cranial lesion at coronal suture, probable trauma (white arrow). b) Enlarged view of the cranial lesion.

Figure 7.8: Kanín Burial 156 right tibia (photos: author and Národní muzeum radiology technician). a) Distal right tibia (inferior view) with large callus on lateral surface (white arrow). b) Radiograph (lateral view) showing a small piece of metal embedded in the shaft (red arrow).
While the grave of Burial 156 is normative in size and orientation for the Kanín cemetery, the body was placed in a highly unusual position in the center of the grave. The woman’s arms were outstretched, and the lower limbs were bent at the waist and tightly flexed at the knees (Figure 7.9). Flexed burial may have been an accepted alternative to extended supine burials, proscribed by family or community practices (Reynolds 2009; Farrell 2011). However, it is significant that this individual is flexed in a grave clearly sized for extended inhumation. The unique burial circumstances of Burial 156 may be related to her unusual experiences of trauma and the subsequent effects on her life.

Figure 7.9: Kanín Burial 156 (Mařík 2009a). The body is tightly flexed in a normally sized and oriented grave.

This woman’s social relationships and subsequent life experiences would have been affected by her injuries and the physical consequences, including probable deafness. The extensive remodeling of the cranium has resulted in bony occlusion of both ear canals. The result was that she was likely deaf at the time of her death. While this and other potentially disabling conditions in the Libice remains will be more fully addressed in Chapter 8, it draws attention to how earlier life events might channel later ones, shifting people onto different life course paths (Robb 2019). Persons with perceived disabilities or markers of physical difference such as trauma have sometimes been found to receive unusual burial treatment (Murphy 2008; Hadley
As will be explored further in Chapter 8, medieval people with unusual deaths or unusual life circumstances were sometimes perceived as dangerous (Hanuliak 2007; Tsaliki 2008; Aspöck 2011). These beliefs were based in pre-Christian conceptualizations of the body and afterlife but might be enacted within a Christian context (Dunn 2009; Čulíková 2011; Gilchrist 2012). The Kanín cemetery, with numerous unusual burials, may have been a space where these alternative rituals could have played out with fewer restrictions. Burial 156 represents a rare example of a female victim of sharp force violence who survived her wounds; her unusual life experiences may have also altered her death course, contributing to a unique mortuary treatment at Kanín.

In contrast to this woman’s experiences with trauma over the extended life course is the fate of a young adult female (20-29 years) at Akropole who met an extremely violent death. Akropole Burial 264 was found to have multiple deep, blade wounds in her cranium (Figure 7.10) indicating that it was not just men whose bodies were traumatized by heavy, bladed weapons. Wounds to the superior and posterior surfaces of the cranium suggest that her attacker struck from different positions, including from above and from behind, or potentially while she was lying prone. Indeed, these blows came with such force that radiating fractures extend from the wounds, including a diastatic fracture opening the sutures and a hinge fracture encircling the base of the cranium. The fracture patterns indicate that the superior-most blow came before the blows to the back of her head.

In addition to these cranial wounds, Burial 264 also exhibited extensive postcranial trauma. At least nine separate blows have resulted in 14 wounds to the left posterior radius and ulna (Figure 7.11). These shallow cuts and chops are indicative of parry wounds to the left forearm while blocking an attack. One chop had enough force to fracture both long bones. Other
postcranial trauma includes nine stab wounds on five left ribs indicating that she was stabbed in the upper left part of her back. Finally, a cut slicing through the fifth and sixth cervical vertebrae would have resulted in decapitation.

Figure 7.10: Akropole Burial 264 cranium (photos: author). a) Superior view of the cranium with two perimortem sharp force wounds (black arrows) nearly bisecting the cranium in two locations. b) Posterior view of the cranium showing the two wounds visible in 7.10a (uppermost arrows) as well as two additional chops to the occipital.

Figure 7.11: Akropole Burial 264 left forearm (photo: author). Distal posterior surfaces of the left radius and ulna with eight visible cuts (black arrows) and chops (red arrows).

This woman’s horrific death and mutilation is strikingly similar to that of the martyred Václav (St. Wenceslas). As described in his *vitae*, Václav was struck over the head with a sword,
stabbed in the ribs, hit in the arm, and ultimately dismembered\(^\text{145}\) (Kantor 1983). These parallel trauma patterns may be significant, as Libice had several historical connections to Václav and his martyrdom, including the sack of Libice occurring 60 years to the day of his death (Vlasto 1970).

Despite the extensive trauma that this young woman experienced, she was buried in a normative position in the Akropole cemetery – an ‘intact’ body lying with the head to the west (Turek 1980). While certain special bodies, such as saints and kings, might be divided for religious or political purposes, there was much ambivalence about the fragmented body in medieval cosmology (Walker Bynum 1991, Tracy and DeVries 2015). Following concerns about bodily integrity for the Resurrection, separated body parts and pieces might be gathered together in death (Gilchrist 2012). Indeed, Václav’s mother, Drahomíra, collected the mutilated pieces of his body and clothed him before burial (Kantor 1983). Once again, Burial 264 parallels this narrative as even with clear evidence of decapitation, she was buried ‘intact’ in anatomical position. Buried in a normative Christian grave near the Akropole church, Burial 264 offers a vivid example of how female bodies could be subject to extensive violence while also showing a concern for the sanctity and completeness of the body in death.

The types of injuries experienced by these two women are not typical of “domestic violence,” in the classic sense of the way trauma patterns manifest (Novak 2006, 2017a; Redfern 2017b). Rather, these injuries reflect how women could also be implicated in warfare, potentially as collateral victims or even participants. Importantly, the wounds experienced by these women may have informed their divergent treatments in death. Kanín Burial 156 may have been placed

\(^{145}\) “Thereupon the Devil inclined Boleslav’s ear and corrupted his heart…and he struck him over the head with his sword. And Wenceslas [Václav] turned around and said, ‘What have you plotted?’ And seizing hold of him, he lunged forward and fell against him, and said, ‘May God forgive you this, brother.’ Now Tuzá came running and struck him on the arm, and Wenceslas released his brother and ran toward the church. And Hnévysá came running and pierced his ribs with his sword, and Wenceslas gave up the ghost, saying, ‘Lord, into Thy hands I commend my spirit.’…And they hacked Wenceslas apart and left him unburied.” Translation of First OCS Life of Saint Wenceslas by Kantor (1983:148-9).
in an unusual position as a reflection of the (physical and social) consequences of her trauma. The Kanín cemetery offered space for such unusual ritual expression. In contrast, the traumatized but normalized body of Akropole Burial 264 conforms with concepts of bodily cohesion within the space of the church cemetery. These two osteobiographies thus present different manifestations of the intersections between violence, gender, and cosmologies at Libice.

7.7 Conclusions

The evidence for interpersonal violence at Libice has drawn attention to life course risk factors, warrior identities and lifestyle, gendered violence, and the potential role of the Church in medieval violence. Historical sources describe early medieval Bohemia as marred by periods of warfare, ranging from raiding and ritual feuds, to large-scale organized military action. While the osteological evidence for violence at Libice is relatively sparse, it does suggest that violent encounters were a reality for some of the people who lived and died in this community. The osteobiography of Burial 261(a) provides firmer evidence of local, violent conflict near Libice, while also showing how organized violence might be tied to religious justifications at the level of individual experience and burial context. A warrior identity, embodied in both life and death, could therefore contribute to large-scale narratives of political violence and Christianization beyond the walls of Libice.

Violence at Libice may have also had a ritual component, with evidence for both mutilation and decapitation. In most cases, it is not clear that the trauma was battle-related, and instead may have been the result of punitive measures or individual assaults. The two cemeteries at Libice have shown divergent attitudes toward violence, particularly in a gendered context. All people with perimortem trauma at Akropole were buried in normative graves, suggesting that a
violent demise did not necessarily warrant unusual mortuary treatment. Indeed, Akropole Burial 264 was buried in a normative manner in spite of her traumatic bodily fragmentation at death. However, Kanín Burial 156 was singled out by unusual mortuary treatment that may have been related to the trauma she experienced and its subsequent consequences on her life and health.

The violent encounters coded in these skeletal remains have been shown to intersect with cosmologies in ways that informed different life (and afterlife) experiences at Libice. Like traumatized bodies, the bodies of people who suffered from disease and impairment were also sites of intersection for aspects of identity and cosmology. The final thematic section explores these ‘othered’ bodies at Libice.

**Chapter 8: Afflicted and crippled: Disease and ‘othered’ bodies**

“A small boy – afflicted and crippled by a disease of the body... – invoked [St. Ludmila] and the power of Christ. He was righted and completely restored to health”

**8.1 Introduction**

For medieval Christians, the health of the body was inseparable from the health of the soul (Paxton 1992; Cusack 1997). Medieval miracle narratives describe miraculous interventions, the majority of which concerned “acute and chronic illnesses, disabilities, and emotional disorders” (Gordon 1991:4; Finucane 1997). Beyond miraculous cures, medieval Slavs integrated clerical and secular approaches to illness in which “specific tools, objects, plants, animals or minerals were used to treat a disease in relation to attributes of its symptoms” (Matczak and Chudziak 2018:437). Lay persons could act as healers with local knowledge of plant properties and other treatments. However, visiting the sick was also an important duty of

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146 One of the miracles that occurred during the first anniversary of the translation of the relics of St. Ludmila, a Czech martyr. From the *Passion of the Martyr Ludmila* (translated by Kantor [1983:162]).
the clergy. The ritual care of the ill, including anointing with blessed oil, expressed concern with spiritual as well as physical health (Paxton 1992). The connection between the condition of the body and religious principles and practices suggests that we might be able to see different bodies produced through different engagement with Christianity.

A general impression of physical health at Libice can be approached through non-specific skeletal indicators of disease and stress (i.e. cribra orbitalia, periostitis, and endocranial lesions). The etiology of these conditions is not specific and they can be the result of an array of causal mechanisms, but offer important clues to disease and stress in past bodies (Blom et al. 2005; Walker at al. 2009; Wheeler 2012; Klaus 2014; Lewis 2017; Snoddy et al. 2018).

Appendix C presents an assessment of non-specific skeletal lesions at Libice, however, few statistically significant differences were found between the two cemetery samples. Take, for example, periostitis. Non-specific periostitis was common in both cemetery samples, with a combined 57% of all adults at Libice exhibiting postcranial periosteal lesions. Although more adults at Akropole exhibited lesions, the difference was not statistically significant. This finding potentially reflects similar disease loads between the two burial locations. In many ways these

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147 Cribra orbitalia presents as lytic lesions or porosity in the eye orbits linked to anemia as well as other dietary deficiencies or infectious diseases more broadly (Lewis and Roberts 1997; Roberts and Manchester 2005; Vercellotti et al. 2010; Hens et al. 2019 and see Appendix C).
148 Periostitis refers to inflammation of the periosteum, the osteogenic tissue surrounding the bone (Lewis and Roberts 1997; Ortner 2003; Waldron 2009; Rittemard et al. 2019 and see Appendix C).
149 Endocranial lesions include porotic lesions, formative lesions, vascular impressions, and hair-on-end formations on the interior surface of the cranium (Lewis 2004; Sun et al. 2019 and see Appendix C). These non-specific lesions have been linked to several diseases as well as metabolic disorders such as rickets or scurvy (Ceconi et al. 2007; Janovic et al. 2015; Cooper et al. 2016; Snoddy et al. 2018).
150 Non-specific indicators of stress and infection provide insights into health status and well-being even when a specific etiology cannot be assigned. Indeed, the “cause” of most skeletal and dental lesions described in the paleopathology literature are the result of multiple factors that influence formation and loss, or alteration in shape and form (Manifold 2014; Reitsema and McIlvaine 2014; Yaussy et al. 2016). As such, examining a “series of skeletal indicators of physiological disruption or disease” (Temple and Goodman 2014:186) is a means of approaching health through skeletal remains. Importantly, interpretations of health and disease from skeletal populations are also complicated by issues of frailty (individual susceptibility to disease), cemetery population demographics, and selective mortality (individuals’ different histories of illness) (Wood et al. 1992; Wright and Yoder 2003; Pinhasi et al. 2013).
two groups of people appear to have experienced similar environments, diets, and disease exposure—at least as best we can surmise from their skeletal remains. However, when we look closely at the manifestations of some specific diseases, we can see how social status, religious practices, and life experiences intersect in certain bodies at Libice.

Bodily difference could complicate notions of the sacred and sinful, of health and illness, and of normative and ‘other’ forms. This chapter examines disease and impairment at Libice, including the social implications and individual experiences of several conditions. It is possible to identify some specific infectious conditions through their distinct distribution of skeletal lesions, including leprosy and tuberculosis. Contextualizing these diseases and the people who suffered from them reveals different social reactions to illness in the burial spaces at Libice and beyond. First, however, I turn to physical impairments and disease more broadly and the unruly bodies that resulted. Perceived impairments provide insight into how Christian practices and beliefs were enfolded into life and death at Libice.

8.2 Medieval impairment and disease

Among the “cacophony” of medieval bodies (Walker Bynum 1995:7) were non-normative forms that disrupted social understandings of wholeness, the sacred, and physical and spiritual health. Perceptions of non-normative bodies, disease, and physical impairment are contingent on particular socio-historical contexts. A “comprehensive view of bodily alterity” attunes us to a “vast landscape of medieval difference” in which disease and impairment are embodied as facets of identity that foster particular relationships (Chace 2017:3). These interactions might involve other people (care, ostracism), the natural world (causes, cures), and
religious discourses (sin, morality). Encounters with these ‘othered’ bodies might produce new configurations of humans, substances, and objects (Metzler 2006; Chace 2017).

Impairment can be defined as a structural or functional problem of the body that may restrict activities (Roberts 2017). Physical impairments could result from a congenital disorder, an acquired disease, or accidental and intentional injuries. After Irina Metzler’s foundational work on medieval impairment, I refer to impairment as a physical reality and disability as a socially coded response to impairment (2006, 2013). People with physical conditions that were acknowledged as impairing in the Middle Ages included “crippled (contracti, defecti, decrepiti), blind (caeci), mute (muti) or deaf (surdi) people; epileptics (epileptici); and children born with congenital deformities (monstra)” (Metzler 1999:13). Permanent physical impairments placed sufferers in a liminal space between healthy and ill, often socially marginalized by their conditions (Metzler 1999, 2013). However, it is important not to assume a particular condition would have been disabling in a medieval context (Lee 2012; Garner 2017). In fact, we might consider how certain impairments could be enabling. Cusack (1997) cites an example from hagiographic literature in which a paralytic injury allowed a woman to avoid an undesirable marriage and instead devote herself to God and eventually achieve sainthood.

Like other facets of identity, disability is informed by the biological body but socially constructed (Brownlee 2017). Even ‘impairment’ has to be considered in a cultural context (Shuttleworth and Meekosha 2017). We must ask: in what ways might a medieval person be impaired and thus experience pain and/or functional limitations? Certain confluences of identity could affect if a condition was impairing or not (i.e. old age, gender, social status). For example, a woman with a facial disfigurement might experience this impairment differently than a man. She might keep her face covered and the disfigurement hidden due to gendered expectations.
about impairment and aesthetics as well as gendered differences in medieval dress (Skinner 2017). Other facets of identity, including social status, could intersect with experiences of impairment. Many physically impaired individuals were marginalized and impoverished because of their conditions, or poverty itself might influence how a particular condition was perceived (Metzler 2013). Of course, people of all social strata could experience impairment. For example, Thietmar of Merseberg provides an early 11th-century account of the blinding of Duke Boleslav III of Bohemia as punishment by the Duke of Poland (Skinner 2017).

Illness and impairment should not always be conflated, as there could be differences in perceptions of a ‘healthy’ impaired person versus a ‘sick’ impaired person (Metzler 2013). In the medieval humoral system, illness was conceived of in part as an imbalance, in which the body’s stable state was disrupted by an excess or lack of particular substances (Meaney 1992). Popular disease theories in the early Middle Ages included corrupted air, known as miasma, spreading pestilence and disrupting the body’s humoral balance (Jones 2016). The landscape itself could contribute to, or produce, unhealthy, foul-smelling air. Such a dangerous substance might manifest in urban spaces through the detritus of humans and animals, and in natural spaces through stagnant water, winds, and other natural phenomena (Jones 2016).

In a medieval Christian worldview, illness and impairment did not necessarily represent punishment for sin (Metzler 2006; Scarborough 2015; Brownlee 2017; Chace 2017). Deformities were still aspects of God’s creation (Scarborough 2015; Cusack 1997). Furthermore, medieval sources drew on biblical representations of Jesus’ miraculous cures that were often ambiguous about the morality of the afflicted (Metzler 2006). Illnesses that resulted in physical deformities, such as leprosy, could render a person not just physically impaired, but monstrous (Scarborough 2015).

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151 Early medieval charity was less discerning about care and assistance to the poor than in the later Middle Ages when ‘deserving’ and ‘undeserving’ beggars were distinguished (Metzler 2013).
2015). However, even the monstrous qualities of the leprous body were ambiguous. While leprosy was thought to be the castigation of a sinful soul, lepers could also be perceived of as holy intercessors whose prayer could assist in achieving divine mercy (Freedman 2002).

Hagiographic literature offers insights into the “therapeutic landscapes” of the early Middle Ages (Horden 2014). Healing via miraculous cures occurred when saints or their relics acted as conduits for the healing power of the holy (Metzler 1999). Medieval saints were entangled within discourses of bodily difference by virtue of their extraordinary bodies that offered healing and transformation, further associating them with marginalized and ‘othered’ bodies seeking cures (Scarborough 2015; Chace 2017). Indeed, Christ was presented as a figure of healing who also endured crippling wounds, reflecting the ambivalence of holy bodies and bodies marked as ‘other’ (Wheatley 2010; Chace 2017). Sacred sites and the bodies of saints therefore had the potential to be “[loci] of medieval caregiving” representing a coalescence of non-normative bodies (Chace 2017:11). Individuals suffering from disease and physical impairments, such as lepers, were known to travel pilgrimage routes seeking alms and cures from sacred sites and relics (Brenner 2010).

This abundance of paralytics and otherwise physically challenged people seeking miraculous intervention highlights the connection between Christianity and the impaired body. Nearly one-third of all miracles recorded for canonization justification in the 14th century were cures for paralysis and other motor issues (Metzler 1999). The vitae of medieval saints offer accounts of a wide variety of impairments alongside miraculous cures at holy places. These descriptions can be considered examples of lived experiences of impairment and disability (insofar as a person was unable to perform certain activities) (Metzler 2006; Scarborough 2015). However, some attempts at curing impairment were deemed outside of Christian bounds. For
example, Metzler (1999) notes an 11th-century penitential admonishing a woman for the pagan act of drawing her child through the earth at a crossroads to cure them of some affliction. Crossroads were potential sites of pagan activity, including illicit burial after Christianization (Wolverton 2009). Libice’s position as a settlement at a crossroads could have facilitated alternative practices, such as pagan curative rituals, that might not be visible archaeologically.

Historical sources do provide some insight into early medieval Czech experiences of disease and impairment, primarily through descriptions of miraculous cures. For example, the 10th-century chronicler, Cosmas of Prague, describes numerous miraculous recoveries from illness that are attributed to the interventions of Czech saints. In recounting the opening of Adalbert’s sarcophagus, Cosmas notes the pleasant scent of the corpse and how it cured many people through its fragrance alone (Wolverton 2009). In Bishop Gumpold of Mantua’s Legend of St. Wenceslas, a woman came to the saint’s tomb on his feast day and was healed despite being “devoid of her eyesight and from her birth her hands were curved in a cramp so that she was deprived of all use of them” (Miladinov 2012:71). These accounts graphically depict some of the ailments experienced in early medieval Bohemia. Bioarchaeology offers further insight into the sociocultural implications of impairment through the actual bodies of those living with physical differences.

Bioarchaeology allows us to integrate different forms of evidence including historical, archaeological, and osteological data to gain a more holistic understanding of disease and impairment in the Middle Ages. Incorporating critical disability studies also encourages bioarchaeologists to go beyond clinical descriptions of a pathology and consider the lived experience of impairment and disability (Brynes and Muller 2017; Shuttleworth and Meekosha 2017). Shuttleworth and Meekosha (2017:29) reframe pathology as “variant human corporeality”
by first assessing the functional impact of a pathology and then situating the condition in a sociohistorical context. Of course, many physical impairments do not involve the skeleton (such as blindness, mental impairment, and certain soft tissue disfigurements) and so osteology only provides information on a subset of people with impairment. Some osteologically visible impairments might include dysplasia, kyphosis, scoliosis, deafness, facial deformities, limb deformities, and restricted movement of the limbs (Brownlee 2017). Likewise, many diseases do not leave traces in bone. Those that do are often chronic and not immediately fatal so an individual might live long enough for skeletal signatures to be present (Ortner 2003). The result is that only certain disease experiences are accessible through skeletal remains.

The impacts of impairment and disease can be difficult to demonstrate osteologically. For instance, experiences of pain and the inability to perform a particular function are challenging to infer from skeletal remains (Tilley and Oxenham 2011; Brynes and Muller 2017; Brownlee 2017). However, a few carefully contextualized cases suggest that such lived experiences can be approached through a bioarchaeological lens. For example, Huggins (1978) describes an Anglo Saxon old-adult male from Essex with congenitally dislocated hips and argues that he may have relied on crutches for mobility, based on enlarged ligament attachments on the clavicles. Likewise, Kralová and colleagues (2019) present osteological data on a young adult female from Pohansko with both spinal trauma and tuberculosis. They determine that she likely had reduced mobility and required care to survive long enough for skeletal changes to develop.

A discussion of impairment and disease also requires consideration of medieval networks of care. In bioarchaeology, a theory of care has been developed with a four-stage methodology to assess the biological and social implications of a particular condition (Tilley and Oxenham 2011; Tilley 2015; Schrenk and Martin 2017; Tilley and Schrenk 2017). Addressing the provision of
care based on skeletal remains requires careful contextualization (Tilley and Oxenham 2011; Worne 2017) and a consideration of how bioarchaeologists might ethically and honestly approach politics of care (Chamoun 2020). Indeed, the very idea that disabled people would have required care is based on an assumption that they could not support themselves (Brownlee 2017). While I do not employ the Index of Care model (Tilley and Cameron 2014) here, I do consider the ways in which impaired individuals might have relied upon alternative social and material practices in an early medieval context.

8.3 Afflicted bodies: Physical impairments

The confluence of bodies interred at Libice include some marked by disease and physical impairment. Contextualizing the remains of these people offers insight into how their lived experiences were shaped through relationships to the Church, disease ideologies, and social norms. Indeed, the church at Libice was a potential nexus for these relationships as it may have been a site for miraculous cures. Some accounts suggest that when the Přemyslid ruler Václav (St. Wenceslas) was assassinated in 935, his most devoted followers fled to Slavník territory and remained at Libice.\textsuperscript{152} It has been postulated that Libice was associated with St. Wenceslas and the advent of Czech Christianity as much as or more so than Prague (Vlasto 1970:97).

While the Akropole church yielded no burials within the structure, a sunken feature in the center of the transept may have been an interment that was later moved or destroyed (Mařík 2014). High status individuals and saintly bodies or relics often received privileged positioning and burial \textit{ad sanctos} near the altar of the church (Hadley 2001). Medieval Czechs could have sought healing at Libice, and some of their afflicted bodies may have been buried at the site.

\textsuperscript{152} While the relics of Wenceslas and Adalbert were located elsewhere, the connection of Libice to both saints may have made its church a particularly holy site and a destination for those seeking miracles in the region.
Skeletal remains provide clues to experiences of impairment at Libice. An examination of pathological conditions draws attention to twelve adult individuals153 (8.5% of adults) who may have been perceived of as impaired (Table 8.1). While a differential diagnosis may suggest several possible causes for the observed pathologies (see Appendix C), many of these conditions would have clearly affected mobility, posture, and activity. Importantly, perhaps, is that the majority were interred at Akropole, although the preservation differences between the two samples is a concern here. Furthermore, half of these impaired individuals were older adults and two thirds were men. Each of these aspects of identity could have impacted experiences of impairment and necessitate further exploration.

Conditions that impacted mobility and posture were the most common, such as several cases of bony ankylosis (fusion) of limb joints. Others, such as probable lepromatous leprosy and a paralytic neuromuscular condition, likely resulted in bodily deformities. Still others did not cause visible bodily differences but may have significantly altered the typical life course. For example, one older-adult female, Kanín Burial 156, would have been deaf due to the bony occlusion of the ear canals probably related to healed cranial trauma (see Chapter 7). Like historical accounts of Duke Boleslav III who was blinded as an adult, this woman faced impairment later in life.

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153 No subadult remains were found to exhibit major skeletal pathological lesions that could be considered impairing.
Table 8.1: Osteological evidence for impairment at Libice

<table>
<thead>
<tr>
<th>Burial</th>
<th>Sex</th>
<th>Age</th>
<th>Osteological evidence for impairment</th>
<th>Probable physical consequences</th>
<th>Mortuary context</th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td>M</td>
<td>YA</td>
<td>Destructive lesions to bones of feet, probable lepromatous leprosy</td>
<td>Deformities to the feet, mobility affected</td>
<td>Possible atypical: likely flexed legs, stone lining</td>
</tr>
<tr>
<td>126</td>
<td>M</td>
<td>YA</td>
<td>Scoliosis</td>
<td>Posture and possibly mobility affected, asymmetry in humeri suggests possible use of a crutch</td>
<td>Burial in cluster with three subadults</td>
</tr>
<tr>
<td>207</td>
<td>M</td>
<td>MA</td>
<td>Lytic destruction of right proximal femur, possible tuberculosis of the hip</td>
<td>Mobility affected</td>
<td>Wood and stone lining</td>
</tr>
<tr>
<td>106</td>
<td>M</td>
<td>MA</td>
<td>Neoplasm (possibly eosinophilic granuloma), probable tuberculosis, fractures to right clavicle,</td>
<td>Mobility affected, possible neurological consequences</td>
<td>Possible atypical: skull rotated in grave</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>left scapula, and several ribs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>249</td>
<td>M</td>
<td>MA</td>
<td>Neuromuscular disorder, possible paralytic poliomyelitis</td>
<td>Mobility affected, physical deformites to lower limbs, large muscle attachments in arms suggest use of crutches or arms for mobility</td>
<td>Atypical: crouched burial, artifact: knife in backfill</td>
</tr>
<tr>
<td>80a</td>
<td>M</td>
<td>MA</td>
<td>Spinal arthropathy, pseudarthrosis of lumbar vertebrae</td>
<td>Posture and mobility affected</td>
<td></td>
</tr>
<tr>
<td>206</td>
<td>M</td>
<td>OA</td>
<td>Ankyslosing spondylitis, ankylosis of left elbow, lytic destruction of left knee joint</td>
<td>Posture and mobility affected</td>
<td>Wood and stone lining</td>
</tr>
<tr>
<td>69</td>
<td>F</td>
<td>OA</td>
<td>Severe arthropathy, possible systemic rheumatoid arthritis, ankylosis of right elbow</td>
<td>Mobility affected, probable chronic pain</td>
<td>Small stones in grave</td>
</tr>
<tr>
<td>240</td>
<td>F</td>
<td>OA</td>
<td>Bilateral healed Colles fractures</td>
<td>Wrist mobility limited</td>
<td>Immediately above Burial 240a</td>
</tr>
<tr>
<td>165</td>
<td>F</td>
<td>OA</td>
<td>Ankylosis of left elbow</td>
<td>Arm mobility affected</td>
<td>Small stones in grave, artifacts: iron knife, silver earrings, glass bead</td>
</tr>
<tr>
<td>155</td>
<td>M</td>
<td>OA</td>
<td>Kyphosis, tuberculosis</td>
<td>Posture and possibly mobility affected, large humoral muscle attachments suggest use of crutches, chronic poor health likely due to pulmonary tuberculosis</td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>F</td>
<td>OA</td>
<td>Healed severe cranial trauma, bilateral complete bony occlusion of ear canal</td>
<td>Deafness, possible neurological consequences of cranial trauma and infection</td>
<td>Atypical: crouched</td>
</tr>
</tbody>
</table>

The timing of impairment during the life course could impact how disabling a condition was. For example, old age might be accompanied by disabling conditions requiring different care.
than those of younger people. Chronic illness and frailty resulting in increased susceptibility to trauma could alter the lived experiences and capabilities of the elderly (Metzler 2011, 2013). Half of the individuals at Libice with impairments were older adults (45+ years). These people primarily suffered from advanced joint conditions (Figure 8.1) and healed fractures that would have limited mobility and likely required some care or, at a minimum, alternative modes of activity. However, because old age was generally considered a period of less productivity and increased physical limitations, the experiences of these individuals and their caregivers may have been relatively typical and expected in a medieval context (Shahar 1997). Alternatively, impairments that occurred earlier in life, such as healed fractures or the occluded ear canals of Kanín Burial 156, could have resulted in well-rehearsed activity adjustments by later stages of the life course.

Figure 8.1: Akropole Burial 69 right arm (photo: author). This old-adult female exhibits bony ankylosis of the right elbow joint (lateral view). The olecranon process of the proximal ulna has fused to the olecranon fossa of the distal humerus, resulting in immobility of the joint and restriction to an oblique angle. Visible joint surfaces at the elbow exhibit extensive destruction consistent with a severe arthropathic condition and further articular surface deterioration throughout the skeleton.

Another aspect of identity that could impact the perception and experience of an impairment was gender. One third of the individuals found to have impairments were female, and all four were older adults. Women’s suffering, in particular, could be associated with the holy. For example, a 10th-century chronicle describes how a woman’s paralysis resulted in more
time to devote to prayer (Metzler 2006; Brownlee 2017). Males with osteological evidence for impairment at Libice tended to be young or middle adults with rather unique conditions including possible cases of leprosy, scoliosis, neoplasm, and poliomyelitis. The association between younger men and these conditions at Libice might be in part explained by the relative social freedoms experienced by medieval men (see Chapter 5), potentially facilitating opportunities for travel to seek cures and other forms of healing or intercession.

Importantly, the physically impaired might find relief in death. St. Augustine declared that people with deformities would be made whole and normal upon the resurrection (Scarborough 2015). This may explain why some individuals exhibiting physical differences received normative treatment in death. Indeed, Metzler (2013) uses the term ‘liminal,’ rather than marginal, to describe those with impairment, as their condition might be considered betwixt and between, rather than excluded or outside. However, four individuals with pathologies at Libice received unusual burial treatment that could reflect the social implications of their impairments. For example, flexed or crouched burials in cemeteries where extended inhumation was the norm might indicate outsider status or other forms of difference (Reynolds 2009; Farrell 2011).

The location of burial may also be of significance to representations of bodily difference. The majority of people with impairments (83%) were buried in the Akropole cemetery. This initially might seem surprising, given the presumed higher status of the cemetery within the fortified enclosure and the fact that many medieval individuals with impairment were impoverished and marginalized. However, if the church at Libice was indeed associated with important Czech martyrs, it may have drawn people seeking miraculous cures. Additionally, we have seen that some people with impairments could be associated with the holy through their perceived suffering.
One man buried in the Akropole cemetery provides a deeply contextualized example of the potential relationships between impairment and Christianity. Akropole Burial 249 contained the well-preserved skeleton of a middle-adult male with bilateral limb asymmetry and skeletal atrophy indicating neurogenic paralysis of the legs. The abnormally short and gracile long bones of the legs with atrophic diaphyses (Figure 8.2) suggest a pathological condition beginning in childhood that resulted in paraplegia (Worne 2017). Differential diagnosis includes traumatic spinal injury as well as neuromuscular disorders such as paralytic poliomyelitis and cerebral palsy. The hip dysplasia evident in the left innominate, bilateral femoral neck anteversion, and the concentration of the musculoskeletal changes in the leg bones suggest paralytic poliomyelitis as the most likely diagnosis (Martin and Potts 2012; Novak et al. 2014; Schrenk et al. 2016).

Figure 8.2: Akropole Burial 249 (photos: author). a) Side by side anterior view of the right humerus and femur (note the relatively short length and atrophied shaft of the femur). b) Gracile and atrophied right tibia and fibula. c) Burial 249 skeleton in anatomical layout (note the size disparity between the upper and lower limbs).
Poliomyelitis is a viral infection affecting the central nervous system that is transmitted orally through contact with fecal material (Roberts and Manchester 2005; Smallman-Raynor et al. 2006). While most people infected with poliovirus will be asymptomatic or experience minor illness, a small percentage of infections involve the central nervous system and can lead to an acute, paralytic form of the disease (de Jesus 2007; Worne 2017). Skeletally, paralytic poliomyelitis can manifest as bone atrophy, disruptions in growth and development, scoliosis, hip dysplasia, and changes to the knee and foot. Paralysis can be asymmetrical and typically involves the muscles of the legs more often than the arms (Novak et al. 2014; Worne 2017).

A disease of considerable antiquity, paleopathological cases of poliomyelitis have been identified in Neolithic and Bronze Age Great Britain as well as ancient Egypt. Furthermore, art and iconography from Egypt to the Renaissance depict individuals with lameness and hypertrophy of the limbs that may represent the effects of poliomyelitis (Smallman-Raynor et al. 2006). There is limited bioarchaeological evidence for the disease in medieval Europe, although Novak and colleagues (2014) report two individuals with neurogenic paralysis in later medieval Croatia. An early medieval adult male at Raunds in Great Britain was buried with a pebble in his mouth and may have suffered from poliomyelitis while later developing tuberculosis (Gilchrist 2008). Like the man at Raunds, Akropole Burial 249 also received unusual burial treatment.

Akropole Burial 249 was located in the southern area of the Akropole cemetery in a normative west-east alignment. The burial pit was relatively small, however, and the skeletal remains were placed in a tightly crouched position along the southern wall of the grave with the head facing south (Figure 8.3a). The arms were bent at the elbows and the legs were tightly drawn up to the torso. Such a position is unique in the Akropole cemetery in which nearly all individuals were buried in extended, supine positions. A crouched burial turned to the side may
suggest particular care, possibly representing a sleeping position (Gilchrist and Sloane 2005), or a symbolic return to the Slavic “womb of the earth” (Gardeła and Duma 2013). In this case, burial position may acknowledge this man’s bodily difference and unique lived experience with paralysis and alternative mobility.

An iron blade was found in the backfill of Burial 249 and so its association with the burial is uncertain. However, this unique blade with a pointed tip (Figure 8.3b) has been identified as a possible liturgical blade (referred to symbolically as the ‘spear’) used to cut the host during the eucharist (Turek 1971). It is likely significant that such an unusual object was found in close association with a man exhibiting a rare impairment as well as highly unusual mortuary treatment. Together, this evidence suggests a connection between this individual and the Church beyond the location of his burial near an ecclesiastical structure. Medieval miracle accounts frequently describe cripples and people with limb deformities seeking cures at sacred sites. Bishop Gumpold of Mantua recounts how a crippled man with contracted legs moved on the ground “like a reptile.” Following a vision, he paid traders to carry him to the tomb of the
Czech martyr, St. Wenceslas, where he was cured \(^{154}\) (Miladinov 2012). Akropole Burial 249 may have sought such a cure at the church at Libice, or he may have been associated with holy suffering based on his physical impairment. In any case, his burial in connection with a sacred liturgical object further reinforces a relationship between the church and bodily difference.

Akropole Burial 249 offers several other significant insights into early medieval experiences of impairment. Beyond his neurogenic paralysis, other pathological conditions include periosteal rib lesions suggestive of a chronic respiratory infection. Like the early medieval man at Raunds (Gilchrist 2008), this man may have experienced further compromised health later in life. While he likely required some level of care, particularly during the acute phase of the poliovirus (Martin and Potts 2012), well-developed muscle attachments in the upper arms and shoulder girdle suggest that this man was capable of at least some mobility. He may have used crutches or pulled himself with his arms like the crippled man described in Bishop Gumpold’s *Legend of St. Wenceslas*. Finally, Burial 249 draws attention to disease landscapes as poliomyelitis is linked to denser populations and close human-to-human contact (Schrenk et al. 2016). As a trade hub with a relatively large population around the fortified site, Libice may have been a locus for many pathogens ranging from poliovirus to the bacterium that caused leprosy. Leprosy, as a medieval condition at the intersection of disease and impairment, also held a particularly complex relationship to Christian notions of sin and the body.

\(^{154}\) The account describes how “in the province of the Franks, there lived a man who was from his very childhood unable to walk on his feet: and, because of the nature of his deformity, he could not move upright, but wriggled on the ground like a reptile.” He saw a vision and was told to take a “journey to your own health” and by giving “the tradesmen who were spread all along the way a satisfactory fee, he was quickly taken by them to the destined place.” He was carried by others into the church where “for the admirable merits of the blessed martyr Wenceslas, the nerves of his legs, which had been contracted at first, stretched out with something like a cracking sound, while his feet and soles acquired stability. He arose healthy, thanks to God, and….came out of the church sturdily, without anyone’s support, marching with a step restored to health and vigor.” (Bishop Gumpold of Mantua, translated by Miladinov 2012:75).
8.4 A stigmatized body: Leprosy

Leprosy was an infectious disease that loomed large in the medieval imagination, often resulting in physical impairment with unique social implications. Known today as Hansen’s disease, leprosy is a chronic bacterial infection caused by *Mycobacterium leprae* that affects the skin, bones, and nerves as well as other tissues (Walker 2009; Kjellström 2012). The contagious disease begins as a pulmonary infection or through skin-to-skin contact and has a long incubation period (Rubini and Zaio 2009; Christensen et al. 2013).

Skeletal lesions can result from the presence of the *M. leprae* bacterium and from secondary nerve damage and ulceration (Rubini and Zaio 2009). Rhinomaxillary changes to the facial bones are considered pathognomic indicators of lepromatous leprosy, an aggressive form of the disease. This may include resorption of the anterior nasal spine and destruction of the anterior alveolar margin of the maxillae (Ortner 2003; Kjellström 2012). Postcranial lesions typically involve symmetrical, bilateral changes to the lower legs, including striated periosteal deposits on the distal two-thirds of the tibiae and fibulae shafts. Erosive lesions in the distal phalanges of the hands and feet are also common indicators of leprosy. These lesions include resorption and a narrowing, or ‘penciling,’ of the distal ends of the phalanges (Ortner 2003; Roberts and Manchester 2005; Rubini and Zaio 2009; Kjellström 2012).

Historical and archaeological evidence of leprosy is rare in early medieval Central Europe. One explanation proposed is that it was not until the crusades of the 12th century that *M. leprae* spread throughout the region (Dokládal 2002; Strouhal et al. 2002; Likovský et al. 2006). However, a handful of bioarchaeological cases attest to the movement of this disease prior to the crusades (Likovský et al. 2006; Rubini and Zaio 2009; Boldsen et al. 2013; Lunt 2013). Pilgrims, military campaigns, and trade routes all contributed to the dispersion of leprosy in early medieval
Europe (Rubini and Zaio 2009). Indeed, any of these factors may have brought the disease to Libice.

The social context of leprosy in the early medieval period is not well understood. The relative rarity of the disease in this period means that the stigmas of the later Middle Ages may not yet have taken deep root (Roberts 2011; Lunt 2013). Eventually, lepers were ‘othered’ by the physical manifestations of their illness. Indeed, by 1280, a leprosarium was established at the Church of St. Lazarus\(^\text{155}\) in Prague, in order to separate the afflicted from the rest of the population. Even today, the street name Lazarska marks its former presence in the heart of Prague (Strouhal et al. 2002; Ellul 2011), reflecting the long history of the disease and its enduring traces in the historical landscape of Central Europe. In the 9\(^\text{th}\) and 10\(^\text{th}\) centuries, however, lepers may have been relatively unusual, and the social significance of their condition even more variable.

Rawcliffe (2006) notes that while leprosy was easily recognizable as a disease, it also elicited a wide array of social responses, from respect to horror. Leprosy was a particularly significant condition from an early medieval Christian perspective, as lepers were thought to be marked by God. In some contexts, the disease could represent a physical manifestation of sin, while in others the afflicted could be admired and sympathized with as God’s redeemed (Rubini and Zaio 2009; Scarborough 2015). Leprosy, unlike some other diseases, was not considered contagious in the early medieval period, but rather “a chronic illness that resulted from internal bodily corruption” (Brenner 2010:391). Despite this corruption, the obvious suffering of lepers led to medieval perceptions of leprosy as a ‘holy disease.’ In suffering on earth, lepers were

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\(^{155}\) The biblical figure of Lazarus was frequently associated with medieval lepers. In the gospel of Luke, Lazarus was a suffering poor man who went to heaven immediately upon his death (Miller and Smith-Savage 2006).
thought to find immediate salvation in the afterlife (Freedman 2002; Miller and Smith-Savage 2006; Brenner 2010).

One individual in the Akropole cemetery exhibits skeletal lesions consistent with lepromatous leprosy. Akropole Burial 93 contained the nearly complete skeleton of a young adult male (Figure 8.4a). The postcranial remains exhibit pathological changes in the lower legs and feet that closely resemble secondary lesions of leprosy (Likovský et al. 2006; Rubini and Zaio 2009; Kjellström 2012; Lunt 2013). A striated, periosteal reaction is present bilaterally on the lower third of the diaphyses of the tibiae and fibulae, which has resulted in thickened diaphyses with irregular proliferative bony growth, particularly on the fibulae (Figure 8.4b) (Kjellström 2012). Widespread periostitis is present on the dorsal surfaces of the calcanei, and all of the tarsals bones present exhibit destructive lesions. Several metatarsals have active periostitis on the diaphyses as well as lytic changes in the metatarsophalangeal joint surfaces. Five proximal phalanges are present, with destructive lesions on both the proximal and distal joint surfaces, including one with nearly complete destruction of the distal end and a characteristic “penciling” shape (Figure 8.4c).

Paleopathological diagnosis of leprosy is not certain without the presence of the suite of bone changes to the face (facies leprosa) (Walker 2009; Christensen et al. 2013). The skull of Burial 93, unfortunately, is not present with the postcranial remains in the repository of the National Museum in Prague. A survey of pathology in the Libice collection by Hajniš (1964) noted that the skull of this individual was used for a facial reconstruction project through the Hrdlička Museum of Mankind (Figure 8.5a). The current location of the skull is not known, although an image of “Libice Man’s” skull in the survey exhibits possible evidence for rhinomaxillary remodeling (Figure 8.5b). There appears to be significant loss of alveolar bone in
the region of the maxillary incisors (including the possible antemortem loss of the anterior dentition) and remodeling of the inferior nasal aperture. Without an analysis of the skull, the diagnosis of leprosy is not conclusive, but together the skeletal evidence is strongly suggestive of this disease.

Figure 8.4: Akropole Burial 93. a) Schematic of present burial elements (white), absent elements (black), and pathological elements (gray). b) Green inset: bilateral proliferative bone activity on the distal third of the fibulae (medial view). c) Red inset: un-sided proximal foot phalanges with destructive lesions on the joint surfaces (plantar view). Note the “penciling” shape of the left-most phalanx.
The young age of this individual, not unusual among those with skeletal evidence of leprosy (Lunt 2013), indicates that he would have faced the debilitating nature of this disease through adolescence and early adulthood. The medieval cosmological perception of youth as the “summertime” of life, an age of productivity and fertility (Gilchrist 2012), may have been experienced quite differently by this young man. Importantly, he likely also suffered from a chronic respiratory infection such as tuberculosis (see section 8.5), as several ribs exhibit periostitis on the visceral surfaces of the vertebral ends. Biomolecular research has indicated a connection between *M. leprae* and *M. tuberculosis* (Kjellström 2012) and a compromised immune system due to leprosy may have left this individual vulnerable to other infections (Walker 2009; Christensen et al. 2013). Beyond the debilitating deformities of leprosy, the disease could also cause damage to the voice and blindness. The medieval association of lepers
rilling small bells may have had less to do with warning people of their contagion, and more with seeking out alms and drawing attention despite challenges with speaking and sight (Brenner 2010). Though loss of voice and sight cannot be gauged from the skeletal remains, the mortuary treatment of Burial 93 may reflect perceptions of his illness as well as his lived experience.

Akropole Burial 93 was located just southwest of the church. The grave was recessed into a leveling layer that defines the chronology of the site, marking a significant construction phase around the mid-10th century (Turek 1971). The interjection into this horizon of rubble, sherds, and the fragments of construction ties this grave to the later phase of site (Mařík 2014, 2009). The large, flat stones lining his grave also attest to this later date, reflecting a transition in mortuary practices from wood-lined tombs to those of stone (Mařík 2005). The position of the body is recorded in the excavation survey as supine with the arms outstretched and the legs bent with the knees angled to the south (Turek 1971). Such a deviation from a fully extended, supine position is highly unusual in the Akropole cemetery, although burials with flexed limbs were fairly common at Kanín (Mařík 2009a).

The burial of this individual within the grounds of the church suggests his acceptance in the Christian community at Libice. As such, his condition may not have been stigmatized as a manifestation of sin. However, the unusual position of his legs suggests other ways that bodily difference may have been represented in burial ritual. In other cases of leprosy reported in early medieval Central Europe, individuals were accorded normal burial treatment (Likovský et al. 2006). It is possible that while the disease was recognized and feared in relation to living bodies, the dead bodies of lepers were less potent (Rubini and Zaio 2009). Alternatively, early medieval lepers may have been afforded more social freedoms than during the epidemics and leprosaria of the later Middle Ages (Miller and Smith-Savage 2006).
The presence of this young man in the Akropole cemetery, in close proximity to the church at Libice, highlights the relationship between the Church and afflicted bodies. And as we have seen, Burial 93 was not the only person with a debilitating physical condition to be buried in the churchyard. The lived experiences and mortuary contexts of these individuals reveal intersections between the Church, the body, and notions of disease and impairment at Libice. Another disease, tuberculosis, offers further insight into how disease experiences might differ between the two cemeteries.

### 8.5 Contagious air: Tuberculosis and respiratory infections

Infectious diseases (as we now consider them) were enabled and exacerbated in the medieval period by more crowded living conditions, proximity to domesticated animals, sanitation issues, and pathogens moving via trade routes (Mitchell et al. 2011; King and Henderson 2013). Several significant trade routes linked Bohemia to wider markets, including an overland road into Poland that crossed the Cidlina River at Libice (Sláma 2000). This network—from the Baltic, to the Mediterranean, to Western Europe—allowed people, materials, and pathogens to range far across the early medieval landscape, including through Libice. Skeletal evidence suggests that one of these pathogens, tuberculosis, almost certainly plagued the early medieval people living at Libice.

Tuberculosis is a bacterial disease with a long history in both humans and animals. Infection by *Mycobacterium tuberculosis* usually begins in the lung and moves to bone through the circulatory and lymphatic systems, but the disease can also be introduced gastrointestinaly from infected animal products (Roberts and Buikstra 2008; Cooper et al. 2016). Medieval manifestations of tuberculosis include scrofula, or the King’s Evil, a non-pulmonary tuberculous
infection of the neck lymph nodes that was believed to be cured by the holy touch of a monarch\textsuperscript{156} (Roberts and Manchester 2005; Thomas 2006). Scrofulous lesions reinforced the medieval connection between the state of the body and sin, as the bodies of the poor were most likely to be infected (Lauer 2017). Indeed, Christian concepts of contagion often linked the spread of disease to moral failings among the populace (Jarcho 2000; Gordon 2014).

Bioarchaeological evidence suggests that pulmonary forms of tuberculosis were also present in the Middle Ages. Recent bioarchaeological research has identified medieval cases of probable tuberculosis in the Czech Republic, Poland, Switzerland, Slovakia, England, Sweden, and Serbia (Djurić-Srejić and Roberts 2001; Kjellström 2012; Dawson and Brown 2012; Kyselicová et al. 2015; Cooper et al. 2016; Ciešlik 2017; Kralová et al. 2019).

Pulmonary tuberculosis, and respiratory conditions more generally, may have contributed to the perceived connection between sin and disease as well as a fear of the dangerous dead (Gordon 2014; Lauer 2017). Revenants, or the returning dead, plagued medieval imaginations in Central Europe and beyond (Barford 2001; Navrátilová 2005; Caciola 2016). Deaths from disease, violence, or accidents, as well as the occurrence of misfortune such as a poor harvest, were thought to result in certain dead returning to trouble the living (Hanuliak 2007; Tsaliki 2008; Aspöck 2011). Epidemics, in particular, may have “structure[ed] the perceived agency of the revenant,” as outbreaks of disease were causally linked to ‘bad deaths’ (Gordon 2014:62). Medieval sources describe how communities plagued by the returning dead could also suffer from ambient pestilential vapors. Indeed, the contagious nature of the pulmonary form of tuberculosis and other respiratory infections was likely one source of these perceived miasmas\textsuperscript{157}

\textsuperscript{156} This perceived healing power offered political advantage to medieval European kings by reinforcing a ruler’s divine right and authority over the populace (Lauer 2017).

\textsuperscript{157} The late 12\textsuperscript{th}-century ghost narratives in \textit{Historia Rerum Anglicarum} by William of Newburgh provide several English examples of the dead returning from the grave to terrorize and sicken the living.
The so-called “vampire” epidemics of the 19th century even more explicitly link corpses to contagion as well as the signs and symptoms of pulmonary tuberculosis (Sledzik and Bellantoni 1994; Lauer 2017). While this connection has not been made for the medieval period, I argue that the presence of tuberculosis in a community may have been a contributing factor to perceptions of the dangerous dead bringing illness to other family members or close acquaintances of the deceased.

Skeletal manifestations of tuberculosis most commonly affect the spine. Spinal tuberculosis, or Pott’s disease, involves the destruction of the ventral surfaces of the lower thoracic and lumbar vertebral bodies (Kjellström 2012; Cooper et al. 2016; Pederson et al. 2019). Seven skeletons at Libice exhibited lytic lesions on vertebral bodies. For example, Figure 8.6 depicts several lytic foci in the endplate of L5 from an old adult female buried at Kanín. Importantly, Pott’s disease is only one possible diagnosis for these lesions, and other conditions such as brucellosis or metastatic carcinomas must be considered (Ortner 2003).

Periosteal new bone formation on the visceral surfaces of the ribs has been shown to be a potential indicator of pulmonary tuberculosis, although these lesions cannot be considered pathognomic on their own (Roberts et al. 1998; Santos and Roberts 2006; Cooper et al. 2016; Pederson et al. 2019). Santos and Roberts (2006) found an association between skeletal rib
lesions and tuberculosis in historic individuals with recorded cause of death. Rib lesions in individuals with pulmonary tuberculosis manifested as periosteal plaque on the visceral surface of the vertebral ends of the mid-ribs, more frequently on the left side of the rib cage. All individuals listed in Table 8.2 with rib lesions exhibited this pattern, meaning that while the rib lesions are not pathognomic of tuberculosis on their own, a differential diagnosis should include tuberculosis alongside other respiratory infections. Other non-pathognomic foci include the joint surfaces of the hip, knee, and ankle (Roberts and Buikstra 2008; Dawson and Brown 2012; Cooper et al. 2016; Cieślik 2017; Pederson et al. 2019). A total of 16 adult individuals (11% of adults) at Libice exhibit skeletal lesions suggestive of tuberculosis or other infectious respiratory conditions (Table 8.2).

Table 8.2: Individuals with possible tuberculosis or respiratory infection at Libice

<table>
<thead>
<tr>
<th>Burial</th>
<th>Sex</th>
<th>Age</th>
<th>Elements affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akropole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>93*</td>
<td>M</td>
<td>YA</td>
<td>ribs</td>
</tr>
<tr>
<td>249*</td>
<td>M</td>
<td>MA</td>
<td>ribs</td>
</tr>
<tr>
<td>106*</td>
<td>M</td>
<td>MA</td>
<td>ribs</td>
</tr>
<tr>
<td>207</td>
<td>M</td>
<td>MA</td>
<td>femur (greater trochanter), innominate</td>
</tr>
<tr>
<td>150*</td>
<td>M</td>
<td>OA</td>
<td>ribs</td>
</tr>
<tr>
<td>205*</td>
<td>M</td>
<td>OA</td>
<td>ribs, humerus (proximal joint)</td>
</tr>
<tr>
<td>185*</td>
<td>F</td>
<td>YA</td>
<td>ribs</td>
</tr>
<tr>
<td>34*</td>
<td>F</td>
<td>OA</td>
<td>ribs, humerus (proximal joint)</td>
</tr>
<tr>
<td>240</td>
<td>F</td>
<td>OA</td>
<td>vertebrae, ribs</td>
</tr>
<tr>
<td>124</td>
<td>I</td>
<td>MA</td>
<td>vertebrae, ribs</td>
</tr>
<tr>
<td>Kanin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>M</td>
<td>MA</td>
<td>vertebrae</td>
</tr>
<tr>
<td>98</td>
<td>M</td>
<td>MA</td>
<td>talus</td>
</tr>
<tr>
<td>173</td>
<td>M</td>
<td>OA</td>
<td>vertebrae, ribs, innominate</td>
</tr>
<tr>
<td>155</td>
<td>M</td>
<td>OA</td>
<td>vertebrae (kyphosis), ribs</td>
</tr>
<tr>
<td>75</td>
<td>F</td>
<td>OA</td>
<td>vertebrae</td>
</tr>
<tr>
<td>25</td>
<td>F</td>
<td>OA</td>
<td>ribs, possible vertebrae</td>
</tr>
</tbody>
</table>

* rib lesions alone are not pathognomic of tuberculosis and may reflect respiratory infections more broadly.

More diagnostic of this infectious condition is vertebral collapse and angular kyphosis (anterior curvature of the spine) suggestive of tuberculosis spondylitis (Kjellström 2012), such as
that found in the spine\textsuperscript{158} of an old-adult male, Kanín Burial 155. The anterior body of the 11\textsuperscript{th} thoracic vertebra (T11) is wedged with nearly complete destruction of the endplate surfaces. Extensive osteophyte formation and bony ankylosis with T10 has occurred to stabilize the joint (Figure 8.7). Additionally, Burial 155 exhibits active periostitis on nearly all the left ribs (excluding ribs 11-12). Indeed, rib lesions were common at Libice in the form of periosteal bone formation on the visceral surfaces of ribs near the vertebral ends. Of Akropole adults with ribs present, 22\% exhibited lesions, while 9\% of Kanín adults exhibited rib lesions. Both of these percentages are within the range reported by Cooper and colleagues (2016) for European sites with evidence of tuberculosis. Since many tuberculous infections do not involve skeletal changes (Ortner 2003; Cooper et al. 2016), these bioarchaeological examples suggest that pulmonary tuberculosis was likely even more widespread in the population at Libice.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{kanin_burial_155.jpg}
\caption{Kanín Burial 155 vertebral column (photo: author). This old-adult male exhibits kyphosis of the spine due to ventral collapse of the 11\textsuperscript{th} thoracic vertebrae.}
\end{figure}

\textsuperscript{158} Differential diagnosis includes a healed compression fracture of the vertebral body resulting in wedging. This is less likely, however, because the neural arches and pedicles are not affected and both surfaces of the endplate exhibit lytic lesions with the majority of the surface destroyed. These characteristics are more suggestive of tuberculous spondylitis (Ortner 2003; Kjellström 2012).
Other skeletal indicators suggest the presence of non-pulmonary forms of tuberculosis. For example, Akropole Burial 207 was a middle-adult male with possible tuberculosis of the hip\textsuperscript{159} (Lynch 1982; Ortner 2003; Pederson et al. 2019). The greater trochanter of the right femur exhibits scalloped erosion resulting in exposed and porous cancellous bone on the lateral surface with formative lesions on the margins (Figure 8.8a). The femoral head exhibits postmortem damage, precluding further analysis. Pitting and lytic lesions have largely destroyed the right acetabulum and reactive periostitis is present on the ischium and ilium (Figure 8.8b). This individual likely suffered from hip pain and may have had reduced mobility based on clinical manifestations of tuberculosis of the hip (Lynch 1982).

\textsuperscript{159} While uncommon, Ortner (2003) notes that tuberculosis of the greater trochanter is the most identifiable tuberculous bone lesion after vertebral changes. Differential diagnosis includes traumatic injury to the proximal femur or osteomyelitis due to secondary infection. However, the scalloped manifestation of the lesions is most suggestive of tuberculosis of the greater trochanter.

Figure 8.8: Akropole Burial 207 right hip joint (photos: author). a) Destructive lesions on the greater trochanter of the right femur (lateral view). b) Right innominate with lytic lesions in the acetabulum and reactive bone activity on the ischium and ilium (lateral view).
Non-pulmonary forms of tuberculosis tend to affect joints and are more often the result of infection from *Mycobacterium bovis*, a bacteria found in infected cattle and other bovids (Pederson et al. 2019). As such, Akropole Burial 207 draws attention to the relationships between humans and animals at Libice. Archaeological evidence suggests that medieval Czechs shared significant space with domestic animals, often keeping livestock in living quarters (Brather 2011:45). Such close interactions with cattle, sheep, pigs, and other animals would have elevated risks of parasites and zoonoses (Mitchell et al. 2011; King and Henderson 2013; Reinhard et al. 2013). Of course, many of these animals were also important components of medieval diets. Pigs were the most abundant food animal in Central Europe, and cattle were important draught animals as well as sources of meat and milk (Beranová 1984; Brather 2011). Further deepening the connections between humans, animals, and disease pathways, medieval revenants were believed to attack and sicken animals such as cattle as well as people (Gordon 2014). The intimate relationships engendered by living with, and consuming, animals were thus also reflected in folkloric fears of pestilence and skeletal manifestations of disease.

Significant in this regard, two of the six individuals from Kanín exhibiting skeletal evidence for tuberculosis also received unusual burial treatment. Both were buried prone, or facedown. Only three total individuals (representing 9% of the atypical burials at Kanín) were buried prone, making this body position one of the most unusual in the cemetery (and see Chapter 4). The connection between tuberculosis and prone burial is worthy of exploration. For example, Kanín Burial 98 was a middle-adult male with evidence for possible tibiotalar tuberculosis\(^{160}\) (Ortner 2003; Mohammad et al. 2015; Cooper et al. 2016). His skull also exhibits

\(^{160}\) Bilateral, irregular lytic lesions are present on the trochlear surfaces of the tali and the distal joint surface of the left tibia. Differential diagnosis includes metastatic foci and secondary sites of infection (Ortner 2003).
healed trauma from a previous injury (elaborated on in Chapter 5). The physical consequences of illness and trauma this man experienced in his life may be echoed by his unusual burial treatment.

Another prone burial offers further insight into the relationship between disease and mortuary response. Kanín Burial 75 contained the fragmentary, prone remains of an old-adult female with changes to the lumbar vertebrae suggestive of pulmonary tuberculosis. The woman was placed facedown with the arms and legs outstretched in an otherwise normative grave adjacent to an unknown feature (Figure 8.9). However, the angulation of the arms suggests the hands may have been placed together beneath the hips, or they may have been bound. When we also consider the skeletal evidence of disease, this woman’s mortuary treatment may well have been a response to her potential respiratory symptoms and perceived contagion. Indeed, measures used to prevent revenants from postmortem wanderings included placing the body facedown or limiting the corpse’s ability to move through decapitation, disarticulation, burning, or binding (Tsaliki 2008; Aspöck 2011; Farrell 2011; Caciola 2016).

Figure 8.9: Kanín Burial 75 (Mařík 2009a). The body is prone and outstretched with the hands under the pelvis.

161 The endplates of L5 and the sacral promontory exhibit cortical destruction with several rounded, lytic cavities near the anterior margins (see Figure 8.6 above). As noted above, brucellosis and metastatic conditions must be included in a differential diagnosis.
Such “defenses against pestilent bodies” could be integrated into larger mortuary schemes, existing alongside normative practices through religious justifications (Gordon 2014:56). Christian concepts of the contagiousness of sin were entwined with the material decay of the body and the spread of disease, requiring particular apotropaic practices. It is significant that generally only individuals in the Kanín cemetery received such treatment, despite evidence for tuberculosis in both groups. While social status did not insulate people from exposure to tuberculosis and other respiratory infections, it may have played a role in mortuary response to these diseases. As we have seen before, Kanín is a space for alternative practices, including more variation in body position and burial treatment. The disease experiences of these individuals may have intersected with social status, religious practice, and other social contingencies to warrant particular mortuary practices depending on the burial place.

8.6 Conclusions

Experiences of disease and impairment at Libice have shown how certain contingencies may have channeled people down different life course paths and into different burial circumstances. Non-specific osteological indicators of compromised health and disease indicate few differences between the cemetery samples, likely reflecting the similar risks of exposure faced by most people at Libice. And yet when specific diseases are contextualized, we see how experiences of tuberculosis, leprosy, and other forms of physical impairment including paralysis might intersect with social status and religious practices to result in particular mortuary treatment.

People buried at the Akropole cemetery with evidence for certain diseases may have sought cures or proximity to the church. Some of these individuals may have been regarded as
holy sufferers, facilitating their burial in this space. At Kanín, infectious diseases such as tuberculosis may have fueled particular mortuary treatment in response to a pervasive fear of the dangerous dead. These various social responses to disease further reinforce how religious practices were enabled and enacted differently throughout individual lives at Libice. Some of these responses may have acted as a conduit into particular burial locations, resulting in both bodily and mortuary differences between the Akropole and Kanín samples.

**Chapter 9: Embodying a crossroads: Conclusions**

**9.1 Introduction**

The modern landscape of Libice nad Cidlinou offers clues to the enduring significance of this site in the Czech imagination as well as how its Christian history is embedded in the landscape. To the west of the modern village, carefully placed flagstones outline the cruciform footprint of the 10th-century stone church that once towered over the wooden buildings of the inner bailey and the grave markers of the Akropole cemetery. Just beyond what was the nave of the church stands a tall wooden cross set into concrete. On the eastern side, beyond the curved apse, bronze statues of two men appear to stride away from the site. The man in front holds a cross and staff; he is Vojtěch (later St. Adalbert), and behind him stands his half-brother, Radim. These two historic sons of Libice were the only purported survivors (in absentia) of the legendary massacre of the Slavník family. Both were men of the church who later achieved sainthood.
The cross and the statues were erected around the year 2000 in honor of the 1000-year anniversary of the massacre at Libice and the subsequent martyrdom of St. Adalbert. These monuments and the recent memorialization of this space draw attention to how the past comes to be understood in the present. The story presented here of early medieval Libice is implicitly a Christian story, one that reinforces the inevitability and totality of Christianization and the roles of well-known historical figures in this process. In spite of this characterization, archaeological and historical evidence suggests that religious transformation was a complex and on-going negotiation of ritual, belief, and material culture throughout the 10th century and beyond. Moreover, it was a process lived through, and experienced by, the bodies of practitioners. The material remains of this process extend beyond the skeletal outline of the church at Libice to the physical remains of people who lived and died here.
In this microhistorical bioarchaeology, careful contextualization of skeletal data with archaeological and historical evidence has illuminated how large-scale phenomena come to be reflected in, and transformed by, the embodied experiences of individuals, including those other than the literate, Christian elite. Even further, however, this process has shown divergences from traditional historiography in terms of how Christianization manifested at a local level. Certain bodies in particular, including those of women, children, and the socially marginalized, are often nearly invisible in textual sources and their contributions to the religious and secular transformations of early medieval Europe have been largely unexplored. Bioarchaeology can fill some of these lacunae in our understanding of lived experience in the Middle Ages, particularly through the use of osteobiography as an approach to the interpretation of human remains. As a research perspective that engages with lived experiences and life course pathways, osteobiography has rich potential to bring human skeletal remains into articulation with broader macro-forces. Specifically, this project has reimagined osteobiography as a multiscalar, interdisciplinary methodology built on microhistorical approaches to the past.

Human skeletal remains, as a valuable reservoir of information about past people, have not been seriously considered in medieval studies of ritual and religion. With the potential that bioarchaeology has to inform on how cosmological negotiations and tensions become embodied, this approach can add much to our understanding of early medieval Europe. While conversion is often envisioned as spiritual transformation, the process also involves a suite of bodily practices and engagement with material culture. Lived experiences of Christianization leave traces in the skeletal body that inform on intersections of emerging Christian identities and local traditions. In the case of Libice nad Cidlinou, we have seen how people were channeled into either of the two major cemeteries at the site, based in part on their engagement with particular cosmologies.
Where people are buried, and how, draws attention to the nuances of Christianization and the roles of ordinary people in the contingencies of its historical development.

9.2 Embodying cosmologies at Libice

The two cemeteries at Libice offer contrasting deathscapes. The Akropole cemetery was presided over by an imposing stone church within the busy space of the fortified inner bailey. The graves nearly all conformed to early medieval Christian norms of orientation and position. The Kanín cemetery was peripheral to the settlement and lacking ecclesiastical structures. Burial in this space involved far more variation in body position and grave arrangements. The ritual and religious significance encoded in these spaces is apparent, and yet most archaeological analysis frame cemeteries like these in terms of status dichotomies. Indeed, one can see how ‘elites’ utilizing the Akropole burial ground might be participating in more overt Christian mortuary practices as part of a suite of power tactics designed to claim legitimacy in the Christianizing frontier of Europe. As the skeletal data further emphasizes, the location of burial at Libice does not solely indicate relative status or privilege, but rather a convergence of ideology, politics, social status, and evolving ritual expressions. Importantly, this convergence does not only contribute to the expression of mortuary practices; it also actively shapes peoples’ bodies as they engage with particular cosmologies across the life course through daily practices and ritual.

As the people of Libice grew up, grew old, and died, their life course trajectories altered their bodies. Factors including childhood stress, social roles, labor, and diet left traces in bone. However, when the skeletal samples from the two cemeteries at Libice are compared, we see few significant differences between the groups in terms of activity, nutrition, diet, health, and trauma. For example, medieval children experienced new social roles, activities, and biological stressors
as they aged and entered into different life course stages. As expected, the percentage of children exhibiting non-specific skeletal lesions increased with age at both cemeteries. Likewise, about half of all children from both cemeteries exhibit cribra orbitalia, hinting at the presence of nutritional stress and/or disease loads in both groups.

The more varied contours of medieval men and women’s adult lives were informed by intersecting social factors including status, gender, age, family background, and occupation, among others. In questioning how social status may have contributed to burial location at Libice, I examined what kinds of activities may have differentiated these groups. Adults at Libice may have engaged in farming, building, military training, and craft production. Everyday activities and labor can be approached by examining skeletal changes. The relative presence of entheseal changes at musculoskeletal insertion sites, for example, points to levels of habitual activity and even occupation distribution. Few major differences in levels and types of activity were found in the skeletal remains from the two cemetery samples. In other words, the people buried at Akropole and Kanín were not performing vastly different types of labor and there may have been significant overlap in occupations between the two groups.

Skeletal patterns of traumatic injury offer another approach to understanding activity and occupational hazards at Libice. Both cemetery samples have high percentages of people with antemortem fractures, a pattern typical of early medieval rural communities, in particular. However, there are not significant differences in frequencies or types of fractures between the groups. If people buried at the Akropole were higher status, then they were engaging in activities that offered similar risks and bodily hazards when compared to those buried at Kanín. More likely, people buried in both cemeteries were participating in activities that could account for these fractures, including building labor, military training, and farming with large domesticates.
As a proxy for social status, skeletal activity changes and trauma suggest that people buried in both cemeteries may have been of mixed-status, and we must look for other factors that influenced burial location at Libice.

Similar to the skeletal markers of activity, dental analysis uncovered few differences in diet and dental health between the cemetery samples. Instead, gender and age differences in food preparation and consumption resulted in women and children consuming softer and more cariogenic foods when compared to the more abrasive diets of men at Libice. Rather than social status driving dietary practices, these patterns draw attention to how religious and secular discourses on bodily temperament and the properties of food could influence diet, and by extension, bodies. These clues suggest that engagement with particular cosmologies could be a facet of identity like gender and status guiding people on certain life course trajectories.

In this busy early medieval landscape, the lived experiences of people intersected with wider historical forces including nascent Christian institutions, political transformation, and the movement of people and ideas. The two cemeteries at Libice offer clues to how these encounters may have shaped people’s bodies in different ways. As the skeletal data have shown, markers of status related to activity and diet do not correlate with burial location. Instead, careful bioarchaeology analysis reveals how some subtler forces may have been channeling people into one cemetery or the other. Three thematic areas further show how biosocial engagement with particular cosmologies contributed to the development of subtly different bodies in these spaces.

As a microcosm of medieval sociality, birth and infancy offer an intimate look into how Christian beliefs and practices were integrated into daily life at Libice. The skeletal remains and mortuary contexts of infants from Akropole and Kanín draw attention to the many relationships and histories that infants were enfolded within. Analysis of these data indicate significant
differences in the care of infants during both life and death. Infant mortality is predictably high in both cemetery samples, likely reflecting stressors including disease, malnutrition, and the weaning process. However, variation in mortuary care provides some insight into how infants’ lives could be mediated by Christian and other practices. Likewise, differences in the timing of weaning as well as exposure to disease and other risk factors suggest at least some variation based on status and ritual engagement at Libice.

The significance of infant lives within the medieval community at Libice is apparent in their mortuary treatment at both cemeteries. Even very young infants and neonates of questionable baptismal status were found in each cemetery, often placed in close proximity to other burials. Indeed, the perinatal remains of Kanín Burial 185(c) were found within the same grave as an adolescent and adult female, suggesting potential social and/or spiritual relationships. A few infants at Akropole were placed against the very walls of the church, potentially creating circumstances for postmortem baptism. The mortuary artifacts buried with infants also demonstrate some of the ritual complexities involved in their postmortem care. Akropole Burial 254 was a normative infant burial near the church containing a weapon and chisel, objects with social and symbolic significance to particular occupations. This gathering of Christian practices alongside other identities and intergenerational relationships highlights how wider histories could shape the mortuary treatment of infants.

Skeletal remains offer insight into how other historical forces influenced infants during life. For example, inter-generational relationships are implicated when maternal environments expose infants to disease and malnutrition. Maternal deficiencies in vitamin C during pregnancy, early nursing, and while weaning could have contributed to the high percentage of infants with endocranial lesions at Libice. As illustrated by the case of Akropole Burial 100, an infant with
multiple skeletal pathologies suggestive of scurvy, the health of pregnant women and mothers at Libice was a contributing factor to compromised health in some infants.

Other aspects of infant lives and care were mediated through wider histories of Christian thought, childhood diets, and family dynamics. Skeletal evidence for infant weaning practices at Libice points to variation in weaning timing and process. The formation of dental caries and wear in the deciduous dentition of some infants indicate the introduction of solid foods. In particular, numerous infants from the Akropole sample exhibited these macroscopic indicators of the weaning process. For example, the teeth of infant Akropole Burial 182 exhibited both attrition and a carious lesion, suggesting that this infant was likely not exclusively consuming breast milk. The low-nutrient starches and carbohydrates typically fed to young medieval children may have contributed to nutritional deficiencies in this infant and the subsequent formation of endocranial lesions. Furthermore, Christian prescriptions regarding family planning and infant care may have held particular significance to the caregivers of children buried at Akropole, influencing their choices regarding weaning and diet.

The infant remains at Libice provide some clues to how social status may have influenced infant health, particularly through maternal environments and diet. However, it is also important to consider how other factors including religious adherence may have impacted infant lives and deaths. As we have seen, the skeletal and mortuary data suggests that the families of infants buried at the Akropole were more attuned to Christian influences. For example, religious prescriptions could account for the greater percentage of Akropole infants exhibiting dental evidence for weaning. The caregivers of infants buried at Kanín accessed a wider range of care and burial possibilities. Medieval families and caregivers at Libice made choices about the care of infants in response to Christian prescriptions as well as other social and religious factors.
These intergenerational relationships and religiously-informed practices shaped infant lives as well as their treatment in death.

Conflict and warfare in early medieval Bohemia was likewise entangled with the politics and process of Christianization. Indeed, the lived experiences of some people at Libice articulate with wider histories of violence in ways that implicate the discourses and practices of the Church. While archaeological evidence at Libice is somewhat ambiguous, including symbolic fortifications and infrequent military artifacts, skeletal remains offer visceral insight into the scale and consequence of violence at Libice. Coupled with mortuary contexts and the material culture of warfare, skeletal histories show how bodies could be shaped by the interplay of violence, politics, and cosmology.

Several burials at both the Akropole and Kanín cemeteries contained weapons and other accoutrements typical of soldiers and mounted cavalry. These ‘warrior’ burials evoke the social significance of warfare but also how social status may have differentiated participation. For example, remains of wooden buckets were only present in the Kanín cemetery and may have represented care for horses that the most elite individuals would not have performed. Likewise, while the martial artifacts buried with the middle-adult male in Kanín Burial 54 suggest a warrior identity, the inferior quality of some of these items and the location of his burial in the peripheral Kanín cemetery belie the elite status conferred on this man by his mortuary context.

The skeletal remains of one person buried at the Akropole demonstrates how an elite equestrian warrior identity could become embodied. Akropole Burial 261(a) was a middle-adult male buried with spurs and a barbed axe. His remains show how material relationships can be inscribed on the body through habitual activity and trauma. Skeletal markers of probable equestrian activity and perimortem interpersonal violence coincide with a warrior mortuary
context suggesting a continuity of social identity between life and death. The churchyard burial of this man at Akropole offers further insight into the relationship between violence and Christianity at Libice at the scale of an individual life and mortuary context. Spatially and symbolically linking these warrior bodies to the ‘body’ of the church reinforced the sanctity of certain types of violence in the context of Christian justice and conversion.

Other manifestations of interpersonal violence are revealed in the skeletal remains at Libice. Some violence may have had a ritual component, with skeletal evidence for both mutilation and decapitation. Gendered violence, in particular, is implicated in skeleton of an old-adult female in Kanín Burial 156. The flexed remains exhibit several debilitating, but healed injuries. The subsequent consequence of these injuries to her life and health, including probable deafness, may have resulted in her unusual mortuary treatment. In contrast, the young adult female in Akropole Burial 264 met an extremely violent death with numerous perimortem blade wounds but her burial shows concern for bodily cohesion and normative treatment. These two cases offer insight into how women could be collateral victims or even potentially participants in local conflict. They also present different manifestations of the relationships between violence, cosmologies, and mortuary practices in the two cemeteries at Libice.

Osteological evidence for interpersonal violence at Libice was relatively rare, but the trauma experienced by several people attests to the reality of violent encounters in this community. Coupled with historical and archaeological evidence, we can see the social significance of warfare and warrior identity as well as how conflict was utilized and justified in the Christianization of Central Europe. People enact and enable macrohistories of warfare and violence in their daily lives even as their bodies can be marked by these histories. Furthermore, the traumas encoded in these skeletal remains have drawn attention to how cosmologies might
shape life (and afterlife) experiences at Libice. The two cemeteries at Libice have yielded different attitudes toward violence with an emphasis on bodily integrity in death at Akropole and atypical mortuary treatment at Kanín.

The lived experiences of disease and impairment at Libice suggest other ways in which cemetery inclusion at Libice was influenced by cosmology. As with indicators of activity, non-specific skeletal indicators of disease showed few significant differences between the cemetery samples. Skeletally visible diseases with specific etiologies, however, were found to have particular social implications that influenced individual experiences. The manifestations of these diseases intersected with social status and religious practices to channel individuals into different mortuary circumstances.

The vast majority of people exhibiting a skeletally visible impairment (83%) were buried in the Akropole cemetery. The associated church may have been a site for saintly intervention and miraculous cures, drawing together non-normative and impaired bodies with spiritual associations. For example, Akropole Burial 249 was a young man with probable neurogenic paralysis of the legs who may have sought proximity to the church in life and death due to his condition. The skeletal atrophy and bilateral asymmetry of his limbs are made more conspicuous by his highly unusual flexed burial and association with a possible liturgical knife. This person’s visible bodily difference and distinctive mortuary treatment within the largely uniform Akropole cemetery demonstrates how the relationship between physical impairment and Christian identity could simultaneously emphasize differentiation and inclusion.

Another Akropole burial further connects the Church to bodily difference and the potential for holy suffering. Akropole Burial 93 was a young man with skeletal lesions consistent with lepromatous leprosy. Pathological changes in the lower legs and feet are suggestive of
secondary lesions of leprosy and signal potentially debilitating physical deformities. The social context of leprosy was complicated and fluid in the Middle Ages, with lepers both feared and revered as stigmatized victims. The presence of this person in the Akropole cemetery suggests a relative lack of social stigma as compared to the isolated leprosaria of the following centuries. In fact, his burial near the church may instead be an indication of other social connotations of leprosy, including the diseased body as a sign of eventual redemption.

People buried in both cemeteries have skeletal lesions suggestive of chronic respiratory infections, including tuberculosis. Some of these individuals exhibit likely tuberculosis infections, like the old-adult male in Kanín Burial 155 with vertebral collapse and angular kyphosis of the spine. The burial treatment of these people, particularly in the Kanín cemetery, highlights the perceived connection between disease, sin, and dangerous dead. For example, Kanín Burial 75, an old-adult female, exhibited changes to the lumbar vertebrae suggestive of possible pulmonary tuberculosis and was buried prone with her hands possibly bound. As common measures to prevent revenants, prone burial and binding were some of the many variations in mortuary treatment found at Kanín. The ritual variety at Kanín suggests that this space afforded alternative practices in tandem and tension with Christian notions of disease, sin, and the afterlife.

Carefully integrating skeletal histories with mortuary contexts and medieval disease ideologies has revealed notions of the sacred and sinful, of health and illness, and of normative and ‘other’ forms at work at the graveside at Libice. As sites of intersection between religious practice, social status, and disease, the bodies of the people buried at Libice show how lived experiences could be shaped by these relationships. The social responses to disease and impairment, including care, stigma, marginalization, fear, and awe, are visible in both the bodies
and their mortuary contexts. Impaired bodies buried in close proximity to the church at Akropole recall the miraculous cures and holy suffering of certain bodies in Christian cosmology. Alternative beliefs and practices on display at Kanín offer other social contexts for disease, including contending with the dangerous dead. Confluences of certain diseases, social circumstances, and eschatological beliefs thus may have influenced where people were buried at Libice as much or more so than their presumed social status.

The remains interred at the two cemeteries at Libice show remarkably similar life course paths, with people living, working, and eating in much the same way regardless of where they were eventually buried. The historical and social forces channeling people into particular mortuary spaces are complex, but microhistorical osteobiographies allows us to examine specific bodies and the skeletal clues and signs that speak to their lives. In this way, some of the few skeletal differences have been carefully contextualized and reveal how the people at Libice were engaging with cosmologies and religiously informed practices throughout their lives. These relationships begin in the cradle with family choices influencing infant care. They continue through the subtle, yet powerful relationship between the Church and political violence. Finally, they can be identified in the symbolism and suffering of diseased and impaired bodies. In these contexts, we have seen how people negotiate cosmologies within their daily lives and how these doings ultimately played a role in where they were buried and how.

9.3 Beyond the Cidlina: Future directions

As this project has made clear, conversion to Christianity was an on-going process of negotiation, tension, and syncretism in daily life and mortuary spaces. Future directions will seek to determine how mortuary and skeletal data might reflect growing ecclesiastical authority and
ritual dominance. To do so, I will examine temporal changes in mortuary practices, activity, and health across more than two centuries of site activity during the Christianizing period. The focus of this dissertation was on 9th – 10th-century life and death at Libice. However, burial at the Akropole cemetery, in particular, continued well into the 11th century. I have identified 46 individuals associated with 11th-century burial based on grave goods and stratigraphic location who may serve as a comparison to the Akropole cemetery sample presented here.

A major research question for this future component asks: What impact does the increased centralization of Czech political institutions have on skeletal indicators of health and activity, including violence? Relatedly, the role of large cultural and political centers such as Libice wanes by the 11th century. What stressors emerge through this shift in regional power? We might expect, for example, an increase in skeletal evidence of interpersonal violence correlating with more burials reflecting warrior identities in Christian burial spaces in the 11th century.

Furthering this theme, I ask if the expansion of Christian institutions is reflected in tighter adherence to Christian ritual norms over time, or does the marginality of Bohemia to the rest of Western Christendom continue to allow for ritual alternatives? Skeletal and mortuary contexts might demonstrate the gradual accretion of religious change, reflecting the extended and piecemeal process of conversion. Changes in diet related to conversion potentially include increased consumption of fish as well as a more widespread altering of the weaning process corresponding with Christian prescriptions for nursing infants. Some of these transformations can be accessed through stable isotope analysis in human teeth and bone, which represents the next phase of research in the Libice project.
Stable isotope data was collected as part of the National Science Foundation Graduate Research Fellowship funding and the analysis and dissemination of this data will continue the Libice project in the immediate future. Bone and, in some cases, dental samples have been acquired from a total of 50 individuals from the Akropole series and 52 individuals from Kanín. Individuals were chosen for sampling based on characteristics of interest (i.e. unusual burials, pathology, significant mortuary artifacts) and preservation quality, although an effort was made to ensure that all age categories and both sexes are represented. In addition to human remains, I have received several samples of archaeological faunal remains from the Libice site, courtesy of Dr. Jan Mařík at the Institute of Archaeology of the Academy of Sciences of the Czech Republic (ARUP) in Prague. These faunal remains include bone and tooth samples from horse, cow, pig, deer, dog, and avian species and provide baseline comparison for the human isotope signatures. Samples have been processed by Dr. Joan Brenner Coltrain at the Archaeological Center Research Facility for Stable Isotope Chemistry at the University of Utah.

The isotopic analysis of teeth and bone samples from the Libice remains will address further questions about food and diet, as well as the movement of people. Stable isotopes do not degrade and remain preserved in bone and teeth, allowing scientists to test what foods, water, and trace elements were consumed and absorbed into past bodies (Katzenberg 2008; Burton 2008). As Chapter 5 demonstrated, an analysis of diet contributes to our understanding of the life course of an individual or patterns within a population. While macroscopic dental studies of wear and caries formation offer some insight into diet, stable isotopes further indicate what types of food were being consumed and where the food was coming from. Different types of food are signaled by different stable carbon (13C/12C) and stable nitrogen (15N/14N) ratios in bone collagen. Diets based on terrestrial animal and plant products result in different signatures than
marine-based diets and ratios of meat and plant consumption can be identified as well (Brenner Coltrain et al. 2007, 2016; Kosiba et al. 2007; Kjellström et al. 2009; Rutgers et al. 2009). I will investigate if consumption patterns at Libice indicate dietary variation based on gender, social status, age cohorts, mobility, or even ideological practices such as medieval adherence to Christian fasting rituals (Kjellström et al. 2009; Rutgers et al. 2009; Reitsema and Vercellotti 2012; Hermes et al. 2018).

Isotopes analysis can also address questions about migration and the movements of people in the past. A comparison of the composition of bone (which is replaced approximately every seven years) and teeth (which develop during childhood and record early diet) provides information on changes over the life course in terms of mobility (Brenner Coltrain et al. 2007; Katzenberg 2008; Burton 2008; Machicek et al. 2019; Winter-Schuh and Makarewicz 2019). In particular, stable oxygen isotopes (18O/17O) from teeth have been used to determine geographical origins and movements at the level of the individual. The local environment determines oxygen ratios in water which is absorbed into the teeth during childhood development. Variation in oxygen levels in a population indicates different locations of origin for people in that population and an individual’s oxygen signature can be matched to other regions (Brenner Coltrain et al. 2007; Katzenberg 2008; Conlee et al. 2009; Brenner Coltrain and Janetski 2013; Kendall et al. 2013; Machicek et al. 2019). Kendall and colleagues (2013) illustrate the value of such analyses by demonstrating the high levels of mobility for many individuals interred in 14th-century Black Death cemeteries in London through combined oxygen and strontium signatures. Strontium ratios (87Sr/86Sr) in tooth enamel are similarly affected by

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162 Carbon and nitrogen ratios related to diet may also demonstrate the movement of people, as evidenced by Hakenbeck and colleagues’ (2010) study of Late Roman and early Medieval Bavarian diets. The authors found that some women had diets similar to that of other regions and some individuals buried with foreign grave goods also had foreign diets, suggesting that they may have come from the same region as the material culture.
particular environmental conditions (Eckardt et al. 2009; Kendall et al. 2013; Winter-Schuh and Makarewicz 2019) but were not feasible for this project due to budget limitations combined with the logistics of acquiring baseline environmental data from soil and local animal bone. The population at Libice may have been fairly mobile for a variety of reasons. For example, trade routes, military excursions, or patrilocality Christian marriage patterns may have facilitated the movement of people through and beyond Libice. Oxygen and strontium isotope analysis may shed some light on where and how people moved across the early medieval landscape.

While most of the isotope data has yet to be analyzed in detail, one example shows the potential for new insights to the Libice project. For a small subset of adult individuals$^{163}$ from the Akropole sample (N=17), it was possible to sample both bone hydroxyapatite and tooth enamel for oxygen signatures. Comparing these two values provides information on weaning, but more importantly for this example, oxygen signatures in tooth enamel provide an indicator of childhood origin. Figure 9.2 shows the shift in oxygen isotope values across an approximate life course. Most individuals exhibit more enriched enamel values indicating enamel laid down prior to weaning. This patterning derives from reliance on breast milk, which is isotopically enriched over imbibed drinking water. In paired samples where bone and tooth oxygen values are quite similar, weaning likely took place before or during the deposition of tooth enamel. These results indicate that most of these individuals did not migrate from a distant childhood home to Libice.

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$^{163}$ Due to poorer preservation and different substances used in the laboratory to preserve the remains, only two individuals from Kanín yielded both bone hydroxyapatite and tooth enamel for sampling. Their paired oxygen isotope values also indicate a local origin.
While archaeological surveys have yielded evidence for diverse networks of trade and travel (see Chapter 5), stable oxygen isotopes suggest regionally local origins for nearly all of the individuals sampled. A synthesis of these sources of evidence shows that people may not have been as mobile as their objects were. Of course, what is meant by “local” becomes rather complicated, as the granularity of oxygen isotope analysis in Central Europe is fairly coarse. Oxygen isotopes values in part reflect local precipitation. Any regions that are part of the same moisture regime, and about the same elevation, would yield similar results. As such, these oxygen values are representative of large swaths of Central Europe including parts of modern Germany, Austria, Poland, and other regions (Figure 9.3). While it is certainly possible that some of these individuals are non-local but from regions with similar precipitation regimes, the narrow value ranges at Libice are consistent with a local population.
Importantly, isotope analysis affords new opportunities to expand on osteobiography and the significance of individual life histories in bioarchaeology (Leach et al. 2010; Hamre et al. 2017; Mays et al. 2018). As an example, one Akropole sample stands out in Figure 9.2 with a particularly depleted enamel oxygen signature. This individual, Akropole Burial 258, was a middle-adult male buried with the accoutrements of a warrior. Buried in a large grave just north of another warrior burial, Burial 261(a) discussed in Chapter 7, this man’s body was placed on a raised wooden platform in the grave (Figure 9.4). The weaponry and equestrian artifacts
associated with this burial include a large axe, a long iron rod of uncertain function, iron spurs, numerous iron buckles and belt fittings, and fragments of olive-green glass beads.

![Figure 9.4: Akropole Burial 258 (Turek 1980). The body was placed on a raised wooden platform. An axe with a wooden handle is visible south of the right femur, a metal rod extends along the lower left arm, and metal spurs are present at the feet.]

Burial 258’s remains are quite large and robust, and long bone length metrics indicate that he was one of the tallest individuals in the Akropole sample, estimated to be about 177cm tall. Healed formative lesions on the right orbit, porosity on the mandible, and formative porous lesions on the alveolar bone are suggestive of scurvy (Brickley and Ives 2008; Geber and Murphy 2012). Geber and Murphy (2012) found that taller males were more likely to exhibit scorbutic lesions, potentially due to inadequate nutritional intake for their size. In spite of his well-furnished burial and elite associations with equestrian warfare, this man may not have been eating a varied or particularly nutritious diet. Indeed, his presumed connections to the military and horses could have resulted in significant travel, limiting regular access to certain foods including perishable fresh produce.
The isotope data shed further light on this man’s mobility, indicating that he likely spent his early childhood elsewhere, in a higher elevation or more northern latitude with depleted drinking water oxygen values. Some regional possibilities include the Alps or more northern parts of Europe (see Figure 9.3). Of course, it is also significant that the bone apatite oxygen value for Burial 258 indicates that he had acquired a “local” signature by the end of his life, meaning he had spent at least the last several years in the regional vicinity of Libice. Burial 258 is the only individual sampled whose paired oxygen isotope values clearly indicate a non-local origin. In addition to receiving one of the very few equestrian-warrior burials, he is also the only male to be buried with beads, rare artifacts at Libice that may reflect a foreign connection. This man’s burial context, coupled with isotopic evidence for a non-local childhood, suggests that some elite individuals connected to military activity may be coming from other regions. Were these individuals for hire and how might they have influenced local military culture? What other ideologies and materials might they have brought to Libice? These questions, and others introduced above, will drive the next stage of research at Libice.
9.4 Conclusions

This microhistorical bioarchaeology has examined the intersections of lived medieval lives and broader themes of history and process. A theoretical bioarchaeology grounded in material contexts has shown how the embodied experiences of the people at buried at Libice contributed to a richly entangled world. The material practices of daily life, conjunctions of the life course, and large scale economic, political, and religious transformations were expressed in and through their bodies. Osteobiographies have woven individual life histories with wider skeletal data as well as archaeological and historical contexts. The resultant microhistorical interplay of bodies, materials, and practices acknowledges the many factors informing skeletal histories. In articulating these narratives within broader historical processes, we have seen how Christianization altered the material practices, cosmological orientations, and life course experiences in early medieval Central Europe.

One goal of this work has been to contribute nuance to dominant historical narratives and emphasize the role of local and particular experiences in the formation of medieval institutions. Libice’s position (and, by extension, Bohemia’s) is one of marginality, both temporally and geographically. On the periphery of Western Christendom, Slavic experiences often only appear in the footnotes of European history and the scant historical sources dating to the early medieval period are nearly silent about the lives of women, children, and other marginalized groups. In focusing on the role of particular elites in the development of the Czech state and Christian institutions, previous scholarship naturalized and constrained processes that are actually contingent and multivocal. This project has aimed to understand the historical processes of political unification and Christianization in early medieval Bohemia while avoiding the deterministic and univocal narratives that have until recently largely defined scholarship in the
region. It contributes scholarship to a part of the medieval world and types of medieval experiences all too often overlooked in larger historical narratives.

The skeletal remains have shown that individual lives articulated differently with religious practices and ritual, resulting in subtly different bodies in the two cemeteries at Libice. In demonstrating how social status intersects with cosmology, practice, age, gender, political histories, and disease experiences, this project has complicated how early medieval burial spaces are compared and analyzed. Even further, this microhistorical bioarchaeology offers a fuller picture of an alternative understanding of the Christianization of Bohemia: one in which people negotiated new rituals and identities in tandem with other social forces and long-standing traditions as part of their daily lives and choices. In other words, when we change the scales of analysis, different kinds of history emerge. These new historical threads suggest that local experiences of Christianization have much to contribute to how we envision this historical process.

Finally, this project has shown the importance and efficacy of presenting individual lives through osteobiography. These individual life histories offer an anchor for skeletal data in terms of presentation and narrative, but they are also research tools in their own right. Microhistorical investigations of a single person’s life reveals how large-scale historical phenomena manifest at the level of the individual and daily life. Such narratives remind us how histories are enabled and enacted, not just through the kings and saints of surviving texts, but also through the farmers, merchants, children, soldiers, priests, and weavers living their lives on the banks of the Cidlina.
Appendix A: Czech historical timelines

**Přemyslid dynasty** (9th-10th century)

Figure A.1: Přemyslid family and rulers (9th-10th centuries)

**Slavínk dynasty** (10th century)

Figure A.2: Slavínk family (10th century)
Figure A.3: 9th-10th Century Bohemia Timeline
Appendix B: Biological profile forms and sample narrative

This appendix provides examples of the forms used to record data for the Libice series as well as an example of a biological profile narrative based on gathered osteological data. The biological profile showcased below is that of Kanín Burial 139, a middle-adult female. This data was further integrated with mortuary and historical evidence to develop the osteobiography of Kanín Burial 139 found in Chapter 5.

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Age and sex determination form 268
Dental inventory and wear form 271
Cranial measurements form 273
Postcranial measurements form 274
Non-metric traits form 275
Biological profile narrative: Kanín Burial 139 277
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**VERTEBRAE**

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<td>4</td>
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<td>C7</td>
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<td>T1 – 9</td>
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<td>10 present, 9 complete</td>
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<td>L5</td>
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**NOTES:**

**Burial Context:**
Burial 139 (fig 45) (deviant)
# 10/68
Burial pit: rectangular, bottom: flat
Dimensions: length 236 cm, width 81 cm, depth 65 cm, depth from the surface 135 cm
Orientation: east-northeast – west-southwest
Skeleton of an adult female (adult II) lying on the left side with the skull on the left temple, with the right arm along the body, the left placed on the face, with the right leg slightly flexed, and with the left heavily flexed (crouched) towards the buttocks, length of the skeleton 153 cm.
Finds:
1. behind the left ear: bronze earring with a spiral pendant, dimensions of the arch 11.9x6mm, length of the pendant 10.5mm, diameter of the pendant 3.2-5.5mm.
Misc. Notes:
Also present in box – fragmentary proximal joint surface of a right tibia, from a different individual. All long bones are noted to be comparatively long and thin for this skeletal series.

Coded pathology and activity markers:
R clav – mild enthesophyte on coronoid tubercle of right clavicle
R scap – oseo ½ glenoid
L rad - porosity 1/3 prox
R rad – porosity 2/1, mild macroporosity on proximal joint surface of right radius
L ulna – oseo ½ prox
Vertebral bodies on inferior articular facets of C3-6
C3-6 – oseo ½ body, oseo ½ porosity 1/3 facets
T1-9 – oseo ½ body, facets
T10-12 – oseo 1/2 , porosity 2/1 facets
L1-3 – oseo ½ facets
L4-5 – oseo ½ body, facets
L5-6 – oseo ½ facets
Innominate – bilat oseo ½, porosity 1/3 acetabulae
Bilat tibs - well-healed, widespread mild periostitis on medial surface of distal 1/3
R tib – porosity 1/1 on proximal joint surface, squatting facet

Other skeletal features noted:
Hum – bilateral anterior bowing of proximal hum shafts
L rad – mild cortical excavation on radial tuberosity
Fem – bilateral anterior bowing of shafts, elevated linea aspera, inferior surface of lateral condyle is flattened
R tib – anterior crest bowed medially on prox shaft and laterally on distal shaft (left is straight).
R fibula is bowed (left is normal), right tibia appears to be normal as well. Fibula is bowed medially towards tibia.

Photos:
green stain on temporal
Green stain on metacarpal
notches on maxillary teeth
radius joint porosity
bowed R fibula
auricular surface (for age)
thin lower arm bones
hum shaft bowing
flattened distal fem
TAPHONOMY

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<tr>
<td>Date</td>
<td>07/12/12</td>
</tr>
<tr>
<td>Recorder</td>
<td>LH</td>
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</tbody>
</table>

A. **General color of bone** (Assign one of the numeric codes listed)

2

1. Natural Ivory color
2. Yellow to brown
3. Black
4. Grey
5. White

B. **Bone weathering stage** (Behrensmeyer, stages 0-5)

3

C. **Staining** (check all that apply)

<table>
<thead>
<tr>
<th>Green (copper)</th>
<th>X</th>
<th>Left temporal and left phalange (see notes)</th>
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</thead>
<tbody>
<tr>
<td>Green (algae)</td>
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<tr>
<td>Red (ochre, cinnabar, iron)</td>
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<td>Black</td>
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D. **Surface and shape changes**

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<tr>
<td>Chemical bleaching</td>
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<tr>
<td>Surface exposure not involving sunlight</td>
<td></td>
</tr>
<tr>
<td>Plant root damage</td>
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<tr>
<td>Rodent tooth marks</td>
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<tr>
<td>Carnivore tooth marks</td>
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<tr>
<td>Warping due to ground pressure</td>
<td>X</td>
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<tr>
<td>Burning</td>
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E. **Cultural modification**

<table>
<thead>
<tr>
<th>Cut marks</th>
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<tr>
<td>Intentional fracturing</td>
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</table>
Postmortem drilling, cutting, or other modification

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<tr>
<th><strong>F. Adherent materials</strong></th>
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<tr>
<td>Desiccated tissue</td>
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<td>Textile or textile impressions</td>
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<tr>
<td>Hair or fur</td>
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<tr>
<td>Unknown material</td>
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<tr>
<td>Other</td>
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<table>
<thead>
<tr>
<th><strong>G. Museum preparation and modification</strong></th>
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</thead>
<tbody>
<tr>
<td>Post-mortem cut marks produced during maceration</td>
</tr>
<tr>
<td>Drilling, attachment of nails or other hardware</td>
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<tr>
<td>Preservatives or glue applied to bone or teeth</td>
</tr>
<tr>
<td>Plaster or other reconstruction materials applied to specimen</td>
</tr>
<tr>
<td>Samples removed by cutting or drilling</td>
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**Notes:**
Bone is somewhat weathered, particularly the joint surfaces of the long bones and the long bone shafts are often lacking significant cortical bone. The vertebral bodies and ribs are also very weathered and fragmentary. The ectocranial surface is slightly weathered and some cortical bone is gone, and the endocranial surface of the right parietal in particular is very weathered with almost no cortical bone present. All long bones are present, although the

Glued bones – cranial bones, teeth glued into sockets, mandible, right scapula, right ulna, sacrum, left innominate, right tibia, left tibia, right fibula, and the right clavicle

Preservative coating is very thick on some bones, including the right humerus, both femorae and both tibiae. The shiny appearance of the coating makes it difficult to see pathology.

Green stain on left temporal, centered on auditory meatus. Bone is broken, so extent of the stain is unknown, but it is at least 25mm high by 29mm in width and extends to the base of the zygomatic process. Another green stain is present on one of the left phalange fragments. The stain is on the proximal end of what is probably the superior surface. This hand was near the cranium and the earring on the left temporal.
AGE AND SEX DETERMINATION

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<td>Burial #</td>
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SKELETAL AGING

C. Dental Development

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<tr>
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<th>Deciduous</th>
<th>AGE:</th>
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<td>m2</td>
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Permanent

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<td>Maxillary I2</td>
<td>Mandibular Pm1</td>
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<td>Mandibular I1</td>
<td>Mandibular Pm2</td>
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D. Epiphyseal Union (0, 1, 2)

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<tbody>
<tr>
<td>Metopic suture</td>
<td>L vert inferior rim</td>
</tr>
<tr>
<td>Mental symphysis</td>
<td>Scapula coracoid</td>
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<tr>
<td>Lateral to basilar</td>
<td>Scapula glenoid cavity</td>
</tr>
<tr>
<td>Lateral to squamous</td>
<td>Scapula acromion</td>
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<tr>
<td>Basilar suture</td>
<td>Scapula inferior angle</td>
</tr>
<tr>
<td>C halves of arch</td>
<td>Scapula medial border</td>
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<tr>
<td>C arch to centrum</td>
<td>Clavicle sternal end</td>
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<tr>
<td>C vert superior rim</td>
<td>Proximal humerus</td>
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<tr>
<td>C vert inferior rim</td>
<td>Distal humerus</td>
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<tr>
<td>T halves of arch</td>
<td>Humerus epicondyle</td>
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<tr>
<td>T arch to centrum</td>
<td>Proximal radius</td>
</tr>
<tr>
<td>T vert superior rim</td>
<td>Distal radius</td>
</tr>
<tr>
<td>T vert inferior rim</td>
<td>Proximal ulna</td>
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<tr>
<td>L halves of arch</td>
<td>Distal ulna</td>
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<tr>
<td>L arch to centrum</td>
<td>Ilium to pubis</td>
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<tr>
<td>L vert superior rim</td>
<td>Ischium to pubis</td>
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E. Subadult bone measurements

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<tbody>
<tr>
<td>Humerus max length</td>
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<tr>
<td>Radium max length</td>
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<td>Ulna max length</td>
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F. Pubic Symphysis and Auricular surface

<table>
<thead>
<tr>
<th>Suchey-Brooks Pubic Scoring</th>
<th>35-39</th>
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<tbody>
<tr>
<td>Auricular Surface Scoring</td>
<td>Phase 4 (35-39)</td>
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G. Cranial suture closure

<table>
<thead>
<tr>
<th>Ectocranial</th>
<th>Left</th>
<th>Right</th>
<th>Palatine</th>
<th>Left</th>
<th>Right</th>
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<td>Incisive Suture</td>
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<td>Lambdoidal</td>
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<td>Transverse Palatine</td>
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<td>Bregma</td>
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<td>Greater Palatine Foramina</td>
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<tr>
<td>Superior Sphenotemporal</td>
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Range: 35-45
Age: 35-39
Code: 24

SKELETAL SEXING

<table>
<thead>
<tr>
<th>Ventral arc</th>
<th>Nuchal crest</th>
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<tbody>
<tr>
<td>Subpubic concavity</td>
<td>Mastoid process</td>
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<tr>
<td>Subpubic angle</td>
<td>Supra-orbital sharpness</td>
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<tr>
<td>Ischio-pubic ramus ridge</td>
<td>Supra-orbital ridge size</td>
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<td>Greater sciatic notch width</td>
<td>Mental eminence size</td>
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<tr>
<td>Preauricular sulcus</td>
<td>Mental shape</td>
</tr>
<tr>
<td>Auricular surface elevation</td>
<td>Femur head diameter</td>
</tr>
<tr>
<td>Curvature of the sacrum</td>
<td>Humerus head diameter</td>
</tr>
</tbody>
</table>

Femur: (F<42.5, 47.5 >M), Humerus: (F<43, 47>M)

Notes:
Very small humerus head diameter, small and gracile mandible – characteristics suggest female.
Burial context - green stain on left temporal, earring

All sutures are open, but there are deep pacchionian pits and meningial grooves on the endocranial surface.
Teeth exhibit moderate to severe attrition, particularly anterior dentition, but appear healthy with minor dental disease present. The verts exhibit only mild degenerative changes, somewhat unusual for this age range in this skeletal series.

Auricular surface score:
Left - The left auricular surface is mostly granular with some small areas of densification on the superior demiface. Slight transverse organization is present. Slight apical changes, and granular surface is somewhat irregular.
R – only superior demiface fragment is present, but it is a mix of granular and dense, with possibly some macroporosity.
Phase 4-5 – 35-44 years
With all factors in mind, this individual is probably on the younger end of this range, 35-39 years
## DENTAL INVENTORY

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### RIGHT MAXILLA

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<th>Ling</th>
<th>Inter</th>
<th>Root</th>
<th>Pulp</th>
<th>Alveol</th>
<th>Calc</th>
<th>Resorp</th>
<th>Stain</th>
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### LEFT MANDIBLE

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**Notes:**
Banded hypoplasias along incisors and canines, probably more on incisors but upper and lower teeth exhibit significant attrition, only Cr1/2 and later development is present.

Anterior teeth exhibit more wear

Mandible and maxilla appear to be misaligned with the upper teeth fairly spaced out resulting in the upper canines resting on the lower PM1s, the upper PM1s occlude with the lower PM2s, and the upper PM2s occlude with the lower M1s.

Cultural modification of teeth:
Lmax I1
Lmax I2
Lmax C
These three teeth exhibit small, irregular notches on the occlusal surface of the teeth, towards the distal side. Notches are accompanied by chipped wear facets, particularly visible on the incisors, as rough, triangular surfaces on the labial surfaces of the teeth. Chipped areas measure about 3mm long, 1-2mm wide. See photos.
CRANIAL MEASUREMENTS

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## NON-METRIC TRAITS

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| 18a | Mastoid foramen          |     |     |     | Degree                   |      |     |     |
|     | 0 = absent                | 1   | 1   | 21b | 0 = absent               | 9    | 9   |     |
|     | 1 = temporal             | 0   |     |     | 1 = partial              |      |     |     |
|     | 2 = sutural              |     | 2   |     | 2 = complete             |      |     |     |
|     | 3 = occipital            | 3   |     |     | 3 = unobservable         |      |     |     |
|     | 4 = both sutural and temp|     | 4   |     | 4 = unobservable         |      |     |     |
|     | 5 = both occip and temp  | 5   |     |     | 5 = unobservable         |      |     |     |
|     | 9 = unobservable         | 9   |     |     | 9 = unobservable         |      |     |     |

| 18b | Number                   | 0   |     |     | 1 = partial              |      |     |     |
|     | 0 = absent                | 2   | 2   |     | 2 = complete             |      |     |     |
|     | 1 = 1                    | 3   |     |     | 3 = unobservable         |      |     |     |
|     | 2 = 2                    | 9   |     |     | 9 = unobservable         |      |     |     |

| 19  | Mental foramen           |     |     |     | 2 = complete             |      |     |     |
|     | 0 = absent                | 1   |     |     | 0 = unobservable         |      |     |     |
|     | 1 = 1                    |     | 1   |     | 1 = partial              |      |     |     |
|     | 2 = 2                    | 24  |     |     | 2 = unobservable         |      |     |     |
|     | 3 = more than 2           |     | 3   |     | 3 = unobservable         |      |     |     |
|     | 9 = unobservable          |     | 9   |     | 9 = unobservable         |      |     |     |

| 20  | Mandibular Torus         | 0   |     |     | 9 = unobservable         |      |     |     |
|     | 0 = absent                |     |     |     | 0 = unobservable         |      |     |     |
|     | 1 = trace (palpate, not see) | 2   |     |     | 1 = unobservable         |      |     |     |
|     | 2 = moderate (2-5mm)      |     | 3   |     | 2 = unobservable         |      |     |     |
|     | 3 = marked (5mm)          | 9   |     |     | 3 = unobservable         |      |     |     |

| 21a | Mylohyoid bridge         | 9   |     |     | 9 = unobservable         |      |     |     |
|     | 0 = absent                |     |     |     | 0 = unobservable         |      |     |     |
|     | 1 = near mandibular foram | 1   |     |     | 1 = unobservable         |      |     |     |
|     | 2 = center of canal       |     | 2   |     | 2 = unobservable         |      |     |     |
|     | 3 = both bridges w/ hiatus |     | 3   |     | 3 = unobservable         |      |     |     |
|     | 4 = both bridges no hiatus|     | 4   |     | 4 = unobservable         |      |     |     |
|     | 9 = unobservable          | 9   |     |     | 9 = unobservable         |      |     |     |
Biological Profile Narrative

Libice nad Cidlinou
Kanín Cemetery
Feature: 10/68
Kanín Burial 139
Box # 36141

Recorder: LH (Lauren Hosek)
Date: 07/12/12 and 02/19/14

Burial Context:

The burial of an adult female (adultus II) was located in the southeast area of the Kanín II excavation area, in an irregularly shaped pit with a flat bottom. The grave was 236m long, 81cm wide, and 65cm deep. The depth from the surface was 135cm. The grave was oriented on an east-northeast – west-southwest axis, the opposite orientation of the majority of graves at Kanín.

The skeleton was lying on the left side with the skull lying on the left temple. The right arm was along the body, the left hand placed at the face. The right leg was slightly flexed, and the left leg was sharply flexed (crouched) towards the buttocks. The length of the skeleton in the grave was 153cm.

One artifact was associated with this burial. A bronze earring with a spiral pendant was found in the area of the left ear, beneath the skull. The dimensions of the arch were 11.9x6mm, the length of the pendant was 10.5mm, and the diameter of the pendant was 3.2-5.5mm.

Biological Profile:

This individual was analyzed in an initial pilot examination in 2012, and again in 2014 during analysis of the entire Kanín series. Present in the museum repository are the partially complete remains of a middle adult female, estimated to be 35-39 years of age. Also present in box #36141 is the fragmentary proximal joint surface of a right tibia belonging to an unknown individual. The remains of Kanín Burial 139 include a largely complete calvarium, although some of the bones of the basicranium and face are fragmentary or missing. All long bones are present, although the right radius and ulna and the left tibia and fibula are missing the distal shafts and some joint surfaces are only partially present. Much of the axial skeleton is present but fragmentary, with partial innominates, scapulae, ribs, and vertebrae. Some hand and foot bones were present.

All bones were coated in a preservative that was found to be quite thick on some bones, including the right humerus, both femora and both tibiae. The shellacked coating makes it more difficult to see pathology. Many of the bones were also glued, including the cranial bones,
mandible, right scapula, right ulna, sacrum, left innominate, right tibia, left tibia, right fibula, and the right clavicle. Finally, the teeth were glued into sockets.

Overall, the skeleton was found to be at a Behrensmeyer weathering stage of 3. The bone is somewhat weathered, particularly the joint surfaces of the long bones and the long bone shafts are often lacking significant cortical bone. The vertebral bodies and ribs are also quite weathered and fragmentary. The ectocranial surface is slightly weathered and some cortical bone is gone. The endocranial surface of the right parietal, in particular, is very weathered with almost no cortical bone present. The right side of cranium is warped, with the temporal and parietal bones displaced medially.

A general light brown bone color is fairly consistent across the body, although some probable mold is present on the vertebrae in the form of white, irregular adhesions. There is a green stain on left temporal, centered on auditory meatus. The temporal bone is broken, so extent of the stain is unknown, but it is at least 25mm long by 29mm wide and extends to the base of the zygomatic process. This staining probably correlates with the location of the metal earring. Another green stain is present on one of the left phalange fragments. The stain is on the proximal end of what is probably the superior surface. This hand was near the cranium and the earring on the left temporal.

This individual was determined to be a female based on the morphological characteristics of the cranium and innominate, the small diameter of the humoral head, and overall gracile body. Characteristics suggestive of a female innominate include a wide greater sciatic notch, the presence of a preauricular sulcus, and an elevated auricular surface. The cranium exhibits more of a range of characteristics, though overall these features suggest a female. While the supraorbital ridges are gracile and the mental shape is rounded and gracile, the mental eminence is of an intermediate size. The mastoid process is fairly small, and the orbit margins are fairly sharp. Finally, while the femoral head measurement (43mm) falls in the indeterminate range, the humoral head measurement (38mm) falls in the female range.

This individual was estimated to be a middle adult, 35-39 years of age, with a more conservative estimate of 35-44 years, based primarily on scoring for the auricular surfaces. The left auricular surface was complete and was mostly granular with some small areas of densification on the superior demiface. Slight transverse organization is present. Apical changes are slight, and the granular surface is somewhat irregular. These characteristics corresponded with Phase 4: 35-39 years. Only a fragment of superior demiface of the right auricular surface was present. This fragment exhibited a mix of granular and dense bone, with possibly some macroporosity corresponding more with Phase 5: 40-44 years. All cranial sutures were open, likely impacted by the warping of the cranium postmortem. There are deep pacchionian bodies and deep meningeal grooves on the endocranial surface. The teeth are relatively healthy, and exhibit mild to moderate wear, particularly advanced on the anterior dentition. Degenerative joint
changes, particularly in the spine, are relatively mild. Together, these characteristics support an estimate on the younger end of the range indicated by the auricular surfaces, 35-39 years.

Nearly all teeth are present and in occlusion, except for the right maxillary third molar and the right mandibular canine which are missing postmortem. There is very little dental disease, with only a few pit caries found primarily on the mandibular molars and a larger carious lesion on the left mandibular third molar affecting multiple surfaces. Dental wear is moderate to severe, in the range of stages 3-5, with the most advanced wear on the anterior dentition. The mandible and maxilla appear to be slightly misaligned with the upper teeth fairly spaced out resulting in the upper canines resting on the lower first premolars, the upper first premolars occluding with the lower second premolars, and the upper second premolars occluding with the lower first molars. The dental disease present is unusually mild for middle adult females in this series, while the attrition stage is unusually severe.

Most notable is cultural modification of the teeth. The maxillary left incisors and canine exhibit small notches on the occlusal margins of the teeth, towards the distal margin. Chipping around these notches has resulted in the loss of small flakes of enamel on the labial surfaces of the incisors. These triangular-shaped chipped surfaces range from 2-3mm in length.

Linear enamel hypoplasias (LEHs) are present on all anterior teeth. The incisors exhibit moderate wear and so only LEHs at Cr1/2 (development stage of half the crown) and later are visible. These indicators of growth disruption suggest that this individual experienced several stressful periods during early childhood, at least from 1.9-2.9 years based on banded hypoplasias on the left mandibular canine between crown 1/2 and crown 3/4 development.

Skeletal pathology and activity changes include a squatting facet on the distal right tibia indicating hyperdorsiflexion of the ankle, possibly as a result of habitual squatting or kneeling. Other changes include a mild enthesophyte on the coronoid tubercle of the right clavicle and slight cortical excavation on the radial tuberosity of the left radius. The long bones shafts exhibit some bowing, including bilateral anterior bowing of the proximal shafts of the humeri. The femur shafts are likewise bowed anteriorly and also exhibit elevated linea asperae and bilateral flattening of the inferior surface of the lateral condyle. This morphological change is unusual and could be due to kneeling but must be investigated further. The anterior crest of the right tibia is bowed (medially on the proximal shaft, laterally on the distal shaft), while the left anterior crest is straight. Likewise, the right fibula is bowed medially towards the tibia, while the shaft of the left is straight. The tibiae exhibit mild, bilateral periostitis. The periostitis is well-healed and widespread along the medial surfaces of the distal third of the shafts.

Degenerative changes are mild throughout the skeleton, typical of middle adult females in this series. The arm bones exhibit some degenerative joint changes, primarily mild. The right scapula exhibits mild osteophytes on the margin of the glenoid surface. The left radius exhibits
mild porosity on the margin and surface of the proximal joint, while the left ulna exhibits mild osteophyte formation on the proximal joint margin. Moderate porosity is present on the proximal joint surface of the right radius, including some macroporosity. The spine shows relatively minor degenerative changes, with mild osteophytes and porosity present on most facets and on the vertebral bodies of the cervical and lumbar vertebrae. Both innominate bones have mild osteophyte activity on the margins of the acetabulae, as well as mild porosity on the surface of the joints. Finally, the right tibia exhibits mild porosity on the proximal joint surface. All of these changes are relatively mild, although many joint surfaces are eroded or missing.

Photos:
green stain on temporal
green stain on metacarpal
notches on maxillary teeth
radius joint porosity
bowed R fibula
auricular surface (for note)
thin lower arm bones
hum shaft bowing
flattened distal fem
Appendix C: Skeletal methods and results

This appendix presents the methods and techniques used in the analysis of the Libice series. Additionally, results of the skeletal analyses and some comparisons between the cemetery samples are tabulated and discussed here. Some topics (e.g., entheseal changes, robusticity, trauma, dental pathology, etc.) are elaborated and contextualized in the main text of the dissertation as components of this microhistorical bioarchaeology. At the same time, this appendix offers a comprehensive overview of the skeletal analysis and demonstrates significant similarities between the two cemetery samples in terms of demographics, health, and activity.

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**Skeletal Inventory**

A skeletal inventory provides an account of the skeletal elements present, their completeness, and how many individuals are present. In the inventory of the Libice series, each element was evaluated for completeness on a three-point scale based on the Smithsonian coding system: “complete” (more than 75% of the element present), “partially complete” (between 25-75% of the element present), and “incomplete” (less than 25% present of the element present) (Owsley et al. 1995). Furthermore, each individual set of remains was scored for completeness with the same scale (Table C.1). As noted in Chapter 3, skeletal remains from Kanín were significantly more incomplete and fragmentary.¹⁶⁴ It is important to take these discrepancies in preservation and completeness into account. For example, only individuals with dental remains present were included in evaluations of dental health between the samples. Likewise, pathology was evaluated by element and only individuals with the specific elements present were included in analysis.

**Table C.1: Skeletal completeness in Libice cemetery samples**

<table>
<thead>
<tr>
<th>Preservation</th>
<th>Akropole</th>
<th>Kanin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Complete &gt;75% present</td>
<td>71</td>
<td>61%</td>
</tr>
<tr>
<td>Partially Complete 25-75% present</td>
<td>33</td>
<td>28%</td>
</tr>
<tr>
<td>Incomplete &lt;25% present</td>
<td>13</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>11%</td>
</tr>
</tbody>
</table>

Skeletal inventory reflects the condition of the remains at the time of analysis, and it is noted when this information differs from excavation descriptions. As described in Chapter 3, the recovery and storage of the Libice remains were at times problematic. Nearly all burials from both cemeteries at Libice were discreet, with only a few cases of deliberate multiple interment.

¹⁶⁴ A two-proportion Z-test was conducted to compare the proportion of “complete” individuals (more than 75% of the skeleton present) between the two cemetery samples. The test yields a statistic of $Z=6.5348$, $p < .00001$. The result is significant at $p < .05$, meaning that there is a significant difference in the proportion of complete individuals in the two cemetery samples.
However, during laboratory analysis, there were several instances in which curation boxes contained more than one set of skeletal remains. In these situations, an MNI (minimum number of individuals) was determined and individuals were identified based on preservation, age and sex data, and articulation.

On a case-by-case basis, some of these individuals were assigned a distinct burial number. For example, Kanín Burial 177 was found to contain cranial material from two individuals: an infant aged 0.0-0.5 years (designated in analysis as Burial 177a) and a younger child aged 1.5-2.5 years (designated Burial 177b). It is possible that excavators in 1961 did not recognize two sets of remains in this burial as the remains were incomplete and crushed. In that case, this may have been a double burial similar to Kanín Burials 91/92 in which one subadult was interred immediately on top of another in the same grave. On the other hand, the remains of the two subadults curated as Kanín Burial 177 may have been accidentally commingled post-excavation, and so the questionable provenance is noted.

In most cases, however, only one or two extraneous elements were present and likely represented disturbed remains in the backfill of the designated burial. These remains, lacking provenance and other mortuary data, were not given a “Burial” designation and were not included in my analysis. For example, Akropole Burial 58 contained the remains of an adult male which matched the remains described in the excavation report. The curation box also contained rib fragments and femoral epiphyses belonging to a subadult individual which were not mentioned in the report. In this case, a curational MNI was noted and a description of the extraneous remains was included in the skeletal inventory of Burial 58.
Taphonomy

Taphonomic processes are those which affect the body after deposition. Environmental or cultural activity can result in changes to bone, typically involving alteration in color, texture, and shape. Other surface changes include weathering, cut marks, and animal activity, all of which can affect the visibility and interpretation of pathology and other antemortem changes to bone (Behrensmeyer 1978; Buikstra and Ubelaker 1994; Ubelaker 1997; Forbes 2014; Knüsel and Robb 2016). Observed taphonomic changes were included in each biological profile with regard to their potential impact on the skeletal analysis and interpretations of mortuary context. These alterations were recorded based on the Smithsonian coding system (Owsley et al. 1995) along with narrative descriptions.

Shape changes due to environmental conditions such as warping or cracking under soil pressure were noted as these alterations could preclude some cranial measurements. Furthermore, these changes had to be distinguished from antemortem or perimortem trauma to bone (Buikstra and Ubelaker 1994; Ubelaker 1997; Knüsel and Robb 2016). Bone weathering was evaluated based on Behrensmeyer’s (1978) stages. Describing the taphonomic deterioration of bone can help determine the burial environment and the position of the body. Finally, the chemical and physical properties of artifacts buried with the body can leave traces on the bones (Ubelaker 1997; 2016). Graves from both cemeteries at Libice occasionally contained metal jewelry and corroded iron artifacts that left stains and adherent rust on bone surfaces. Such traces of material objects assist in interpretations of the spatial relationships between bodies and objects in the grave.
Estimating Sex

Although humans generally fall into two genetic categories of sex (male and female), the biological and cultural expressions of these differences vary throughout the life course. Factors including age, hormonal changes, nutrition, labor and activity patterns, the physical environment, and material practices contribute to biosocial manifestations of sex (Sofaer 2006; Geller 2009; Agarwal 2012; Geller 2017; Agarwal and Wesp 2017). Skeletal markers of sex are based on structural reproductive differences in males and females (primarily in the pelvis) as well as secondary sexual characteristics of the cranium and long bones (Buikstra and Ubelaker 1994; Mays and Cox 2000; White et al 2011). Many of these characteristics vary considerably across populations and fall along a continuum of expression (Geller 2017).

The Libice series were evaluated for sex and scored based on the Smithsonian coding system (Owsley et al. 1995) in which each characteristic is assigned a numerical category (Table C.2). Individuals were assigned to one of these categories following sex estimation; for demographic analysis, the “probable” categories were integrated with those of males or females.

<table>
<thead>
<tr>
<th>Code</th>
<th>Sex category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
</tr>
<tr>
<td>3</td>
<td>Indeterminate</td>
</tr>
<tr>
<td>4</td>
<td>Probable Male</td>
</tr>
<tr>
<td>5</td>
<td>Probable Female</td>
</tr>
</tbody>
</table>

Due to its functional role in reproduction, the innominate is the most reliable element for determining adult sex (Phenice 1969; Buikstra and Ubelaker 1994; Mays and Cox 2000; Brůžek 2002). Pelvic standards used in this study were compiled from Buikstra and Ubelaker (1994), Brůžek (2002), White and Folkens (2005), and White and colleagues (2011). These sources draw on the observational method developed by Phenice (1969) that utilizes several morphological
features of the innominate. This method, based on a sample of remains of known sex from the
Terry Collection, continues to be one of the most reliable methods of sexing adult remains,
although it can be hampered by inter-observer error due to the subjective nature of the
observations (Brůžek 2002; White et al. 2011). The observational method developed by
Ferembach and colleagues (1980) was improved upon by Brůžek (2002) through a rating system
and detailed descriptions of variation in the sacroiliac complex and the ischiopubic complex.
Brůžek (2002) is the most widely used method for determining sex in Central European skeletal
populations. Morphological features assessed in the Libice series include subpubic
characteristics (presence or absence of a ventral arc, subpubic concavity, and ischiopubic ramus
ridge) as well as the morphology of the greater sciatic notch, elevation of the auricular surfaces,
and the morphology of the preauricular surface.

While less reliable than pelvic dimorphism, cranial morphology can complement sex
estimation from the pelvis. Where pelvic features were absent or poorly preserved, secondary
sexual characteristics of the cranium were the primary criteria for sex estimation. Estimations
based solely on the skull were compared to complete individuals and considered with regards to
the range of sexual dimorphism in the Libice samples (Meindl et al. 1985). Hormones
influencing bone growth result in generally more robust male crania and more gracile female
crania – although hormonal changes in post-menopausal women can lead to increased bony
robusticity (Buikstra and Ubelaker 1994; Mays and Cox 2000; Agarwal 2012). The
morphological characteristics of the cranium that were assessed include the nuchal crest, the

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165 It is a common assumption in bioarchaeological investigations that older individuals, particularly females,
experience bone loss and increased fragility towards the end of the lifecycle. However, bone maintenance and loss
are influenced by numerous factors including activity, nutrition, and genetics (Agarwal 2012, 2016).
mastoid process, the supraorbital margin, the supraorbital ridge, mandibular shape, and the mental eminence (Buikstra and Ubelaker 1994; White and Folkens 2005).

As a complement to these more reliable methods, and in the absence of pelvic or cranial elements, secondary sexual characteristics in the postcranial skeleton were also used to estimate sex. For example, metric and morphological characteristics of weight-bearing long bones provide ranges into which males and females tend to fall (Buikstra and Ubelaker 1994; Mays and Cox 2000; White et al. 2011). Importantly, these traits are highly population-specific and seriation within a population is more accurate than using statistics based on other populations (White et al. 2011). Stewart (1979) identified male and female ranges for the vertical diameters of the humoral and femoral heads. These measurements, along with metric measurements of the calcanei (Introna et al. 1997) are used with caution as indicators of sexually dimorphic robusticity in the Libice series.

Identifying sex in subadult skeletal remains is extremely challenging because many morphological characteristics of sex are controlled by hormones and therefore do not begin to be expressed until puberty (Mays and Cox 2000; Lewis 2007, 2018). Studies on subadult remains of known sex continue in an effort to find a method that can accurately demonstrate sexual differences at a younger age (Sutter 2003; Cardoso 2008; Veroni et al. 2010; Shapland and Lewis 2013; Lewis 2018). However, DNA analysis remains the most reliable method of sexing subadult remains (Stone 2008; Lewis 2018), which is beyond the scope of this project. Of course, this osteological limitation does not mean that non-adults in the past were not participating in a gendered social and material world. Carefully contextualized analysis of mortuary practices and material culture can allow us to approach the gendered identities of the very young (see Chapter 5).
The distribution of adult males and females in each cemetery sample is unequal (Figure C.1a and b) with a smaller proportion of females in both groups. This finding might suggest differential mortality in the sex groups at Libice, however, the difference was not statistically significant for either cemetery sample or when the samples were combined. Furthermore, while there are different proportions of males and females in each sample, this variation was not found to be significant. A greater proportion of Kanín individuals were found to be of indeterminate sex, in many cases due to poor preservation. However, this difference in indeterminate sex estimations between the cemetery samples was likewise not significant.

Figure C.1: Sex distribution of adults (*over 15.5 years) at Libce. a) Akropole sex distribution of adults. b) Kanín sex distribution of adults.

When adult age demographics at Libice are examined by sex (Table C.3), we see some patterns that hold across both cemetery samples. For example, a greater proportion of males died in middle adulthood than females. Although this finding was significant when the samples were combined, it only remained statistically significant in the Kanín sample.\(^ {166}\) Generally, however, no other significant differences were observed between the cemetery samples when comparing

\(^ {166}\) A Chi-square test for goodness of fit yields a value of 3.93, \(p=0.04743\). The result is significant at \(p < .05\) meaning that a significantly higher proportion of males than females died in middle adulthood than would be expected at Kanín.
sex and age-at-death, allowing for a comparison of other skeletal findings across the life course and by sex.

**Table C.3: Adult demographics by sex at Libice**

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Range (years)</th>
<th>Akropole adults</th>
<th>Kanin adults</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>% Male</td>
<td>Female</td>
</tr>
<tr>
<td><strong>Young adult</strong></td>
<td>15.5-24</td>
<td>4</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Middle adult</strong></td>
<td>25-45</td>
<td>17</td>
<td>59%</td>
</tr>
<tr>
<td><strong>Old adult</strong></td>
<td>45+</td>
<td>9</td>
<td>45%</td>
</tr>
<tr>
<td><strong>Unknown adult</strong></td>
<td>&gt;15.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total adults</strong></td>
<td>&gt;15.5</td>
<td>30</td>
<td>53%</td>
</tr>
</tbody>
</table>

*Indeterminate sex

**Estimating age-at-death**

Bioarchaeologists divide the continuous process of aging into circumscribed categories that can be used to better understand patterns of disease, nutrition, mortality, and activity across the life course. An individual’s skeletal age is estimated by determining the stage of growth, maturation, or degeneration, which is correlated with a chronological age describing the number of years of life. In general, multiple methods and techniques are employed in conjunction to estimate age-at-death for an individual skeleton (Ubelaker and Khosrowshahi 2019).

Those individuals who died before the age of 15.5 years, as well as some young adults with still-developing skeletons, were assessed using juvenile ageing techniques. Estimating age in juveniles is based on relatively rapid changes in growth and development that place individuals into more narrow age ranges (approximately one year), or broader developmental categories, depending on the reliability of the method (Lewis 2007, 2018). Subadult age estimation for the Libice series relied on dental development, metric long bone length, and epiphyseal union. Wherever possible, subadult age was assessed using all of these methods to increase the accuracy of age estimation.
The most reliable method of aging children who survive birth is dental development (Buikstra and Ubelaker 1994; Cardoso 2007; Lewis 2018). Tooth formation is more heavily influenced by genetics than by sociocultural or environmental factors when compared to other juvenile aging methods (Lewis 2007). Moorrees, Fanning, and Hunt (1963a, 1963b) developed a method of determining tooth development phases based on modern radiographic studies for permanent and deciduous teeth. Liversidge and Molleson (2004) updated and expanded upon this data for deciduous tooth formation. Phillips and van Wyk Kotze (2009) note that the Moorrees and colleagues (1963a) method consistently underestimated the ages of children in some populations. However, the relatively large sample size, the reference population of European descent, and its common use in osteological standards makes this method the most appropriate for this study.

Although less reliable than tooth development, metric analysis of long bone diaphysis length was used to estimate age range or complement tooth development age estimates. Formulae have been developed to estimate fetal age in lunar months (Kosa 1989), as well as postnatal subadults. The latter relies on measurements of the maximum lengths of the humerus, radius, ulna, femur, tibia, and fibula, which are then compared to age categories established from a protohistoric Arikara dataset (Ubelaker 1989). Although often used to evaluate Czech skeletal data, considering this reference population to be comparable to a European population is problematic, as well as the assumption of a predictable rate of long bone growth in all populations and circumstances (Ubelaker 1989).

Further, these standards are most reliable for very young children but become more problematic as children age and their development is further influenced by other factors such as nutrition, health and disease, and activity (Cardoso 2007). Measurements were taken from as
many long bones as possible for each individual. These formulae are commonly used on Czech data sets, although the reference population is problematic and so it is employed with caution and in conjunction with other aging methods wherever possible. For example, Primeau and colleagues (2016) used a medieval Danish dataset to develop quadratic regression formulae for subadult age based on long bone lengths. The age estimates from these formulae more accurately corresponded to dental development estimates in the Libice series, and so these formulae were also used to assess age, particularly when dental remains were absent.

Finally, the degree of epiphyseal union was used to estimate subadult age, although this technique is not as reliable as other methods. In growing subadults, the epiphyses (joint surfaces) ossify and fuse to the metaphyses (main bodies of bone such as a long bone shaft) at predictable rates (Scheuer and Black 2004). Many elements, including long bones and cranial elements, provide age ranges based on the appearance of the secondary center of ossification and whether the epiphysis remains unattached to the metaphysis (open), is in the process of fusing (onset), or is completely fused to the primary center of ossification (complete) (McKern and Stewart 1957; Coqueugniot and Weaver 2007; Cardoso and Ríos 2011; Nagaoka and Kawakubo 2015). Reference populations of known ages provide comparisons to determine the timing of the fusion processes, but the resultant ranges are not as narrow as metric analyses allow. Ossification rates can also be influenced by stress and nutrition, as well as hormones in adolescence, which result in sex differences in fusion (Coqueugniot and Weaver 2007; Cardoso and Ríos 2011). To estimate subadult age-at-death using this method, I relied on ossification and epiphyseal union standards recommended by Buikstra and Ubelaker (1994) and Scheuer and Black (2004).

Estimating age for adults requires a different set of methods that takes into account how the body matures and senesces (Işcan 1989; Agarwal 2016). Although bone turnover continues
throughout life, beyond about 20-25 years of age growth and development are replaced by degenerative changes to bone and joint surfaces (Ubelaker 1989). Due to the plasticity of the skeleton and how it is influenced by cultural and environmental factors, there is not one highly reliable age indicator that can be used alone. Instead, as many separate indicators as possible should be assessed and integrated to determine the most accurate age-at-death for adults (Meindl and Lovejoy 1985; Ubelaker and Khosrowshahi 2019).

The most useful element for estimating adult age is the innominate with the diagnostic joint surfaces of the auricular surface (Lovejoy et al. 1985; Meindl and Lovejoy 1989; Buckberry and Chamberlain 2002) and the pubic symphysis (Todd 1920; Brooks and Suchey 1990; Buikstra and Ubelaker 1994). These joint surfaces are evaluated separately for males and females and demonstrate predictable age-related changes. However, in addition to sex-based differences, the morphologies of the innominate joint surfaces are also known to be influenced by environmental and activity-related factors, including parturition, and these scoring methods do not always account for variability in certain groups (Klepinger et al. 1992; Schmitt 2004; White et al. 2011).

In addition to relying on the age diagnostics in the pelvis, I supplement these with standards developed for the sternal ends of the ribs (Işcan et al. 1984; Oettlé and Steyn 2000), and the degree of cranial suture closure (Meindl and Lovejoy 1985). Both of these techniques are problematic on their own (Masset 1989, Mays and Cox 2000; White and Folkens 2005; White et al. 2011; Muñoz et al. 2018). For example, the sternal ends of the ribs can be affected by a variety of other factors including biomechanical stress, diet, disease, and human variation (Işcan et al. 1984; White and Folkens 2005). However, these methods can serve as checks of, and complements to, more reliable age standards. So too can macroscopic observations of bone and
tooth wear, degenerative joint disease, and changes in bone density, all of which I consider to create an integrated biological age-at-death estimate.

Once an individual’s age-at-death is estimated within a chronological range, it can be placed in context. Falys and Lewis (2011) and Roksandic and Armstrong (2011) have suggested standardized and defined stages of development and age categories based on life history models to be used in the field of bioarchaeology. Any established age category is, however, artificial, as “age” signifies a continuum of change and meanings that vary culturally (Sofaer 2006). As such, I adapted Gilchrist’s (2012) interpretations of relevant age categories along the continuum of the medieval life course (Table C4, and see discussion in Chapter 5). These age categories are similar to those proposed by Falys and Lewis (2011) and Roksandic and Armstrong (2011) that use life stages rather than chronological ages. For example, Roksandic and Armstrong (2011) outline eight stages of development: infancy, early childhood, late childhood, adolescence, young adulthood, full adulthood, mature adulthood, and senile adulthood. It is important to note that Gilchrist’s (2012) medieval age categories correspond more to social milestones (marriage) and changes to the body (adolescence and senescence) than to numbered years. This classification system was used for demographic analysis of the cemetery samples at Libice because it focuses on age groupings that reflect culturally significant life stages (Gilchrist 2012).

The traditional bioarchaeological age categories offered by Buikstra and Ubelaker (1994:9) are useful for comparison with other archaeological populations assessed using the same standards. However, many Central European skeletal series are categorized based on a system developed by Martin (1928) and refined by Stloukal (1999) which differs slightly from the age categories commonly used by other Western bioarchaeologists (see Table C4). With
these discrepancies in mind, I do not directly compare the Libice sample demographics with other Czech series.

Table C.4: Bioarchaeology age classification schemes

<table>
<thead>
<tr>
<th>Chronological Age</th>
<th>Traditional bioarchaeology age categories*</th>
<th>Age categories used in Czech series**</th>
<th>Medieval age categories***</th>
<th>Cultural Age and Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0-0.5</td>
<td>Infans I</td>
<td>Infants (IN)</td>
<td>From birth to about two years, generally prior to weaning</td>
<td></td>
</tr>
<tr>
<td>0.5-1.5</td>
<td>Infans II</td>
<td>Younger Children (YC)</td>
<td>From about two to seven years, post-weaning, social world within the home</td>
<td></td>
</tr>
<tr>
<td>1.5-2.5</td>
<td>Subadult</td>
<td>Infans III</td>
<td>From about seven to 16 years, emerging independence, education, and gender</td>
<td></td>
</tr>
<tr>
<td>2.5-3.5</td>
<td>Juvenis</td>
<td>Young Adults (YA)</td>
<td>Youth, extended adolescence and limited social responsibilities</td>
<td></td>
</tr>
<tr>
<td>3.5-4.5</td>
<td>Adultus I</td>
<td>Middle Adults (MA)</td>
<td>Adulthood, period of greatest productivity and social involvement</td>
<td></td>
</tr>
<tr>
<td>4.5-5.5</td>
<td>Adultus II</td>
<td>Maturus I</td>
<td>Old age, transformed (sometimes reduced) social and physical activity</td>
<td></td>
</tr>
<tr>
<td>5.5-6.5</td>
<td>Maturus II</td>
<td>Old Adults (OA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.5-7.5</td>
<td>Old Adult</td>
<td>Senilis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5-8.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.5-9.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.5-10.5</td>
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<td>10.5-11.5</td>
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<td>11.5-12.5</td>
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<td>12.5-13.5</td>
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<td></td>
<td></td>
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<tr>
<td>13.5-14.5</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>14.5-15.5</td>
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<td></td>
<td></td>
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<tr>
<td>15.5-16.5</td>
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<td>16.5-17.5</td>
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<td>17.5-18.5</td>
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<td></td>
</tr>
<tr>
<td>18.5-19.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-44</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-49</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-54</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55-59</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Buikstra and Ubelaker 1994
** Martin 1928, Stloukal 1999
*** Gilchrist 2012

Table C.5 presents the distribution of age ranges for the two cemetery samples. Only one difference between the cemetery samples was found to be statistically significant: the Akropole
sample contained a significantly higher proportion of infant burials than the Kanín sample.\textsuperscript{167}

Indeed, over a fifth of all interments in the Akropole sample were infants (under the age of 1.5 years). One explanation is that these data may be biased by the poor preservation at Kanín (potentially resulting in the loss of fragile infant skeletal remains). However, it is important to note that the excavated area of Kanín did not contain infant-sized grave shafts that were lacking skeletal remains (Mařík 2009a). Instead, we might consider the possibility that some infants at Libice were not buried in cemeteries at all, reflecting an array of mortuary responses for the very young at Libice.

Table C.5: Libice cemetery samples age-at-death distribution

<table>
<thead>
<tr>
<th>Life Course Phase</th>
<th>Range (yrs)</th>
<th>Akropole</th>
<th>Kanín</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>% total</td>
<td>No.</td>
</tr>
<tr>
<td>Subadult</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant (IN)</td>
<td>0.0-1.5</td>
<td>26</td>
<td>22%</td>
</tr>
<tr>
<td>Younger children (YC)</td>
<td>1.5-6.5</td>
<td>21</td>
<td>18%</td>
</tr>
<tr>
<td>Older children (OC)</td>
<td>6.5-15.5</td>
<td>9</td>
<td>8%</td>
</tr>
<tr>
<td>Unknown subadult (Unkn SA)</td>
<td>&lt;15.5</td>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>Total subadults</td>
<td>&lt;15.5</td>
<td>60</td>
<td>51%</td>
</tr>
<tr>
<td>Adult</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young adult (YA)</td>
<td>15.5-24</td>
<td>8</td>
<td>7%</td>
</tr>
<tr>
<td>Middle adult (MA)</td>
<td>25-45</td>
<td>29</td>
<td>25%</td>
</tr>
<tr>
<td>Old adult (OA)</td>
<td>45+</td>
<td>20</td>
<td>17%</td>
</tr>
<tr>
<td>Unknown adult (Unkn)</td>
<td>&gt;15.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total adults</td>
<td>&gt;15.5</td>
<td>57</td>
<td>49%</td>
</tr>
</tbody>
</table>

The graphic representation of these data (Figure C.2) yields fairly typical U-shaped mortality curves in which the greatest mortality pressures fall on the younger and older individuals in the samples (Jackes 2011). Some possible explanations for the demographic picture (such as the relatively low prevalence of young adults in these cemeteries) are discussed in Chapter 5. Importantly, however, these data show that the age distributions of the two samples

\textsuperscript{167} A two-proportion Z-test was conducted to compare the proportion of infant burials between the two cemetery samples. The test yields a statistic of Z=2.2313, p < .025. The result is significant at p < .05, meaning that there is a significant difference in the proportion of infant burials between the two samples.
are not significantly different and therefore allow us to compare other skeletal findings across the life course.

![Figure C.2: Distribution of mortality in the Akropole and Kanín samples. Each bar reflects the percentage of individuals in the age category within the total sample from each cemetery.](image)

**Skeletal Pathology**

Health is a general, holistic term describing the culturally contextualized well-being of an individual in terms of physiological state and experience (Temple and Goodman 2014; Larsen 2018). In contrast, stress in a bioarchaeological context generally refers to a “series of skeletal indicators of physiological disruption or disease” (Temple and Goodman 2014:186; Klaus 2014) as a means of approaching health. Interpretations of health and disease from skeletal populations are complicated by issues of frailty (individual susceptibility to disease), cemetery population demographics, and selective mortality (individuals’ different histories of illness) (Wood et al. 1992; Wright and Yoder 2003).

The “osteological paradox” described by Wood and colleagues (1992) suggests that individuals with high levels of pathology might actually have been healthier than individuals who died before their skeletons were impacted. The absence of a condition does not necessarily
indicate that an individual is healthier. As such, multiple interpretations of disease patterns in past populations should be considered (Wright and Yoder 2003; Pinhasi and Bourbou 2008; Armelagos et al. 2009; Temple and Goodman 2014). Siek (2013) proposes a biocultural approach to paleopathology that rejects the simplified binary of healthy/unhealthy and uses multiple lines of evidence to take into account both the biological and cultural repercussions of a disease. I employ this approach to consider the significance of the presence and/or absence of pathological lesions in the context of these two early medieval groups with attention to status, variation in mortuary practices, and medieval notions of health and disease.

The study of infectious disease (caused primarily by bacteria, viruses, and parasites) provides insight into the health and quality of life of past populations as well as human interaction with the environment (Larsen 2018). Certain specific infectious conditions can be identified through their distinct skeletal markers including tuberculosis, syphilis and other treponemal diseases, and leprosy. These diseases are often chronic and not immediately fatal and so skeletal signatures may be present. Because bone is a slow-growing tissue, an individual must survive with the disease long enough for the hard tissue to be altered (Djuric-Srejic and Roberts 2001; Ortner 2003).

Paleopathological analysis requires a rigorous approach to differential diagnosis (Buikstra et al. 2017) and levels of certainty (Appleby et al. 2015). To describe and identify pathological changes to bone, I employ several general texts (e.g., Aufderheide and Rodriguez-Martín 1998; Ortner 2003; Roberts and Manchester 2005; Buikstra 2019). More recent paleopathology and clinical literature (e.g., Kjellström 2012; Lunt 2013; Schrenk et al. 2016; Klaus 2017; Pederson et al. 2019) further aid in differential diagnosis, eliminating less likely
conditions and focusing on those that correspond with the observed skeletal pathology.

Individuals with evidence consistent with specific infectious diseases are presented in Chapter 8.

Non-specific indicators of stress and infection provide insight into health status even when a specific etiology cannot be identified, which is often the case. Indeed, the “cause” of most skeletal and dental lesions described in the paleopathology literature is the result of multiple factors that influence bone formation and loss, or alteration in shape and form (Blom et al. 2005; Walker et al. 2009; Wheeler 2012; Klaus 2014; Lewis 2017; Snoddy et al. 2018). For the Libice series, three non-specific indicators were assessed: periostitis, cribra orbitalia, and endocranial lesions (Tables C.6 and C.7). Each of these conditions are described below.

### Table C.6: Subadult skeletal pathology at Libice

<table>
<thead>
<tr>
<th></th>
<th>Total Individuals</th>
<th>Individuals w/path</th>
<th>Path %</th>
<th>Cranial present</th>
<th>Cranial Path %</th>
<th>Observed orbits</th>
<th>Cribra present</th>
<th>Cribra %</th>
<th>Postcranial present</th>
<th>Non spec. Periostitis</th>
<th>Peri %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INFANTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akropole</td>
<td>26</td>
<td>22</td>
<td>84%</td>
<td>25</td>
<td>19</td>
<td>76%</td>
<td>20</td>
<td>7</td>
<td>35%</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Kanin</td>
<td>17</td>
<td>10</td>
<td>59%</td>
<td>15</td>
<td>5</td>
<td>33%</td>
<td>10</td>
<td>5</td>
<td>50%</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Total IN</td>
<td>43</td>
<td>32</td>
<td>74%</td>
<td>40</td>
<td>24</td>
<td>60%</td>
<td>30</td>
<td>12</td>
<td>40%</td>
<td>36</td>
<td>8</td>
</tr>
<tr>
<td><strong>YOUNGER CHILDREN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akropole</td>
<td>21</td>
<td>19</td>
<td>90%</td>
<td>20</td>
<td>11</td>
<td>55%</td>
<td>18</td>
<td>13</td>
<td>72%</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Kanin</td>
<td>27</td>
<td>16</td>
<td>59%</td>
<td>24</td>
<td>7</td>
<td>29%</td>
<td>13</td>
<td>7</td>
<td>54%</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Total YC</td>
<td>48</td>
<td>35</td>
<td>73%</td>
<td>44</td>
<td>18</td>
<td>41%</td>
<td>31</td>
<td>20</td>
<td>65%</td>
<td>34</td>
<td>15</td>
</tr>
<tr>
<td><strong>OLDER CHILDREN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akropole</td>
<td>9</td>
<td>6</td>
<td>66%</td>
<td>8</td>
<td>2</td>
<td>25%</td>
<td>5</td>
<td>3</td>
<td>60%</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Kanin</td>
<td>11</td>
<td>6</td>
<td>54%</td>
<td>10</td>
<td>4</td>
<td>40%</td>
<td>3</td>
<td>1</td>
<td>33%</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Total OC</td>
<td>20</td>
<td>12</td>
<td>60%</td>
<td>18</td>
<td>6</td>
<td>33%</td>
<td>8</td>
<td>4</td>
<td>50%</td>
<td>17</td>
<td>7</td>
</tr>
</tbody>
</table>

Note: Shaded values represent statistically significant differences between the samples

A fourth indicator, porotic hyperostosis,\(^{168}\) was very infrequently observed in the Libice series (N=4 individuals) and is included in the total pathology counts but is not separately discussed here. The presence of these skeletal conditions might reflect episodes of infectious disease, trauma, and/or metabolic and nutritional stress. A narrative description of each lesion attributed to stress or infection was recorded to better understand what role these conditions may

\(^{168}\) Porotic hyperostosis refers to the expansion of bone marrow and porous lesions on the ectocranial vault, particularly the parietal and occipital bones (Hens et al. 2019). Generally, this condition has been linked in bioarchaeological and modern clinical literature with cribra orbitalia as part of the same pathological complex reflecting anemia caused by a variety of conditions (Blom et al. 2005; Lewis 2007; Hens et al. 2019).
have played in the life and death of a particular individual, as well as to identify a specific condition where possible.

### Table C.7: Adult skeletal pathology at Libice

<table>
<thead>
<tr>
<th></th>
<th>Total Individuals</th>
<th>Cranial present</th>
<th>Cranial Path.</th>
<th>% Cranial Path</th>
<th>Observed orbits</th>
<th>Cribra present</th>
<th>% with Cribra</th>
<th>Postcranial present</th>
<th>Non spec. Periostitis</th>
<th>% with Periostitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akr YA M</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>33%</td>
<td>3</td>
<td>2</td>
<td>67%</td>
<td>4</td>
<td>3</td>
<td>75%</td>
</tr>
<tr>
<td>Akr YA F</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>25%</td>
<td>4</td>
<td>0</td>
<td>0%</td>
<td>4</td>
<td>2</td>
<td>50%</td>
</tr>
<tr>
<td>Akr YA I</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Akr YA Total</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td>29%</td>
<td>7</td>
<td>2</td>
<td>29%</td>
<td>8</td>
<td>5</td>
<td>63%</td>
</tr>
<tr>
<td>Kan YA M</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0%</td>
<td>1</td>
<td>1</td>
<td>100%</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Kan YA F</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0%</td>
<td>2</td>
<td>1</td>
<td>50%</td>
<td>2</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Kan YA I</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Kan YA Total</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0%</td>
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<td>2</td>
<td>67%</td>
<td>3</td>
<td>1</td>
<td>33%</td>
</tr>
<tr>
<td><strong>Total YA</strong></td>
<td>12</td>
<td>11</td>
<td>2</td>
<td>18%</td>
<td>10</td>
<td>4</td>
<td>40%</td>
<td>11</td>
<td>6</td>
<td>55%</td>
</tr>
<tr>
<td><strong>MA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akr MA M</td>
<td>17</td>
<td>15</td>
<td>3</td>
<td>20%</td>
<td>14</td>
<td>4</td>
<td>29%</td>
<td>17</td>
<td>13</td>
<td>76%</td>
</tr>
<tr>
<td>Akr MA F</td>
<td>10</td>
<td>9</td>
<td>1</td>
<td>11%</td>
<td>8</td>
<td>0</td>
<td>0%</td>
<td>10</td>
<td>4</td>
<td>40%</td>
</tr>
<tr>
<td>Akr MA I</td>
<td>2</td>
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Note: Totals are highlighted for ease of viewing

Periostitis refers to inflammation of the periosteum, the osteogenic tissue surrounding the bone. Stimulation of the tissue activates osteoblasts to lay down new bone resulting in pitting, striations, and layers of new bone growth on the surface of the cortical bone (Figure C.3) (Lewis and Roberts 1997; Ortner 2003; Waldron 2009; Rittemard et al. 2019). Such stimulation can be
the result of infectious organisms, trauma, or nutritional deficiencies (Wheeler 2012; Klaus 2014) and even subperiosteal growth (Rittemard et al. 2019). Because of this array of potential causal mechanisms, this bony reaction is considered non-specific (Ortner 2003; Wheeler 2012). Traumatic periosteal reaction tends to result in a more localized lesion, while more widespread inflammation of the periosteum is associated with systemic infection (Mays and Cox 2000). Periostitis can be present on any element but is most commonly identified on the long bones (Ortner 2003; Roberts and Manchester 2005). Periosteal lesions were evaluated by individual bone and scored by location, severity, involvement (localized or widespread), and remodeling status (active or healed) based on the Smithsonian system (Owsley et al. 1995).

Figure C.3: Periostitis example. Kanín Burial 155, an old adult male with active periostitis on the visceral surface of a rib neck.

In the Libice series, the tibia shaft was the most frequent site of periosteal lesions. In most cases, periostitis was found to be widespread on affected elements and therefore most likely related to infection rather than trauma (Mays and Cox 2000). Additionally, frequent periosteal lesions on ribs shafts suggests that respiratory infections affected individuals in both cemetery samples to some degree (Santos and Roberts 2006; Cooper et al. 2016; Pederson et al. 2019 and see Chapter 8). Non-specific periostitis in the postcranial skeleton was fairly common in adults

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\(^{169}\) 43 individuals from the Akropole sample and 23 individuals from the Kanín sample exhibited periosteal lesions on one or both tibiae shafts.
from both samples, with a combined frequency of 57% among adults at Libice (Table C.7). Although more adult individuals at Akropole exhibited periosteal lesions than at Kanín, this difference was not statistically significant. Both cemetery samples experienced similar rates of periosteal activity, potentially reflecting similar disease loads between the two burial locations.

Younger children (1.5-6.5 years) buried at the Akropole were significantly more likely to exhibit at least one type of pathological lesion than younger children buried at Kanín. Specifically, this age group exhibited significantly more postcranial periostitis than younger children from the Kanín sample (Table C.6). In general, a smaller proportion of subadult remains exhibited periosteal lesions than those of adults across the cemetery samples. However, based on the osteological paradox (Wood et al. 1992; Siek 2013; DeWitte and Stojanowski 2015), weaker or compromised individuals could have a lower skeletal pathology load because of their inability to recover from periods of stress or affliction. In other words, many of these children could have died before lesions could develop.

Cribra orbitalia presents as lytic lesions or porosity in the eye orbits (Figure C.4) as the outer (cortical) layer of bone thins and the inner (medullary) cavity expands to produce more red blood cells in response to the body’s deficiency (Lewis and Roberts 1997; Roberts and Manchester 2005; Vercellotti et al. 2010; Hens et al. 2019). This condition has been linked to anemia as well as other dietary deficiencies or infectious diseases more broadly (Blom et al. 2005; Walker at al. 2009; Smith-Guzmán 2015; Zarifa et al. 2016). Anemia is the decrease of red blood cells or haemoglobin concentration in the blood and can be due to a dietary deficiency in iron, trauma resulting in blood loss, parasites or infection, and genetic disorders such as thalassemia and sickle cell anemia (Blom et al. 2005; Vercellotti et al. 2010; Hens et al. 2019).
Lesions associated with cribra orbitalia were recorded for location (single orbit or bilateral), severity, and remodeling status (active or healed) (Owsley et al. 1995).

Figure C.4: Cribra orbitalia example. Kanín Burial 144, a younger child (1.5-2.5 years old) with active cribra in both orbits (arrows). View is from inferior angle, showing the roofs of the orbits.

Cribra orbitalia affects just under a quarter (23%) of the adults at Libice who have orbital material present, with no significant differences between the two samples (Table C.7). Likewise, no significant differences emerge when cribra is examined across age groups or by sex. The prevalence of cribra orbitalia in adults at Libice is similar to that adults buried in the Kostelisko sub-castle cemetery at Mikulčice (19%), thought to represent lower status individuals living in close proximity to the castle, including artisans and military personnel (Velemínský et al. 2009). At the early medieval Slovakian site of Devín, both the cemetery within the fortified settlement and the more peripheral cemetery have cribra orbitalia frequencies of 25% and 24.4% among adults, respectively (Beňuš et al. 2010). Interestingly, this pattern is similar to that of the two Libice cemeteries. The data from both Libice and Devín suggest that adults buried in both types of cemeteries experienced similar nutritional and disease stressors resulting in the development of cribra orbitalia.

Cribra orbitalia was identified in over half of all subadults with orbits at Libice, suggesting that childhood anemia was fairly common across the site (Table C.6). The percentage
of subadults exhibiting cribra at Libice was higher than at two other early medieval settlements in the Dolni Věstonice area (24.8% and 35%, respectively) (Jarošova 2007). However, Beňuš and colleagues (2010) summarize data from over a dozen Central European early medieval sites and found wide variation in the frequency of cribra orbitalia. They conclude that variation in population density coupled with outbreaks of infectious disease likely contributed to different manifestations of anemia between the sites.

Another general pathological indicator relevant to the Libice series are non-specific endocranial lesions (Figure C.5). These lesions include porotic lesions, formative lesions, vascular impressions, and hair-on-end formations (Lewis 2004; Sun et al. 2019). One type of endocranial lesion, “serpens endocrania symmetrica” (SES), manifests as patches of discoloration or formative grey/pale plaque on the endocranial surface with “serpentine branching surface excavation” and/or porosity (Hershkovitz et al. 2002:202; Lewis 2004). Possibly the result of a bacterial or viral infection, endocranial lesions have been linked to meningitis, tuberculosis, and other diseases (Roberts and Manchester 2005; Lewis 2007; Cecconi et al. 2007; Janovic et al. 2015; Cooper et al. 2016; Sun et al. 2019). These non-specific lesions may also be the result of severe metabolic disorders such as rickets or scurvy (Cecconi et al. 2007; Snoddy et al. 2018) or even trauma (Gaither and Murphy 2011; Sun et al. 2019). Narrative descriptions of endocranial lesions specify the type of lesion based on Lewis (2004, 2017) and lesions were further scored for location on cranial bones, involvement (localized or widespread), and severity (Owsley et al. 1995).
Adults at Akropole were significantly more likely than adults at Kanín to exhibit non-specific endocranial lesions (Tables C.7 and C.8). This significance persists when the samples are compared by sex, meaning that for both males and females there is a relationship between burial location and frequency of cranial lesions. The only individuals at Kanín exhibiting endocranial lesions were two middle adult males, neither of whom exhibited any other pathologies. Endocranial lesions in adults were found to decrease by age group for both cemetery samples, although none of the differences between age groups were statistically significant.

Table C.8: Endocranial lesions in adults at Libice

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<td>20%</td>
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<td>5%</td>
</tr>
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<td>Kan Females</td>
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</tr>
<tr>
<td>TOTAL Libice</td>
<td>135</td>
<td>118</td>
<td>12</td>
<td>10%</td>
</tr>
</tbody>
</table>

*Total includes individuals of indeterminate sex from both
**Shaded cells indicate statistically significant differences between the two samples.

When comparing the rate of cranial lesions between the two adult samples, a Fisher exact test was utilized due to the small values expected and observed. The Fisher exact test statistic value is 0.0043, and the result is significant at $p < .05$. This significance holds when compared by sex; between the females in the two samples, the Fisher exact test statistic value is 0.0461, and between males it is 0.0495. Both results are significant at $p < .05$. 

Endocranial lesions are present in all age groups of children at both cemeteries (Table C.6). In general, a higher percentage of children exhibited endocranial lesions than adults in both samples. Both infants and younger children in the Akropole sample were found to be more likely to exhibit endocranial lesions than these age groups at Kanín, although this was only statistically significant for the infants. While fewer Akropole children exhibit endocranial lesions beyond infancy, they tend to have higher frequencies of cribra and non-specific periostitis. This finding reiterates that younger and older children were exposed to different nutritional and other disease-related stressors than infants. At Kanín, there is less of a change in the frequency of lesions across different age groups. However, as noted, few of the pathological differences between the subadult samples were found to be statistically significant.

**Dental Pathology**

Dental pathology has implications for both diet and overall health, as links have been found between poor dental health and cardiovascular diseases, pulmonary infections, and cancer (DeWitte and Bekvalac 2010; Lukacs 2007; Molnar 2008; Turner 2015; Ullinger et al. 2015; Larsen 2018). While diet has perhaps the most significant influence on dental disease, other systemic, social, and environmental factors can affect the dentition including hormonal changes, dental care, and stress (Hillson 2008; Nystrom 2013). Three indicators of dental health\(^\text{171}\) were evaluated for the Libice series: dental caries, abscesses, and antemortem tooth loss (Figure C.6).

\(^\text{171}\) Dental calculus was also recorded during skeletal analysis, but this characteristic was not analyzed for this project due to its multifactorial etiology. Calculus is a hard plaque that accumulates and solidifies in patches or bands around the tooth over time (Waldron 2009; Šlaus et al. 2011). Calculus formation depends on a variety of non-dietary factors including the mineral content of water, oral hygiene, food preparation methods, and the activity of micro-organisms (Prowse 2011; Šlaus et al. 2011). Some studies have linked high calculus rates (and low caries rates) to diets heavier in protein than carbohydrates (Šlaus et al. 2011). Calculus was recorded in 6 stages adapted from Owsley and colleagues (1995).
Figure C.6: Dental pathology examples from Libice.

a) Kanín Burial 140, an old adult female with periapical abscess in right mandibular first premolar.
b) Kanín Burial 26, a middle adult male with large carious lesion right maxillary second molar.
c) Akropole Burial 150, an old adult male with mild to moderate attrition on left mandibular molars. Only teeth with attrition scores of 4+ were counted in analysis. For comparison, here M1=score 6, M2=score 4, M3=score 2.

The dentition exhibits infectious disease in the form of dental caries (cavities). Caries are the result of fermenting food sugars on the surface of the tooth by plaque bacteria (Hillson 1996; DeWitte and Bekvalac 2010; Larsen 2018). Softer and sweeter foods (including carbohydrates) stick to tooth surfaces and contribute to the demineralization of the enamel (Prowse 2011; Gamza and Irish 2012). Subsequent infections can enter the pulp chamber and spread to the bone surrounding the tooth. The result is an abscess, an inflamed and pus-filled pocket around the tooth (DeWitte and Bekvalac 2010; Šlaus et al. 2011). Abscesses may result in tooth loss and bone resorption, here referred to as antemortem tooth loss (AMTL) (Hillson 1996; DeWitte and Bekvalac 2010). In addition to the observed status of the tooth, the location and severity of dental caries and abscesses were recorded (Table C.9). Vertical alveolar bone loss that may be the result of periodontal disease was measured in millimeters from the cemento-enamel junction to the alveolar crest along the buccal/mesial root (Hillson 1996).

Dental attrition, or tooth wear, is related to both diet and activity and can contribute to overall dental health. Attrition commonly occurs through the consumption of harder, more abrasive food over time (Prowse 2011). If the attrition is significant enough, the pulp chamber
will be exposed to bacteria, leading to an abscess. A gritty diet of abrasive foods wears down the enamel of teeth over time, but also cleans them and tends to keep teeth relatively free from caries (Gamza and Irish 2012). Attrition was recorded based on Smith’s (1984) eight stages adapted by Buikstra and Ubelaker (1994).

Table C.9: Dental inventory and scoring

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<td>Antemortem loss (bone resorption)</td>
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<td>Surface Abrasion</td>
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### Caries
- 1: Pit or slight fissure/start of lesion
- 2: Lesion ranging from more than a pit but less than ½ of the surface
- 3: Destruction of ½ or more of surface, yet not complete destruction
- 4: Complete destruction of tooth surface
- 5: Caries involving root (neck)

### Abscess
- 1: No pathology evident
- 2: Periodontal abscess w/destruction of alveolar crest
- 3: Periapical abscess w/perforation of cortex or destruction of bone
- 4: Tooth abscessed out
- 5: Antemortem loss-bone resorbed

### Pulp Exposure
- 1: Due to marked attrition
- 2: Due to carious lesion

### Calculus
- 1: None
- 2: Flecks
- 3: Moderate
- 4: Coalesced
- 5: Heavy
- 6: 3-Dimensional

### Surface Abrasion
- 1: Labial
- 2: Mesial
- 3: Distal
- 4: Mesial & Distal
- 5: Occlusal
A total of 1,988 teeth were observed in 155 adult individuals between the two cemetery samples. Table C.10 presents the distribution of dental disease by age and sex. Data are presented in terms of averages per mouth, rather than total number of teeth observed, in order to maintain a sense of actual individuals and their mouths. Likewise, averages are rounded to the nearest whole number to represent a tooth (i.e. a person cannot have 4.3 teeth affected by dental caries).

### Table C.10: Adult dental pathology at Libice

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<th>Ave # Sockets</th>
<th>Ave # Abscess</th>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akr MA M</td>
<td>16</td>
<td>20</td>
<td>4</td>
<td>21%</td>
<td>23</td>
<td>1</td>
<td>1</td>
<td>10%</td>
<td>9</td>
<td>46%</td>
</tr>
<tr>
<td>Akr MA F</td>
<td>9</td>
<td>19</td>
<td>2</td>
<td>11%</td>
<td>22</td>
<td>2</td>
<td>1</td>
<td>14%</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>Akr MA Total</td>
<td>27</td>
<td>20</td>
<td>3</td>
<td>17%</td>
<td>23</td>
<td>2</td>
<td>1</td>
<td>13%</td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td>Kan MA M</td>
<td>19</td>
<td>19</td>
<td>4</td>
<td>21%</td>
<td>24</td>
<td>3</td>
<td>2</td>
<td>20%</td>
<td>10</td>
<td>51%</td>
</tr>
<tr>
<td>Kan MA F</td>
<td>13</td>
<td>19</td>
<td>4</td>
<td>19%</td>
<td>23</td>
<td>1</td>
<td>1</td>
<td>7%</td>
<td>7</td>
<td>38%</td>
</tr>
<tr>
<td>Kan MA Total</td>
<td>34</td>
<td>19</td>
<td>4</td>
<td>20%</td>
<td>24</td>
<td>2</td>
<td>2</td>
<td>16%</td>
<td>10</td>
<td>52%</td>
</tr>
<tr>
<td>Total MA</td>
<td>61</td>
<td>19</td>
<td>4</td>
<td>19%</td>
<td>23</td>
<td>2</td>
<td>2</td>
<td>15%</td>
<td>9</td>
<td>47%</td>
</tr>
<tr>
<td>OA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akr OA M</td>
<td>9</td>
<td>15</td>
<td>3</td>
<td>22%</td>
<td>23</td>
<td>6</td>
<td>3</td>
<td>39%</td>
<td>12</td>
<td>81%</td>
</tr>
<tr>
<td>Akr OA F</td>
<td>10</td>
<td>14</td>
<td>4</td>
<td>28%</td>
<td>23</td>
<td>3</td>
<td>5</td>
<td>37%</td>
<td>10</td>
<td>75%</td>
</tr>
<tr>
<td>Akr OA Total</td>
<td>19</td>
<td>14</td>
<td>4</td>
<td>25%</td>
<td>23</td>
<td>4</td>
<td>4</td>
<td>38%</td>
<td>11</td>
<td>77%</td>
</tr>
<tr>
<td>Kan OA M</td>
<td>12</td>
<td>15</td>
<td>3</td>
<td>22%</td>
<td>26</td>
<td>3</td>
<td>6</td>
<td>35%</td>
<td>12</td>
<td>85%</td>
</tr>
<tr>
<td>Kan OA F</td>
<td>10</td>
<td>10</td>
<td>3</td>
<td>30%</td>
<td>17</td>
<td>2</td>
<td>7</td>
<td>51%</td>
<td>8</td>
<td>80%</td>
</tr>
<tr>
<td>Kan OA Total</td>
<td>22</td>
<td>13</td>
<td>3</td>
<td>24%</td>
<td>22</td>
<td>3</td>
<td>6</td>
<td>40%</td>
<td>11</td>
<td>83%</td>
</tr>
<tr>
<td>Total OA</td>
<td>41</td>
<td>13</td>
<td>3</td>
<td>25%</td>
<td>23</td>
<td>4</td>
<td>5</td>
<td>39%</td>
<td>11</td>
<td>80%</td>
</tr>
<tr>
<td>TOTALS</td>
<td>115</td>
<td>17</td>
<td>4</td>
<td>22%</td>
<td>22</td>
<td>2</td>
<td>3</td>
<td>24%</td>
<td>9</td>
<td>51%</td>
</tr>
</tbody>
</table>

Note: For clarity, data on individuals of unknown sex or age are not presented here. However, these individuals are included in site totals by age group. Averages are rounded to the nearest whole number to maintain a sense of individual mouths, however, percentages reflect the total pathologies per total teeth in a category. A tooth was counted for attrition if it had a score of 4 or higher for wear, reflecting at least some degree of exposed dentin.

Carious lesions were present in over one-fifth of adult teeth at Libice. The distribution of carious lesions by age is relatively constant, but the higher rates of periodontal disease and
attrition experienced by older individuals suggests that they likely lost some of their compromised teeth. Or, caries may have been abraded away with enamel wear over time. Apart from the young adults (see below), statistically significant differences were not identified in caries frequencies between the cemetery samples. Stráňská and colleagues (2008, 2015) found lower rates of carious lesions in the castle cemetery at Mikulčice compared to the more rural cemeteries. They attributed these differences to a diet higher in dairy and animal fats, as well as dental hygiene and maintenance (such as pulling afflicted teeth). In contrast, Beňuš and Thurzo (2001) found higher rates of caries in the castle population of Děvín-Hrad as compared to the hinterland. In any case, these differences are not reproduced in the Libice cemetery samples, suggesting less dietary variation between the two groups.

Notably, young adults at Akropole exhibit significantly higher attrition and significantly fewer caries than young adults at Kanín. Although the sample sizes are small for young adults, this suggests potential dietary differences for younger individuals at the two sites. Young adults at Kanín may have been consuming softer, more cariogenic foods. In contrast, young adults at Akropole appear to have had a comparatively more abrasive diet. Such a diet may have resulted in carious lesions being lost to abrasion. However, for all ages and at both sites, males were found to have higher rates of attrition than females. This information suggests that, in general, men from both cemetery samples were consuming a more abrasive diet than women (see discussion in Chapter 5).

Nearly one quarter of the 2,556 adult alveolar sockets observed at Libice were pathological, exhibiting either active abscesses or antemortem tooth loss. Rates of periodontal disease are seen to increase with age at both sites, as expected based on the progressive nature of dental disease. Old adult females at Kanín, however, exhibit significantly higher rates of
periodontal disease (51%) than either Kanín males or their female counterparts at Akropole. Frequent antemortem tooth loss coupled with slightly higher rates of carious lesions indicate markedly poorer dental health among these older women at Kanín. More generally, Šlaus and colleagues (2011) report higher frequencies of abscesses and AMTL in early medieval populations when compared to Late Antiquity populations. This phenomenon is possibly due to more cariogenic and abrasive diets in the medieval period, which may have contributed to compromised teeth and gums.

The dentition of the subadult remains at Libice shows predictable increases in dental pathology for older age groups, but no significant differences between the cemetery samples (Table C.11). Importantly, this analysis does not distinguish between caries in deciduous and permanent dentition, but rather examines how many individuals in a particular age group have one or more carious lesions at the time of death. As dental pathology is progressive, it is not surprising to see rates of carious lesions increasing over time. However, the number of older children at Libice exhibiting at least one carious lesion is high when compared to other contemporary populations. Stránská and colleagues (2015), for example, found low rates of dental caries in elite and non-elite Great Moravian subadult samples at Mikulčice and its hinterland. Of 393 subadults (under the age of 19 years), only 27 (7%) exhibited one or more carious lesions. The sample size of subadults at Libice is much lower than this study, but it suggests significant dietary differences with children at Libice consuming comparatively more cariogenic foods.

\[^{172}\] Chi-square test of independence was conducted to determine if there was a significant difference in the presence of periodontal disease between old adult males and females at Kanín. The chi-square test yields $X=11.58$, $p=0.0007$. This result is significant at $p < .05$, meaning that there is a relationship between sex and periodontal disease at Kanín. Likewise, a Chi-square test of independence was conducted to determine if there was a significant difference in the presence of periodontal disease between old adult females in the Akropole sample and the Kanín sample. The chi-square test yields $X=7.32$, $p = .007$). This result is significant at $p < .05$, meaning that there is a relationship between burial location and periodontal disease among old adult females.
Table C.11: Subadult dental pathology at Libice

<table>
<thead>
<tr>
<th></th>
<th>Site</th>
<th>Subadults with teeth</th>
<th>Attrition over 4*</th>
<th>% with Attrition</th>
<th>Caries Present</th>
<th>% with Caries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td>Akropole</td>
<td>13</td>
<td>7</td>
<td>54%</td>
<td>4</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>Kanin</td>
<td>8</td>
<td>2</td>
<td>25%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Younger Children</td>
<td>Akropole</td>
<td>19</td>
<td>19</td>
<td>100%</td>
<td>9</td>
<td>47%</td>
</tr>
<tr>
<td></td>
<td>Kanin</td>
<td>27</td>
<td>27</td>
<td>100%</td>
<td>11</td>
<td>41%</td>
</tr>
<tr>
<td>Older Children</td>
<td>Akropole</td>
<td>7</td>
<td>7</td>
<td>100%</td>
<td>6</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>Kanin</td>
<td>10</td>
<td>10</td>
<td>100%</td>
<td>7</td>
<td>70%</td>
</tr>
</tbody>
</table>

*At least one tooth received a score of stage 4 or greater, exhibiting moderate to severe attrition with exposed dentin (Smith 1984).

The presence of dental caries in some of the deciduous teeth of the infants at Akropole, coupled with evidence for attrition, suggests that at least some of these children were being weaned in infancy (Stránska et al 2015; Scott and Halcrow 2017, and see Chapter 6). The relative lack of caries and attrition at Kanín suggest that fewer children were weaning at this young age. All subadults over the age of 1.5 years in both cemetery samples exhibited at least one tooth with moderate to severe attrition. This finding suggests that many children were consuming food containing abrasive substances, regardless of burial location.

**Nutritional and Stress Markers**

Two childhood indicators of nutrition and health are addressed here: linear enamel hypoplasias and terminal adult stature. Developmental dental conditions such as linear enamel hypoplasias provide information on childhood health and growth, and because teeth develop during childhood, they provide a record of childhood conditions in adult skeletons as well. Adult stature in part reflects the health and nutritional status of childhood through a combination of genetic, environmental, and social factors.
**Linear Enamel Hypoplasias**

Linear enamel hypoplasias (LEHs) are pits or grooves on the enamel of the teeth caused by a disruption in tooth growth and development in response to trauma, nutritional deficiencies, or acute and chronic diseases. Measurement of LEHs on the permanent teeth can be used to identify the ages at which the disruptions occurred (Goodman and Rose 1990; Lewis 2007; Liebe-Harkort 2012). Although LEHs are a non-specific indicator of stress, their presence may point to compromised health and increased risk of mortality for particular individuals. Armelagos and colleagues (2009) provide bioarchaeological evidence in support of the Barker Hypothesis: that childhood stress contributes to poorer health later in life. Individuals with enamel defects occurring in early childhood were more likely to die at earlier ages, meaning that health issues in childhood can affect mortality rates throughout the lifecourse (Boldsen 2007; Armelagos et al. 2009; Miszkiewicz 2015).

Measurement of LEHs on the permanent teeth can be used to identify the ages at which the disruptions occurred (Goodman and Rose 1990; Lewis 2007; Liebe-Harkort 2012). To record LEHs, the height of the defect was measured in relation to the cemento-enamel junction (CEJ) and correlated with Moorrees and colleagues’ (1963a, 1963b) dental development data to obtain an estimate of when the defect occurred in childhood.

In this study, LEHs are considered when discussing lived experiences of individuals and examining health and stress across the individual life course. However, a comparison of the relative frequency of LEHs suggests similarities between the two cemetery samples. Table C.12 presents the proportion of individuals exhibiting at least one LEH for age categories at Libice. No significant differences were found between the proportion of individuals with LEHs in each sample when compared by age or sex.
The dentition of the older children suggests that nearly all of these individuals experienced (and recovered from) multiple stress events earlier in childhood. Many of these LEHs are on incisors indicating numerous health challenges in the first year of life. For example, Akropole Burial 80 has multiple LEHs on all incisors, as well as an LEH at crown \( \frac{1}{2} \) development on the mandibular right molar indicating a disruption in growth at around the age of one year. The infants and younger children at Libice were less likely to exhibit LEHs as nutritional deficiencies and/or disease may have been fatal to these children before leaving a record in their teeth. In contrast, older children survived health challenges in infancy and younger childhood, which frequently left dental markers of these stress events in their remains.

Nearly nine out of ten adults from both cemetery samples exhibited at least one LEH (Table C.12), meaning that almost all of the adults at Libice have evidence for surviving stress events in childhood. When compared to the subadult samples, we see a general increase in individuals with LEHs over the life course. However, in keeping with the Barker Hypothesis and a life course model, we must consider how these early stress events may have impacted mortality later in life (Boldsen 2007; Armelagos et al. 2009; Miszkiewicz 2015). Indeed, fewer old adults from both samples exhibited LEHs than other age groups, suggesting that individuals who survived childhood without major stress events were more likely to survive into old age.

### Table C.12: Individuals with linear enamel hypoplasias at Libice

<table>
<thead>
<tr>
<th>Age group</th>
<th>Individuals w/ teeth</th>
<th>Individuals with 1+ LEH</th>
<th>%</th>
<th>Individuals w/ teeth</th>
<th>Individuals with 1+ LEH</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td>13</td>
<td>0</td>
<td>0%</td>
<td>8</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Younger Children</td>
<td>19</td>
<td>6</td>
<td>32%</td>
<td>27</td>
<td>12</td>
<td>44%</td>
</tr>
<tr>
<td>Older Children</td>
<td>7</td>
<td>5</td>
<td>71%</td>
<td>10</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>Total subadult</td>
<td>39</td>
<td>11</td>
<td>28%</td>
<td>45</td>
<td>22</td>
<td>49%</td>
</tr>
<tr>
<td>Young Adults</td>
<td>7</td>
<td>7</td>
<td>100%</td>
<td>4</td>
<td>3</td>
<td>75%</td>
</tr>
<tr>
<td>Middle Adults</td>
<td>27</td>
<td>25</td>
<td>93%</td>
<td>39</td>
<td>37</td>
<td>95%</td>
</tr>
<tr>
<td>Old Adults</td>
<td>19</td>
<td>15</td>
<td>79%</td>
<td>21</td>
<td>17</td>
<td>81%</td>
</tr>
<tr>
<td>Total adult</td>
<td>53</td>
<td>47</td>
<td>89%</td>
<td>64</td>
<td>57</td>
<td>89%</td>
</tr>
</tbody>
</table>
The left mandibular canine was the most affected tooth in both samples. Indeed, anterior teeth tend to be the most susceptible to LEH development. Further, the crown formation period for permanent canines is comparatively long and generally corresponds to the timing of weaning stress (Berbesque and Hoover 2018). Most individuals at Libice with enamel defects on this tooth had more than one defect (76% at Kanín and 65% at Akropole). Most left mandibular canine defects were between Cr1/4 (one fourth of the crown developed) and Cr3/4, corresponding to disruptions in growth between the ages of 1.2-2.9 years. These stress events may have been related to weaning and changing nutritional experiences for infants and younger children.

Dental stress markers at Libice indicate few differences in childhood health between the Kanín and Akropole adult samples. As Table C.12 demonstrates, the same percentage of adults (89%) in each cemetery sample were found to exhibit at least one LEH. Furthermore, the percentage of teeth with at least one defect was nearly identical between the samples (Table C.13). Like other osteological indicators, LEHs do not suggest significant differences in status based on childhood health for the two cemetery samples. However, these dental markers will offer important insight into health across an individual life course.

### Table C.13: Percentage of adult teeth with LEH at Libice

<table>
<thead>
<tr>
<th></th>
<th>Adults w/ teeth</th>
<th>Average no. teeth*</th>
<th>Average w/ LEH**</th>
<th>% of teeth with LEH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akropole</td>
<td>53</td>
<td>18</td>
<td>7</td>
<td>40%</td>
</tr>
<tr>
<td>Kanin</td>
<td>64</td>
<td>17</td>
<td>6</td>
<td>38%</td>
</tr>
</tbody>
</table>

*Average number of teeth per mouth
** Average number of teeth per mouth with at least one LEH

**Stature**

Terminal adult stature is another measure of subadult stress during growth and development. While stature is a fluid category with daily and lifetime fluctuations in living
height, adult stature reflects in part the health and nutritional status of childhood through a combination of genetic, environmental, and social factors (Ousley 1995; Sládek et al. 2015). Osteological estimations of stature are based on the relationship between bone length and body height. Anatomical measurements of stature (e.g. Fully 1956) were not possible due to the incomplete nature of many skeletons at Libice, particularly those from the Kanín sample. Equations for estimating stature by long bone length have been developed from several early medieval reference populations (Vercellotti et al. 2009; Maijanen and Niskanen 2010; Sládek et al. 2015). However, the regression formulae developed by Breitinger (1937) and Bach (1965) for estimating stature were chosen for this study because all Czech skeletal collections housed at the National Museum in Prague have been analyzed with these methods (Dobisíková et al. 2008; Stránská 2009; Stránská 2012, Stránská et al. 2013). This approach allows for a broader regional comparison of the relationships between stature, health, and social status. Terminal adult stature was calculated for each individual with a complete femur using the Breitinger (1937) formula for males, and the Bach (1965) formula for females (Table C.14) 

### Table C.14: Formulae to estimate stature

<table>
<thead>
<tr>
<th>Source</th>
<th>Stature</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breitinger 1937</td>
<td>Terminal Adult Male Stature</td>
<td>$(1.645 \text{ [Femur max.]} + 94.31 \pm 4.8)$</td>
</tr>
<tr>
<td>Bach 1965</td>
<td>Terminal Adult Female Stature</td>
<td>$(1.313 \text{ [Femur max.]} + 106.69 \pm 4.1)$</td>
</tr>
</tbody>
</table>

Table C.15 presents average stature estimates by age and sex for the Libice cemetery samples. Due to their more fragmentary nature, far fewer adults at Kanín had complete femora (31%) than at the Akropole (91%). There were no significant intersite differences found between age groups\textsuperscript{173} and there was no significant difference in mean stature between males at Kanín and Akropole. However, the Akropole females were found to be, on average, significantly taller

\textsuperscript{173} Kanín female age groups sample sizes were too small for statistical analysis.
than the Kanín females. If stature is considered a reflection of childhood nutrition and social status, we can postulate that the Akropole and Kanín males experienced more similar childhoods. Kanín females, however, may have had further nutritional or social disadvantages in childhood. It should be noted, however, that the Kanín sample size is relatively small. Furthermore, archaeological and historical evidence of gender differences in terms of food access in childhood has been inconclusive (DeWitte 2010; Kowaleski 2013). For example, medieval female children were more likely to be abandoned and, in some cases, it was recommended to breastfeed male infants longer than females (Kowaleski 2013). Additionally, evidence for a delayed start of menarche in young medieval women suggests nutritional deficiencies before and during puberty (Shapland et al. 2015). However, there is little direct evidence that medieval females received poorer care in childhood than males (Kowaleski 2013).

Table C.15: Adult stature at Libice

<table>
<thead>
<tr>
<th></th>
<th>Akropole</th>
<th>Kanín</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>No.</td>
<td>Mean height (cm)</td>
</tr>
<tr>
<td>YA M</td>
<td>4</td>
<td>172.9</td>
</tr>
<tr>
<td>MA M</td>
<td>13</td>
<td>171.3</td>
</tr>
<tr>
<td>OA M</td>
<td>9</td>
<td>170.2</td>
</tr>
<tr>
<td>Total M</td>
<td>26</td>
<td>171.1</td>
</tr>
<tr>
<td>YA F</td>
<td>4</td>
<td>161.6</td>
</tr>
<tr>
<td>MA F</td>
<td>10</td>
<td>163.0</td>
</tr>
<tr>
<td>OA F</td>
<td>10</td>
<td>162.5</td>
</tr>
<tr>
<td>Total F</td>
<td>24</td>
<td>162.6</td>
</tr>
</tbody>
</table>

Note: Shaded cells exhibit a statistically significant difference

When compared to the average stature of individuals at other early medieval sites (Table C.16), both males and females from the Akropole sample are, on average, the tallest groups, followed closely by individuals from the high-status cemetery of Žalov-cihelna at Levy Hradec.

174 A two-tailed t-test was performed to determine if the differences in mean stature for Akropole and Kanín females was statistically significant. The t-value is 2.58 and the p-value is 0.015. The result is significant at p < .05 meaning that there is a relationship between stature and burial location for females at Libice.
Kanín males rank among the taller populations, while Kanín females are among the shorter. Interestingly, while it is expected that higher status populations would exhibit greater average stature, we see that this does not hold up at the Mikulčice cemeteries, where the average stature of the hinterland cemeteries is higher than the castle and subcastle cemeteries for males (Dobisíková et al. 2008). Dobisíková and colleagues (2008) suggest that the hinterland populations may have had easier access to better nutrition through cultivated foods. These discrepancies at contemporary early medieval sites make stature a rather problematic marker of status as it is unclear what social factors may have influenced stature differences between burial populations.

Table C.16: Early medieval stature estimations

<table>
<thead>
<tr>
<th>Males Site</th>
<th>Mean height, cm</th>
<th>Females Site</th>
<th>Mean height, cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Libice, Akropole</td>
<td>171.1</td>
<td>Libice, Akropole</td>
<td>162.6</td>
</tr>
<tr>
<td>Levy Hradec, Žalov-cihelna</td>
<td>170.7</td>
<td>Levy Hradec, Žalov-cihelna</td>
<td>162.5</td>
</tr>
<tr>
<td>Lahovice</td>
<td>170.3</td>
<td>Mikulcice, castle sites</td>
<td>161.5</td>
</tr>
<tr>
<td>Libice, Kanin</td>
<td>170.2</td>
<td>Mikulcice, hinterland sites</td>
<td>161.3</td>
</tr>
<tr>
<td>Mikulcice, hinterland sites</td>
<td>170.1</td>
<td>Lahovice</td>
<td>160.3</td>
</tr>
<tr>
<td>Mikulcice, subcastle sites</td>
<td>169.8</td>
<td>Mikulcice, subcastle sites</td>
<td>160.1</td>
</tr>
<tr>
<td>Mikulcice, castle sites</td>
<td>169.5</td>
<td>Libice, Kanin</td>
<td>159.8</td>
</tr>
<tr>
<td>Budeč, Na Týnici</td>
<td>164.9</td>
<td>Levy Hradec, Žalov-Na panenské</td>
<td>159.6</td>
</tr>
<tr>
<td>Levy Hradec, Žalov-Na panenské</td>
<td>164.1</td>
<td>Budeč, Na Týnici</td>
<td>157.3</td>
</tr>
</tbody>
</table>


Activity and Skeletal Changes

Skeletal markers of activity reflect habitual actions or behaviors that are repetitive enough or physically demanding enough to result in bony changes. These include degenerative joint lesions (osteoarthritis), musculoskeletal stress markers (enthesal changes), and indicators of posture (i.e. squatting facets) (Santos et al. 2011; Jurmain et al. 2012; Schrader 2019).

Importantly, all changes to bone have “multifactorial etiologies,” and therefore must be carefully contextualized (Jurmain et al. 2012: 532; Becker 2019; Myszka et al. 2019). Included here are also analyses of robusticity and skeletal trauma as indicators of activity.
Degenerative Joint Lesions

The deterioration of the joints due to age, wear, and use is one of the most frequently identified pathological conditions in archaeological remains (Roberts and Manchester 2005; Myszka et al. 2019) and in part reflects the degeneration of the body over the life course (Calce et al. 2018). Joint disease progresses through two phases: formative and destructive. The formative phase involves bony outgrowths on the joint surfaces and margins (osteophytes) in response to stresses on the joint and uneven loading. The following destructive phase results in cartilage damage leaving the bones of the joint to move directly against each other – a condition marked by polishing of the joint surface (eburnation) (Waldron 2009; McKinnon et al. 2013; Becker 2019; Schrader 2019).

Joint diseases encountered less frequently are autoimmune conditions, including rheumatoid arthritis and ankylosing spondylitis which causes the bony fusion of certain joints such as the sacroiliac joint and vertebral joints (McKinnon et al. 2013). The most common type of joint disease is osteoarthritis, a neuromechanical disease involving osteophytes, porosity, and eburnation in multiple joints - particularly in the hip and knee (Schrader 2019). This condition is the result of a variety of factors including advanced age, activity, underlying trauma, genetic predisposition, and environmental factors (Ortner 2003; Waldron 2009; McKinnon et al. 2013; Myszka et al. 2019). Some bony changes of osteoarthritis are likely pathological, while others can be the result of behavioral patterns (Jurmain et al. 2012). Osteoarthritis and other degenerative changes at certain joints have been linked (somewhat inconsistently) to particular activities or occupations. For example, certain degenerative changes and mechanical osteophytes in the hip joint have been identified as potential indicators of habitual horseback riding (Palfi and Dutour 1996; Berthon 2019).
For the Libice skeletal series, each joint was scored for osteoarthritis in terms of the location and severity of osteophyte formation, porosity, and eburnation (Table C.17) adapting standards developed by Jurmain (1990) and outlined in Buikstra and Ubelaker (1994). Due to the multifactorial nature of degenerative changes, as well as the lack of systematic study in other Czech skeletal collections, degenerative joint disease at Libice was not evaluated for comparison between the cemeteries. However, some generalizations can be made, and degenerative changes are considered when discussing lived experiences of individuals (see, in particular, osteobiographies in Chapters 7 and 8).

<table>
<thead>
<tr>
<th>Code</th>
<th>Severity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteophyte</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>Lipping barely discernable</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>Distinct, sharp lipping</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>Extensive spicule formation</td>
</tr>
<tr>
<td>4</td>
<td>Ankylosing</td>
<td>Bony fusion of joints</td>
</tr>
<tr>
<td>Porosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>Pinpoint, &lt;1/3 of the surface</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>Coalesced, 1/3-2/3 of the surface</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>Both pinpoint and coalesced, &gt;2/3 of the surface</td>
</tr>
<tr>
<td>Eburnation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>Barely discernable polish, &lt;1/3 of the surface</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>Polish only, 1/3-2/3 of the surface</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>Polish, with grooving, &gt;2/3 of the surface</td>
</tr>
</tbody>
</table>

Degenerative joint disease in the Libice cemetery samples was generally mild, but extremely common across age groups (Figure C.6a and b). In the Akropole sample, only two young adult females and one middle adult female did not exhibit any degenerative changes to present joint surfaces. The other 54 adult individuals exhibited degenerative changes to at least one joint surface. In the Kanín sample, only 59 out of 84 adults had at least one joint surface present, but all of these individuals exhibited degenerative changes on at least one joint surface.
For both samples, osteophyte formation was most frequently identified in the vertebrae, likely as a result of load-bearing stress in addition to the stresses of normal posture (Roberts and Manchester 2005).

![Figure C.7: Examples of degenerative joint disease at Libice. a) Kanín Burial 155, an old adult male, exhibiting osteophytes and porosity in the glenoid cavity of the right scapula. b) Akropole Burial 13, a middle adult female, exhibiting moderate osteophytes and porosity, and mild eburnation on the inferior facets of C7 and T1.]

**Entheseal Changes**

Entheseal changes, sometimes termed musculoskeletal stress markers, or enthesopathies, are bony growths at musculoskeletal insertion sites (entheses) (Jurmain et al. 2012; Villotte et al. 2016; Becker 2019). These bony changes have been linked to activity-related stress from certain habitual activities or movements (Havelková et al. 2013; Villotte and Knüsel 2013). However, other predisposing factors such as age, genetics, diet, disease, and hormones can also affect the musculoskeletal system (Cardoso and Henderson 2010; Henderson and Cardoso 2013; Niinimäki and Baiges Sotos 2013; Becker 2019). Aging, in particular, is linked to the development of enthesopathies, and must be taken into consideration in analyses of occupation (Cardoso and Henderson 2010).
Entheseal changes have been used to examine levels of physical activity as a proxy for social status (Havelková et al. 2013; Refai 2019). However, the assumption that higher status individuals engaged in lower levels of physical activity “oversimplifies the lives of people in the past” (Palmer and Waters-Rist 2019:303). Instead, entheseal changes might point to different types of physical activity performed by different groups (Havelková et al. 2013).

Entheseal changes at both fibrocartilaginous and fibrous entheses (Villotte and Knüsel 2013) were identified in the Libice skeletal series. Enthesophytes, porosity, or other irregularities at insertion sites were recorded in qualitative, narrative descriptions. In addition, enthesophytes were scored on a three-point system of severity based on the Smithsonian recording system (Table C.18) (Owsley et al. 1995). To examine activity patterns in the cemetery samples at Libice, the relative presence of entheseal changes was evaluated for the appendicular skeleton. Only individuals with bones of the upper or lower limbs present were included in the analysis. These individuals were assessed for entheseal changes at one or more attachment sites on one or more limb bones.

<table>
<thead>
<tr>
<th>Code</th>
<th>Severity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Absent</td>
<td>No remodeling</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>Trace remodeling on the margin or surface (enthesophytes palpable)</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>Remodeling present on margin or surface (enthesophytes raised and lipped)</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>Significant remodeling involving both margin and surface (enthesophyte is 3-dimensional, extending from bone surface)</td>
</tr>
</tbody>
</table>

Table C.19 shows an expected general increase in the presence of entheseal changes with age in both cemetery samples. A similar proportion of males from each sample exhibit entheseal

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175 The attachment sites included the greater and lesser tubercles and distal epicondyles of the humerus, the radial tuberosity, the olecranon process of the ulna, the greater and lesser trochanters of the femur, and the tibial tuberosity.
changes in both the upper and lower limbs. Males from both samples were more likely to exhibit entheseal changes than females, although this difference was not statistically significant.

However, females from Kanín were significantly less likely than Akropole females to exhibit changes in the upper limbs and there is significant sexual dimorphism at Kanín.

Table C.19: Entheseal changes to upper and lower limbs at Libice

<table>
<thead>
<tr>
<th></th>
<th>Akropole</th>
<th>Kanín</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA M</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>MA M</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>OA M</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Total M</td>
<td>29</td>
<td>18</td>
</tr>
<tr>
<td>YA F</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>MA F</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>OA F</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Total F</td>
<td>23</td>
<td>13</td>
</tr>
<tr>
<td>Total Adults</td>
<td>52</td>
<td>31</td>
</tr>
</tbody>
</table>

Note: Pink shaded cells indicate significant differences between Kanín females and other groups.

These findings suggest that while males from the two cemeteries were performing similar types and levels of habitual strenuous activity, females at Akropole may have been involved in different, and generally more strenuous labor than their counterparts at Kanín. Chapter 5 further explores these patterns of labor and activity at Libice. Because other early medieval Central European populations have been analyzed primarily using methods developed by Villotte (2006) (see Havelková et al. 2011 and Havelková et al. 2013), direct comparisons to other groups cannot be made. However, general findings are compared and discussed in Chapter 5. While entheseal changes are complicated indicators of activity and, by extension, social status (Palmer and

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176 A Fisher exact test was conducted due to the small sample sizes. The Fisher exact test statistic for the Akropole and Kanín female upper limbs is 0.0331, significant at p < .05, meaning that a relationship exists between burial location and activity.

177 Once again, a Fisher exact test was conducted due to the small sample sizes. The Fisher exact test statistic comparing Kanín male and female upper limb changes is 0.0077, significant at p < .05, meaning that a relationship exists between sex and activity for the adult individuals in the Kanín sample.
Waters-Rist 2019), the patterns at Libice do suggest many similarities between the cemetery samples as well as an important difference in upper limb activity for females in the two groups.

Robusticity

Measures of robusticity provide information on relative body size and physical activity. Forces applied to the bone through weight-bearing activity can result in morphological changes indicating the intensity and duration of activities performed over the life course (Wescott 2006; Sparacello et al. 2011; Marchi et al. 2011). It should also be noted that robusticity reflects activity throughout the life course and long bone dimensions may be affected by age. Increased osteoblast activity during development suggests that robusticity indices may represent mechanical loading and activity that occurred earlier in life (Ruff et al. 2006; Magennis and Clementz 2016). In addition, older individuals may trend toward decreasing robusticity reflecting decreased activity levels later in life as compared with younger individuals (Imber 2003; Ruff et al. 2006).

External measurements have been identified as reliable substitutes for cross-sectional geometric data as basic indicators of robusticity (Wescott 2006; Imber 2003; Bass 2005; Stock and Shaw 2007; Marchi et al. 2011; Magennis and Clementz 2016). While cross-sectional geometric data are more precise than external dimensions for biomechanical analyses (Ruff 2000; Wescott 2006; Magennis and Clementz 2016), it was not feasible to obtain computed tomography (CT) scans or physical sections of the long bones in the Libice skeletal series. Postcranial metric measurements\textsuperscript{178} were collected for the left limbs (unless otherwise noted).

\textsuperscript{178} The measurements include: humerus maximum length (HML), humerus maximum diameter at midshaft (MDS), humerus minimum diameter at midshaft (MDM), femur maximum length (FML), femur anterior posterior diameter at midshaft (APS), and femur medial lateral diameter at midshaft (MLS) (Buikstra and Ubelaker 1994).
These external dimensions were used to calculate humeral and femoral robusticity indices based on Bass (2005) and Magennis and Clementz (2016) (Table C.20).

**Table C.20: Formulae for robusticity indices**

<table>
<thead>
<tr>
<th></th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Humerus</strong></td>
<td>((\text{Anterior-Posterior diameter mid-shaft} + \text{Transverse diameter mid-shaft}) \times 100 \text{Maximum Length})</td>
</tr>
<tr>
<td><strong>Femur</strong></td>
<td>((\text{Anterior-Posterior diameter mid-shaft} + \text{Transverse diameter mid-shaft}) \times 100 \text{Physiological (bicondylar) Length})</td>
</tr>
</tbody>
</table>

Robusticity indices were analyzed by sex and age and compared between the skeletal samples of Kanín and Akropole to reconstruct relative activity levels (Table C.21). Akropole males on average exhibit the most robust limbs. The sexual dimorphism in the upper limbs is statistically significant in the Akropole sample, but not at Kanín. Additionally, there is a statistically significant difference in mean lower limb robusticity by age group for males at both Kanín and Akropole. Older males at both sites have significantly more robust femora on average, a sign of more strenuous femoral loading earlier in life (Magennis and Clementz 2016). Overall, however, there are few differences in robusticity between the two cemetery samples, an observation consistent with the patterns of enthesal changes discussed above.

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179 Two-tailed t-tests were performed to determine if the differences in means for robusticity between males and females was statistically significant. For Akropole males and females, the t-value is 2.8808 and the p-value is .006644. The result is significant at p < .05. For Kanín males and females, the t-value is 2.15611 and the p-value is .052072. The result is not significant at p < .05, meaning that there is a relationship between sex and robusticity of the upper limbs at Akropole but not at Kanín.

180 One-way ANOVA tests were employed to determine if there were significant differences in mean robusticity by age group at Akropole and Kanín. While there were no significant differences for females of different age groups, there was found to be a relationship between age and lower limb robusticity for males from both cemetery samples (The Akropole p-value is .011611, while the Kanín p-value is .043658, both significant at p<0.05).
Note: Shaded cells indicate statistically significant differences.

**Table C.21: Robusticity indices at Libice**

<table>
<thead>
<tr>
<th>Humerus</th>
<th>Akropole</th>
<th>Kanin</th>
<th>Femur</th>
<th>Akropole</th>
<th>Kanin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>No.</td>
<td>Mean</td>
<td>Range</td>
<td>No.</td>
<td>Mean</td>
</tr>
<tr>
<td>YA M</td>
<td>4</td>
<td>12.7</td>
<td>12.2-13.9</td>
<td>0</td>
<td>~</td>
</tr>
<tr>
<td>MA M</td>
<td>12</td>
<td>12.8</td>
<td>11.1-14.4</td>
<td>4</td>
<td>12.2</td>
</tr>
<tr>
<td>OA M</td>
<td>5</td>
<td>12.8</td>
<td>11.9-14.0</td>
<td>4</td>
<td>12.7</td>
</tr>
<tr>
<td>Total M</td>
<td>21</td>
<td>12.8</td>
<td>11.1-14.4</td>
<td>8</td>
<td>12.4</td>
</tr>
<tr>
<td>YA F</td>
<td>2</td>
<td>11.3</td>
<td>10.8-11.8</td>
<td>0</td>
<td>~</td>
</tr>
<tr>
<td>MA F</td>
<td>5</td>
<td>11.6</td>
<td>11.2-12.0</td>
<td>4</td>
<td>11.9</td>
</tr>
<tr>
<td>OA F</td>
<td>10</td>
<td>12.4</td>
<td>10.9-13.7</td>
<td>2</td>
<td>10.9</td>
</tr>
<tr>
<td>Total F</td>
<td>17</td>
<td>12.0</td>
<td>10.8-13.7</td>
<td>6</td>
<td>11.5</td>
</tr>
</tbody>
</table>

Trauma

Both accidental injuries and interpersonal violence often only affect soft tissue but some trauma can leave traces on the skeleton. The most common types of trauma to bone are fractures, or breaks, although dislocations, amputations, and trepanations are other, less common forms (Šlaus et al. 2010; Brodholt and Holck 2012). Differentiating between skeletal evidence of accidental injuries (caused by unexpected events that happen in the course of daily activities) and violence (implying physically harmful interaction between people) requires careful attention to the timing, location, and type of injury (Walker 2001; Martin and Harrod 2015).

The timing of fractures can be distinguished as antemortem (before death) or perimortem (near the time of death) (Galloway et al. 1999; Novak 2000; Šlaus et al. 2010; Gilmour et al. 2015). Fractures begin to heal almost immediately if the individual survives, but the first indicators are difficult to detect. Eventually, a callus (a patch of woven immature bone) forms at the fracture site, followed by the replacement of mature lamellar bone. Further remodeling can occur over time depending on the severity of the injury and loading stresses with the potential for complete re-normalization of bone architecture (Waldron 2009; Gilmour et al. 2015). Perimortem trauma does not exhibit skeletal signs of healing and so must be carefully
distinguished from postmortem (after death, taphonomic) fractures based on color and surface changes at the fracture site (Buikstra and Ubelaker 1994; Novak 2000; Šlaus et al. 2012).

The nature and type of injury can be determined from the shape and presentation of the fracture. Sharp force trauma involves narrowly aligned force such as a knife, sword, or axe cut. Blunt force trauma from lower-velocity and large surface area impacts (such as falls or blows from clubs) results in bone breakage due to direct impact or through indirect bending or twisting. Projectile trauma is characterized by a high-velocity impact in a small area, often resulting in entrance- and exit-wounds and extensive radiating fractures (Novak 2000; Williamson et al. 2003; Šlaus et al. 2010). While most projectile trauma in modern and more recent historical archaeological cases is the result of gunshot wounds, in an early medieval context, projectile injuries could occur from arrow or spear wounds (Brodholt and Holck 2012).

Skeletal trauma was recorded through narrative descriptions as well as documentation of the lesion location, type, degree of healing, and descriptive measurements. All traumatic injuries were analyzed macroscopically, and, where possible, affected elements were radiographed. Descriptions of wounds are based on criteria outlined in bioarchaeological literature (Galloway et al. 1999; Novak 2000; Williamson et al. 2003; Šlaus 2009; Giuffra et al. 2015). For example, during analysis of sharp force trauma the direction of the blow was established based on the orientation and appearance of the cut surfaces (Novak 2000; Giuffra et al. 2015).

As Table C.22 presents, a higher proportion of adults from the Akropole sample exhibited antemortem fractures than adults from the Kanín sample, although this difference is not statistically significant.\(^\text{181}\) Nearly one quarter of adults in the Akropole sample experienced

\(^{181}\) A chi-square test of independence was conducted to determine if people buried at Akropole were more likely than those buried at Kanín to exhibit antemortem fracture. The chi-square test yields \(X=0.934\), \(p=0.334\). This result is not significant at \(p < .05\), meaning that there is not a relationship between burial location and incidence of trauma.
antemortem trauma, including four with healed blunt trauma to the cranial vault. In two cases, the type and location of fractures suggests that these injuries occurred at the same time. However, all trauma was well-healed and so it was not possible to further determine differential timing of fractures. In the Kanín sample, nearly one-fifth of adults exhibited antemortem trauma, including five with healed cranial trauma. Most of the cranial trauma was likely blunt force, but one old adult female (Kanín Burial 156) with healed cranial and postcranial trauma exhibits some indicators of interpersonal violence (see Chapter 7).

Table C.22: Trauma at Libice

<table>
<thead>
<tr>
<th>Age</th>
<th>No. indiv</th>
<th>Antemortem</th>
<th>% Ante</th>
<th>Perimortem</th>
<th>% Peri</th>
<th>No. indiv</th>
<th>Antemortem</th>
<th>% Ante</th>
<th>Perimortem</th>
<th>% Peri</th>
</tr>
</thead>
<tbody>
<tr>
<td>YA M</td>
<td>4</td>
<td>1</td>
<td>25%</td>
<td>0</td>
<td>0%</td>
<td>1</td>
<td>1</td>
<td>100%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>MA M</td>
<td>17</td>
<td>2</td>
<td>12%</td>
<td>2</td>
<td>12%</td>
<td>28</td>
<td>3</td>
<td>11%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>OA M</td>
<td>9</td>
<td>4</td>
<td>44%</td>
<td>1</td>
<td>11%</td>
<td>13</td>
<td>5</td>
<td>38%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total M</td>
<td>30</td>
<td>7</td>
<td>23%</td>
<td>3</td>
<td>10%</td>
<td>42</td>
<td>9</td>
<td>21%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>YA F</td>
<td>4</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
<td>2</td>
<td>1</td>
<td>50%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>MA F</td>
<td>10</td>
<td>2</td>
<td>20%</td>
<td>1</td>
<td>10%</td>
<td>15</td>
<td>2</td>
<td>13%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>OA F</td>
<td>11</td>
<td>4</td>
<td>36%</td>
<td>0</td>
<td>0%</td>
<td>11</td>
<td>3</td>
<td>27%</td>
<td>1</td>
<td>9%</td>
</tr>
<tr>
<td>Total F</td>
<td>25</td>
<td>6</td>
<td>24%</td>
<td>1</td>
<td>4%</td>
<td>28</td>
<td>6</td>
<td>21%</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Indet</td>
<td>2</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
<td>14</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total Adults</td>
<td>57</td>
<td>13</td>
<td>23%</td>
<td>4</td>
<td>7%</td>
<td>84</td>
<td>15</td>
<td>18%</td>
<td>1</td>
<td>1%</td>
</tr>
</tbody>
</table>

Nether cemetery sample at Libice exhibited differences in trauma rates by sex, a finding that correlates with other early medieval Czech sites (Krejsová et al. 2008). There is an expected trend of increasing fractures with age for both cemetery samples. Regardless of labor divisions, the biosocial consequences of ageing placed older individuals from both cemetery samples at higher risk of both falls and poorer bone health that could result in ‘fragility fractures’ (Brickley and Ives 2008; Curate et al. 2011). For example, rib and clavicle fractures were the

182 Akropole Burial 267 was an old adult male with bilateral fractures to the posterior process of the tali, known as a Shepherd’s fracture due to hyperextension of the feet (Galloway 2014; Boston 2014). Akropole Burial 240 was an old adult female with bilateral fractures to the distal forearms (Colles fractures).

183 Fisher’s exact tests were performed due to the small size of each of the samples. For both Kanín and the Akropole, the test statistic value is 1, and the results not significant at p < .05, meaning that a relationship was not found between sex and the presence of traumatic injury in either cemetery sample of adults.
most common postcranial injuries identified in older adults at Libice, at least some of which were likely the result of falls.

Table C.23 lists the antemortem fractures identified in the Libice series. Importantly, some individuals from each sample exhibited more than one healed fracture. Multiple fractures were experienced by seven (50%) of the individuals with healed trauma at Akropole, while only three individuals (20%) at Kanín had more than one fracture. Although sustaining multiple fractures was rarer among the Kanín adults than the Akropole adults, this difference was not statistically significant.\footnote{A Fisher exact test was conducted due to the small sample sizes. The Fisher exact test statistic is 0.1281, which is not significant at $p < .05$, meaning that there is not a relationship between burial location and the potential for sustaining multiple fractures.} Although not included in the tabulated adult data here, two cases of (antemortem) traumatic injury were identified in the subadults skeletal remains at Libice (1.8% of all children). Akropole Burial 43, an older child aged 11.5-12.5 years, exhibited a rectangular fracture to the left side of the occipital (see Chapter 5). Kanín Burial 91, an older child aged 14.5-15.5 years, exhibited a probable blunt-force fracture to the left side of the head at the coronal suture.

As with other markers of activity, antemortem trauma patterns are similar between the two cemetery samples. Further discussion of trauma in the context of medieval Libice is found in Chapters 5 and 7. In particular, perimortem trauma and the potential for interpersonal violence is explored through the co-occurrence of skeletal indicators of deliberate violence, including sharp-force injuries, craniofacial injuries, and perimortem injuries (Jurmain et al. 2009; Geber 2015; Giufra et al. 2015). Skeletal evidence of these indicators is tabulated and contextualized in Chapter 7 and is not reproduced here.
### Table C.23: Antemortem fractures at Libice

<table>
<thead>
<tr>
<th>Burial</th>
<th>Age</th>
<th>Sex</th>
<th>Antemortem Fractures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akropole</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>YA</td>
<td>M</td>
<td>R clavicle</td>
</tr>
<tr>
<td>178</td>
<td>MA</td>
<td>F</td>
<td>L fibula shaft, possible L tibia shaft</td>
</tr>
<tr>
<td>57</td>
<td>MA</td>
<td>F</td>
<td>L mid-rib</td>
</tr>
<tr>
<td>84</td>
<td>MA</td>
<td>M</td>
<td>L proximal foot phalanx 1</td>
</tr>
<tr>
<td>106</td>
<td>MA</td>
<td>M</td>
<td>L scapula (glenoid fossa), R clavicle, R rib 6, L rib 9,</td>
</tr>
<tr>
<td>8</td>
<td>OA</td>
<td>F</td>
<td>Cranial vault (4 depression fractures)</td>
</tr>
<tr>
<td>34</td>
<td>OA</td>
<td>F</td>
<td>R rib 3</td>
</tr>
<tr>
<td>240</td>
<td>OA</td>
<td>F</td>
<td>Bilateral radii, R ulna (Colles fractures)</td>
</tr>
<tr>
<td>233</td>
<td>OA</td>
<td>F</td>
<td>Cranial vault (L parietal)</td>
</tr>
<tr>
<td>97</td>
<td>OA</td>
<td>M</td>
<td>Cranial vault (frontal), bilateral rib 10</td>
</tr>
<tr>
<td>267</td>
<td>OA</td>
<td>M</td>
<td>Bilateral tali (posterior process)</td>
</tr>
<tr>
<td>42</td>
<td>OA</td>
<td>M</td>
<td>Cranial vault (R parietal and frontal)</td>
</tr>
<tr>
<td>206</td>
<td>OA</td>
<td>M</td>
<td>L rib 7, possible R tibia and fibula (proximal joints)</td>
</tr>
<tr>
<td>Kanin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>YA</td>
<td>F</td>
<td>R clavicle</td>
</tr>
<tr>
<td>76</td>
<td>YA</td>
<td>M</td>
<td>Cranial vault (frontal)</td>
</tr>
<tr>
<td>57</td>
<td>MA</td>
<td>F</td>
<td>R clavicle</td>
</tr>
<tr>
<td>154</td>
<td>MA</td>
<td>F</td>
<td>R clavicle</td>
</tr>
<tr>
<td>28</td>
<td>MA</td>
<td>M</td>
<td>Cranial vault (frontal)</td>
</tr>
<tr>
<td>38</td>
<td>MA</td>
<td>M</td>
<td>Cranial vault (L parietal)</td>
</tr>
<tr>
<td>98</td>
<td>MA</td>
<td>M</td>
<td>Cranial vault (L parietal and frontal)</td>
</tr>
<tr>
<td>52</td>
<td>OA</td>
<td>F</td>
<td>R femur (distal joint)</td>
</tr>
<tr>
<td>115</td>
<td>OA</td>
<td>F</td>
<td>L proximal foot phalanx 1</td>
</tr>
<tr>
<td>156</td>
<td>OA</td>
<td>F</td>
<td>Cranial vault (L parietal), L tibia</td>
</tr>
<tr>
<td>58</td>
<td>OA</td>
<td>M</td>
<td>R humerus (distal joint)</td>
</tr>
<tr>
<td>59</td>
<td>OA</td>
<td>M</td>
<td>R clavicle, R mid-rib</td>
</tr>
<tr>
<td>155</td>
<td>OA</td>
<td>M</td>
<td>R rib 7</td>
</tr>
<tr>
<td>173</td>
<td>OA</td>
<td>M</td>
<td>R clavicle</td>
</tr>
<tr>
<td>158</td>
<td>OA</td>
<td>M</td>
<td>R patella, R talus (posterior process)</td>
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LAUREN HOSEK, M.A.
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(303) 489-6566

EDUCATION
2014–current: PhD candidate in Anthropology, Syracuse University
   Thesis: *Crossroads of Conversion: Intersections of Bodies, Materials, and Histories in Early Medieval Bohemia*
2014: MA in Anthropology, Syracuse University
2009: BA in Anthropology and Archaeology, Washington University in St. Louis
   *Summa cum Laude*

RESEARCH INTERESTS
Bioarchaeology; human osteology; skeletal plasticity and the life course, paleopathology; materiality; religion and the body; early medieval Europe; mortuary archaeology, bioarchaeological approaches to identity, mobility, and migration

ACADEMIC POSITIONS
2020: Professional Research Assistant, Department of Anthropology, University of Colorado, Boulder
2017: Instructor, Forensic and National Security Sciences Institute, Syracuse University
2017: Instructor, Department of Anthropology, Syracuse University
2014: Instructor, Department of Anthropology, College at Brockport, SUNY

PUBLICATIONS
Guest Organized Special Issue Journal (1)

Peer-Reviewed Book Chapters and Journal Articles (4)
EXTERNAL FELLOWSHIPS, GRANTS, AND AWARDS
2019: Seal of Excellence, Marie Sklodowska-Curie Actions, European Union/European Commission: “ConBod” (Converting Bodies: A Social Bioarchaeology of Religious Change in Central Europe)
2017: Elsevier Foundation New Scholars Travel Grant. AAPA Conference ($200)
2012-2015: National Science Foundation Graduate Research Fellowship: “Bioarchaeological Analysis of an Early Medieval Czech Skeletal Population” ($96,000)
2014: Student Paper Prize, AAA Biological Anthropology Section: “Enamel, Stone, and Gold: Probing Composite Mouths and Personhood in Nineteenth Century New York City” ($250)
2009-2017: ORISE Postgraduate Research Participation Program: Oak Ridge Institute for Science and Education Fellowship with the U.S. Army Corps of Engineers, St. Louis District ($37,400)

INTERNAL GRANTS AND AWARDS
2019: Gordon Bowles Graduate Competition Essay Prize ($100)
2018: Claudia De Lys Scholarship in Archaeological Anthropology. Department of Anthropology, Syracuse University ($9,250)
2015: Moynihan Institute, Center for European Studies Research Grant ($1,000)
2013: Roscoe Martin Research Grant ($1,000)
2012: Roscoe Martin Research Grant ($1,000)
2011-2017: Graduate Student Organization and Department of Anthropology Travel Grants

INTERNAL FELLOWSHIPS
2016-2017: Graduate Research Assistantship, Department of Anthropology ($18,650)
2015-2016: Syracuse University Fellow, Maxwell School of Citizenship and Public Affairs ($24,000)
2012: Maxwell School of Citizenship and Public Affairs Dean’s Summer Research Fellowship ($3,500)
2011: Maxwell School of Citizenship and Public Affairs Dean’s Summer Research Fellowship ($3,500)
2010-2011: Syracuse University Fellow. Maxwell School of Citizenship and Public Affairs ($24,000)

TEACHING EXPERIENCE
Instructor
2017. Introduction to Forensic Anthropology, Syracuse University
2017. Human Osteology, Syracuse University
2015. Bioarchaeology Lab Course, Czech-American Field School (assistant instructor)
2014. The Human Condition (Intro to Anthropology), College at Brockport, SUNY
Teaching Assistant
2012. Introduction to Biological Anthropology, Syracuse University
2011. People and Cultures of the World, Syracuse University
2009. Introduction to World Archaeology, Washington University in St. Louis
ORGANIZED CONFERENCE SYMPOSIA
2017, 03/30: Bodies as Narratives: Revisiting Osteobiography as a Conceptual Tool. With John Robb. Society for American Archaeology, Vancouver, BC.

CONFERENCE PRESENTATIONS (* = invited session)
*2018, 09/07: Lauren Hosek and John Robb. Osteobiography as a Research Tool: Developing Concepts to go with the Term. European Association of Archaeologists, Barcelona, Spain: podium presentation.
2017, 10/07: Vanessa Reeves and Lauren Hosek. The Embodied Warrior: An Early Medieval Case Study. Western Bioarchaeology Group, Reno, NV: poster presentation.
*2017, 08/31: Lauren Hosek, Joan Brenner-Coltrain, and Jan Mařík. Where the Cidlina Loses its Name: Rethinking the Local in Early Medieval Central Europe. European Association of Archaeologists, Maastricht, Netherlands: podium presentation.
*2013, 10/20: Lauren Hosek. Postmortem Wanderings: A Bioarchaeology of Early Medieval Revenants. Canadian Association for Physical Anthropology, University of Toronto, Canada: podium presentation.
2013, 01/10: Lauren Hosek. Early Medieval Deviant Burials in the Czech Republic. Society for Historical Archaeology, Leicester, UK: podium presentation.

2011, 03/15: Lauren Hosek and Shannon Novak. A Case of Metastasized Prostate Cancer from the Spring Street Presbyterian Church in NYC. American Association of Physical Anthropologists, Minneapolis, MN: poster presentation.

INVITED CAMPUS, DEPARTMENTAL AND PUBLIC TALKS

2017, 03/01: Bioarchaeology Laboratory Methods. Cazenovia College, Introduction to Archaeology.

2017, 02/22: A Bioarchaeology of the Unusual Dead. Perspectives in Anthropology and Archaeology Lecture Series at Cazenovia College.

2015, 12/03: Medieval Trauma: A 10th Century Case Study. Syracuse University, Bioarchaeology.

2015, 11/05: Broken Bones: Farmers or Warriors in Medieval Bohemia? Syracuse University, Introduction to Forensic Anthropology.


2015, 03/11: Where the Warriors Lie: A Bioarchaeology of Conflict in Early Medieval Bohemia. Marjorie Helen Stewart Speaker Series at the College at Brockport, SUNY.

2014, 09/22: Dental Disease. The College at Brockport (SUNY), Ancient Diseases.

2014, 09/18: Bioarchaeology: Bones as Sources. Le Moyne College, Introduction to Anthropology.


2013, 11/6: Returning from the Grave: Early Medieval Revenants in Bohemia and Beyond. Syracuse University, Death in the Middle Ages.

2013, 10/28: Bioarchaeology: Bones as Sources. Syracuse University, Death in the Middle Ages.

2013, 04/06: Returning from the Grave: A Bioarchaeology of Early Medieval Revenants. The Monstrous, the Marginalized, and Transgressive Forms of Humanity. Graduate Student Conference, Syracuse University, podium presentation.


SELECTED ARCHAEOLOGICAL FIELD AND LABORATORY EXPERIENCE

2010-2016: Lab Manager (2014-2016), Lab Technician (2010-2014), Spring Street Presbyterian Church Bioarchaeological Project in NYC (1820-1850). Syracuse University Biological Anthropology Laboratory

2013: Independent Researcher, early medieval skeletal collections from Pohansko. Department of Anthropology, Masaryk University, Brno, Czech Republic.

2011: Field School Graduate Student, Undergraduate Supervisor, Harriet Tubman Field School. Syracuse University, Auburn, NY.

2005-2009: Lab Assistant and Field Technician, Cahokia Research Project. Washington University Archaeology Laboratory, St. Louis, MO/IL.

2008: Field Archaeologist, Fetternear Research Project. University of Wales, Lampeter, Aberdeenshire, Scotland


PREVIOUS EMPLOYMENT
2009-2010: Postgraduate Research Participation Program of the Oak Ridge Institute for Science and Education (ORISE) at the St Louis District, U.S. Army Corps of Engineers Mandatory Center of Expertise for Curation and Archives Analysis, St. Louis, MO.


PROFESSIONAL SERVICE
2019: Faculty Mentor for Capstone Project in Forensic Science, Syracuse University

Erin Kang: Forensic Anthropology and Disaster Victim Identification (DVI)

2011-2018: Bioarchaeologists’ Northeast Regional Dialogue (BNRD) Conference Organizing Committee Member

2018: Rowan University, planning and scheduling liaison

2017: Quinnipiac University, conference communication

2016: SUNY Oneonta, conference and committee coordinator

2015: SUNY Buffalo, conference communication

2014: Ithaca College, keynote organizer and publicity

2013: Syracuse University, host institution liaison and conference communication

2012: University at Albany - SUNY, conference communication and program design

2018: Faculty Mentor for Capstone Projects in Forensic Science, Syracuse University

Shannon Vonn Dyke: The Online Market of Human Remains and Forensic Association

Yuyang Tian: Classification of “Asian” Ancestry Using Human Skull: A review of traditional methods and novel alternative classifications


Vanessa Reeves: A Bioarchaeological Study of Early Medieval Human-Horse Relations in the Czech Republic

2010-2014: Future Professoriate Program organizer and participant, Department of Anthropology, Syracuse University

2012-2013. President (elected position), Syracuse University Anthropology Graduate Student Organization (AGSO).
2011-2012. Faculty Representative (elected position), Syracuse University Anthropology Graduate Student Organization (AGSO)
2010-2011. Brown Bottle Social Coordinator, Syracuse University Anthropology Graduate Student Organization (AGSO)

PUBLIC OUTREACH
   Nadia Linton: *The Scars Left Behind: Observations of Traumas Made from Medieval Bladed Weapons*
2017, 11/14-16: Program developer and presenter: Human Evolution Tours in the Lab, Auburn Montessori School, Syracuse NY.
2017, 03/19: Your Growing Skeleton: Featured Presenter at the Rochester Museum and Science Center, Rochester, NY.
2016, 02/28: No Bones about It! – The Human Skeleton: Featured Presenter at the Rochester Museum and Science Center, Rochester, NY.
2015, 12/05: Program developer and presenter: Archaeology Day at Auburn Montessori School, Syracuse, NY.

MEMBERSHIP OF PROFESSIONAL ORGANIZATIONS
American Association of Physical Anthropologists
European Archaeological Association
American Association of Anthropologists
Society for American Archaeologists