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# Spytiněv (CE 875-915), Duke of Bohemia: an osteobiographic perspective on society status and stature in the emerging Czech state

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Spytihněv I (CE 875–915), Duke of Bohemia

An Osteobiographic Perspective on Social Status and Stature  
in the Emerging Czech State

MARSHALL JOSEPH BECKER

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# BONES OF COMPLEXITY

Bioarchaeological Case Studies of  
Social Organization and Skeletal Biology

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EDITED BY

HAAGEN D. KLAUS, AMANDA R. HARVEY,  
AND MARK N. COHEN

Foreword by Clark Spencer Larsen

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## 4

## Spytihněv I (CE 875–915), Duke of Bohemia

### An Osteobiographic Perspective on Social Status and Stature in the Emerging Czech State

MARSHALL JOSEPH BECKER

The recognition that human stature reflects physical well-being and nutrition led Danish social planners to incorporate this observation into their evaluations of social planning policies over a century ago. Masali's (1967) observation that better nutrition is linked to an *aumento seculare* (secular increase) in stature came to be seen as useful for social planning throughout Europe. Studies of northern Italians during and after World War II (Masali 1967) and of Sicilians, the latter of which was based on stature data extending back to 1850 (Cappieri 1963), seemed to confirm Masali's finding. Correlations among stature, social class, and the health of the living (Steckel 1994, 1995) now are commonly used to track regional economic trends. Nicholas and Steckel's (1991) regression analyses of these data have revealed urban-rural and regional variations in these biological consequences of socioeconomic processes.

During the past few decades, the study of the relationship between stature and social class, now identified as "auxology," has become a significant tool in the study of social and economic history (D'Amore et al. 1987; Schell 1986; Singh and Harrison 1997). More recently, these studies have been used in efforts to understand social history, including transitions from complex chiefdoms to early states. The relationship between nutrition and variation in stature has been used to evaluate status differences within archaeologically known ancient chiefdoms in North America (Powell 1988) and elsewhere in the world. This biological approach parallels the evaluation of mortuary complexity as an indicator of differential status (Robb et al. 2001; see also Sellevold 1994 for Medieval Norway). These discoveries do not tell

us why any individuals have greater status, but they generally confirm that higher rank correlates with greater quantities or quality of grave goods. By inference, we believe that taller individuals had greater access to higher energy or protein food resources as part of their status ranking. Possible confounding factors have been summarized elsewhere (Becker 1999, 227) and are noted by many of the contributors to this volume, but in general, we expect that stature will correlate with social rank.

A window on social status and stature in an emergent European state can be opened through the study of human remains recovered from excavations immediately west of the Cathedral of St. Guy in the center of Prague. This work revealed a largely complete foundation of the small Church of the Virgin Mary (Kostel Panny Marie, built ca. 882–885 CE), which is buried under one of the many later buildings that now form the vast Prague Castle complex (Fig. 4.1).<sup>1</sup>

Within that small Christian structure, which is almost as small as a chapel niche of the huge cathedral that now dominates Prague Castle, was a small chamber tomb (Fig. 4.2) in which were interred the body of Prince Spytihněv and his wife and the skull of a second woman. The bones of these two royals provide the basis for the consideration of their stature and how it relates to their status in Bohemia at a time when it was an emerging central European state.

### Background

During the late ninth century, several states were forming in Europe. The beginnings of the Přemyslid dynasty of Bohemia established the foundations of the early Czech state, which later emerged as one of three great powers in central Europe (Bohemia, Hungary, Poland). The core of the Bohemian region was along the Moldau in the area that has become modern Prague, situated at the center of modern Bohemia, the western province of today's Czech Republic. These evolving states emerged from complex historical trajectories influenced by the shift from Roman military control and Roman-oriented trade to independent but church-influenced polities. This transformation was part of a widespread process of political development throughout central Europe (see Bühner-Thierry 1997). The combination of archaeological findings and archival data reveal the many complex processes involved in medieval state formation in Bohemia (Bubeník 1994a, 1994b). The importance of skeletal studies of the emerging elite in Prague is

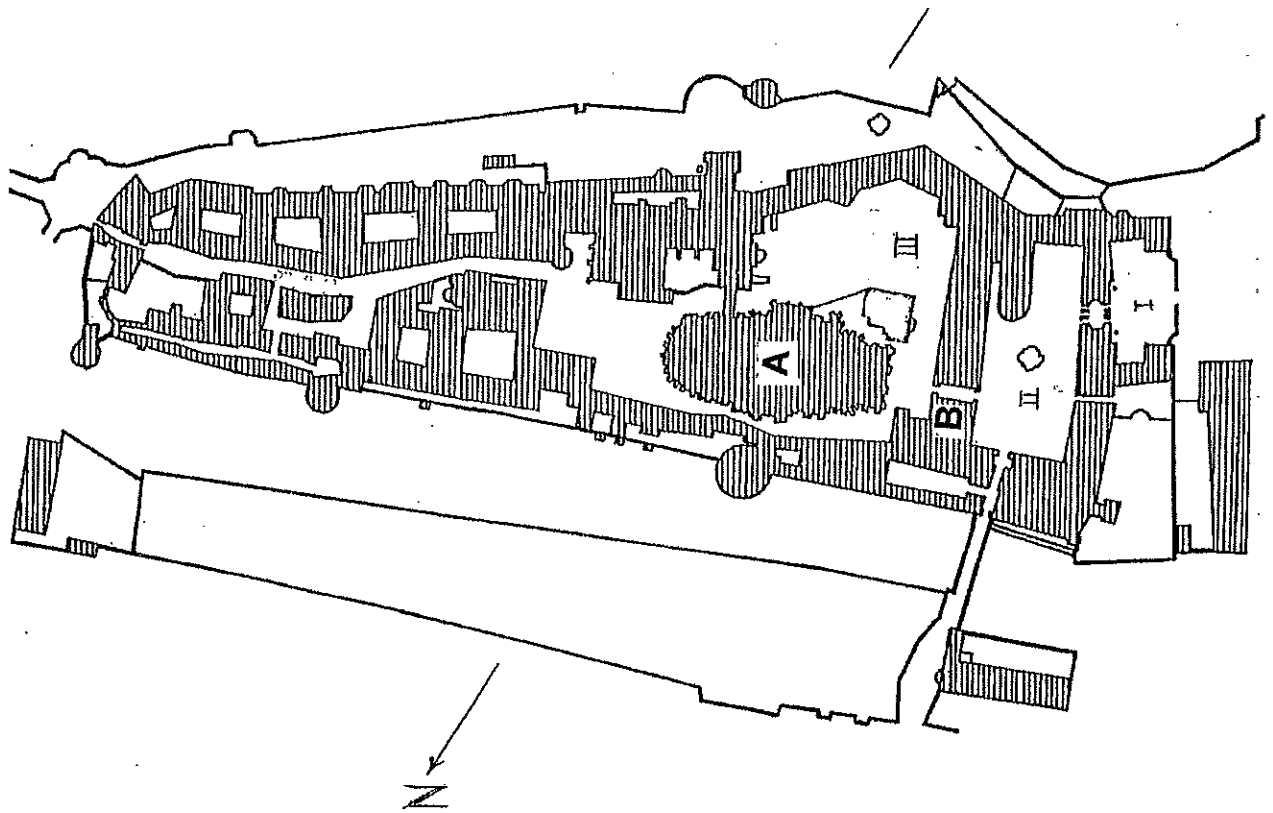


Figure 4.1. General plan of Prague Castle. The locations of the three principal courtyards (I-III) appear at the western end of the complex. A: Prague Cathedral (Cathedral of St. Guy). B: Carriageway connecting Courtyards II and III. From this passage the foundations of the Church of the Virgin Mary are now visible. Adapted from Frolík 1988, Fig. 1.

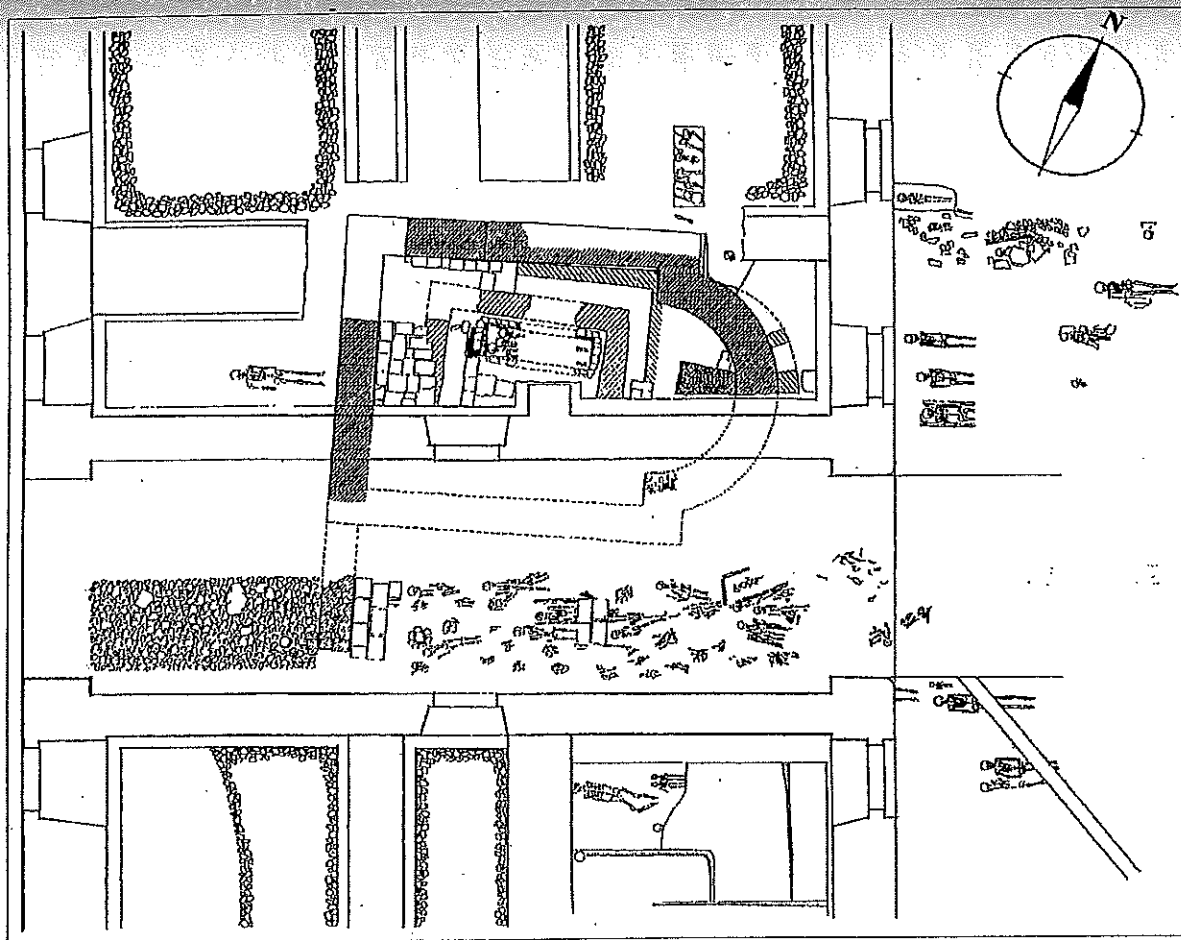


Figure 4.2. Detailed view of the location of the foundations of the Church of the Virgin Mary, with the tomb of Prince Spytihněv I. Adapted from Frolík et al. 2000.

increased by their value in evaluating parallel processes throughout Europe (Kubková et al. 1997).

In 870 CE, Bořivoj I (ca. 852–889) became the first Bohemian ruler of what became the Přemyslid dynasty (870–1306). At that time, the duchy was under the control of the Moravian princes. Bořivoj declared himself *kniže*, or sovereign, a term generally translated as “duke” or “prince.” On Bořivoj’s death, Svytlah, his eldest son, who is generally believed to have still been a minor, became his heir. By 895, Svytlah I had become the ruler and had established his realm free of control by the Moravian princes.

The archaeology of the medieval period in Bohemia has a long and productive record (see Klápště 1994). Even the early archaeological research programs in the early 1900s involved considerable efforts to recover and study human skeletal remains. Descriptions of the physical characteristics of the population at the center of the Czech state, especially of the elite social strata, may help elucidate the complex social interactions between rich and poor and possibly between the growing urban population and their rural neighbors in the region surrounding Prague.

The events surrounding the people whose skeletal remains are the focus of this study are related to the history of the region generally identified as Greater Moravia. The origins of the settlement area of early Prague, within what had been the ancient Bohemian polity, are becoming clearer each year as archaeological work progresses at an unprecedented pace (Frolík 1994; Tomková 1997). As Bohemia is mainly served by the Vltava (Moldau) and Elbe (Labe) Rivers, wide-ranging settlement research conducted throughout their drainage areas offers impressive data for comparative studies. The skeletons recovered over the many years of excavation, especially during recent work under the direction of Jan Frolík (head of the Department of Archaeology at Prague Castle), provide extensive and very well-preserved bodies of biological data from throughout the area inhabited by the lineal ancestors of the modern Czech people. These vast skeletal samples from sites throughout the country have been carefully preserved and are easily accessible for study. The sample discussed here is one of the smaller collections from the vast necropolis-like region below and around the present walled area that is identified as Prague Castle. Many of these “cemetery areas,” which are largely defined by efforts at recovery preceding construction, have yielded remains of several hundred individuals. The earliest burials appear to date from the seventh century and the latest may date from the 1800s. In the Lumbe Garden area and elsewhere outside the walls of the Prague Castle, burials of an early period of interment have been exten-

sively disrupted by graves dug several centuries later. My research program, which involved at least one month of study each year for ten years, was focused on age and sex evaluations in support of archaeological studies of these graves. The published data from these studies (Becker 2000a, 2003) is but a small fraction of the information gathered. The remainder can be found in manuscripts filed with the Czech Archaeological Service.

## Goals

The analysis of the human skeletal remains recovered from the area in and around the Church of the Virgin Mary was part of a much larger project to understand how the grounds of the Prague Castle area were used in antiquity. The overall program has been detailed elsewhere (Becker 2000a, 289–290). The specific focus of this chapter is the remains of Svytlah I, the remains of the woman believed to have been his wife, and fragments of a second and much younger woman. Although status markers in royal tombs have been widely examined in the Maya realm (Krejci and Culbert 1995; and Žračka et al. 2011) and in late pre-Hispanic Peru (Klaus, Shimada, Shinoda, and Munro, this volume), they have rarely been applied during the period of emerging states in central Europe.

The data on age and sex (and incidentally on stature) were not driven by specific hypotheses at the time of collection. Only later was this information applied to a number of questions of general interest to anthropologists. In considering the evolution of the Czech state, we thought that comparing the achieved stature of these two elites with those of the general population of that period that was buried in the immediate vicinity might reveal the biological consequences of higher status in the emergent Czech state. Documenting an elite group with greater stature than the general population during this period of political change enables us to view correlated social changes. Stature could, therefore, serve as a proxy that indicates emerging and continuing social stratification.

## Materials

During the early medieval period, the residential area at Prague Castle was located to the east of this burial ground, but over the centuries, much (if not most) of the entire high area was used as a cemetery. The area of the Prague Castle from which the bones in this study have been recovered was not a simple and bounded “cemetery” area in the commonly understood

sense. Both ancient and many relatively modern cemeteries have patterns of growth and development that tend through time to create “disorder” below ground. Even the most precisely laid out funerary spaces experience changes and problems that cause later graves to be cut into earlier graves, but this usually does not happen until after the passage of a century or more. While no fixed interval of time can be assigned to this process, more than forty years of my personal excavation experience in the recovery and analysis of skeletal materials from more than forty-five ancient cemeteries of all periods (Bronze Age to the 1920s) indicates that after about 100 years of use, confusion in body placement becomes common. Very often, older parts of cemetery areas become subject to reuse after only a few generations. Grave pits and constructions for burials, other types of construction, land contouring and normal changes in topography, and other factors account for the fact that newer graves intrude upon older ones. This process is vastly accelerated in urban contexts, despite the surface appearance of what seems to be an “orderly” cemetery through regular rows of tombstones, plot markers, and other constructions that suggest the presence of organized rows of graves.

The reality is that most cemeteries that are in use for more than a century soon come to resemble the situation that has been discovered through excavations in the Courtyard II of the Prague Castle (Fig. 4.1). Large numbers of graves had been cut into and through earlier graves that in turn had been cut into even earlier graves. The result is considerable disruption and general destruction of the graves that predate the most recent ones and the corresponding loss of skeletal order and data. In addition to the many “intact” graves excavated from the area of the Church of the Virgin Mary, the numbers of fragmentary remains recovered from these contexts indicates that this burial area was used from the eighth through the thirteenth centuries. Later graves frequently were dug through earlier interments, disturbing the skeletons of the earlier inhumations. This behavior, which is common wherever cleared land resources are highly valued and/or space allocated to cemeteries is well defined and restricted, appears to have happened at the Prague Castle. This accidental reuse of burial plots also indicates little or short-term marking of individual graves over long-term use of the area.<sup>2</sup>

Different excavators at Prague Castle, working at different times within the past century (Hillbert 1911; Smetánka et al. 1980; Smetánka and Frolík 1986) have had an increasing focus on the recovery of human skeletal remains. As a result, we have as many as three separate collections of bones

from any one specific location, such as the area to the east of the apse of the cathedral or in the area of Courtyard II. Since each excavator had different constraints on their work, the configuration of the excavated units was never the same. Fragments of bone from different excavations and different target areas had to be identified and matched in a labor-intensive process.

Excavations in the carriageway between the second and third courtyards and the general area surrounding the Church of the Virgin Mary conducted between 1930 and 1995 recovered human remains that represented a population of the ninth to thirteenth centuries or later. In 1930, archaeological work during renovations of the carriageway identified a series of early graves and remains from disturbed interments (see Becker 2000a, 348–350).

The project discussed here focuses on the human remains interred within the tiny Church of the Virgin Mary, the second Christian structure built within the present Czech Republic (Frolík et al. 2000). The bones from this context were identified from the historical record as those of Spytihněv I, Duke of Bohemia, and his wife. They had been interred within this small structure at a general period in Christian history when burials were first being made within churches (Becker 1997). Previously, Christian burials were only made outside and around religious structures, which commonly were erected (or converted to use) in non-urban locations. During the ninth century in northern Italy, the earliest evidence of interments of elite or high-status individuals are found within small, chapel-like churches (Becker 1997, 2000b).

The study of the remains of Prince Spytihněv and those buried with him was part of a skeletal research program that was initiated in August of 1997 in order to understand mortuary activities at a location now within Prague Castle. This particular area was the focus of excavations in 1995 associated with construction in the carriageway connecting Courtyards II and III, around the west end of Prague Cathedral (the Cathedral of St. Guy, also identified as St. Vitus, construction of which was begun ca. 1300 CE; see Frolík et al. 2000). These bone studies were part of a larger effort to review Early Medieval human skeletal remains recovered during excavations from a number of locations within the Prague Castle. As early as 1911, extraordinary archaeological efforts focused on salvaging evidence of the past of Prague Castle. A century ago the impacts of construction or modernization were seen as an opportunity to explore the rich cultural history at this site.



## Methods

The formulas Trotter and Gleser (1952, 1958, 1977) devised for Euro-American males and females were applied in the estimation of stature. The multiple nonstandard methods of analysis commonly used to evaluate commingled remains were applied in this general study (see Becker 2000a, 342–346). While my focus here is on data related to stature, of particular note for the history of the Czech Republic is the calculation of the age at death of Spytihněv I. A number of details reflecting geriatric characteristics were involved and have been listed in detail in the published report. In almost every case for which stature has been calculated for individuals in this population, only one or two intact long bones survive. In one case where I believe we have a sample from both upper and lower limbs, the results of the calculations led me to question the relative proportions (allometry) as they relate to these calculations of stature.

## Results

### Human Remains from the Courtyards

The now open areas of the several courtyards formed by extensive building activity to the west and southwest of Prague Cathedral provide access to the vast archaeological materials below. The standing buildings, one of which now covers the remains of the Church of the Virgin Mary, are only the most recent manifestations of centuries of construction activity within the present confines of Prague Castle. Not surprisingly, the 1930 carriageway excavations revealed only a few relatively undisturbed burials. Also found was evidence of a significant number of disturbed graves. Borkovský (1949, 69) assigned 14 grave numbers to units that he correctly perceived to represent individual burials. He also recognized that perhaps 30 to 40 people might be represented in this small area alone if individuals from disturbed contexts were included. Subsequent study of the skeletal material (Becker 2000a, 353) revealed that Borkovský was correct and that at least 8 adults and 20 subadults could be recognized among the assemblage that had been commingled for storage. Half of these 28 individuals probably derived from graves of earlier dates that had been largely obliterated by later interments and by construction activities. A review of all the human remains indicates a minimum number of individuals of 99 (see Table 4.1).<sup>3</sup> As indicated earlier, this mortuary situation is typical of the massive disruptions seen with

Table 4.1. Age and sex distribution of the Courtyard II sample

Age Group	Males	Unidentified	Female	Totals
Fetus		1		1
0–6 months		5		5
6.0–12.0 months		3		3
1.1–2.0 years		9		9
2.1–3.0 years		4		4
3.1–5.0 years		9	4	13
5.1–7.0 year	1	6		7
7.1–10.0 years		6	1	7
10.1–15.0 years	1	1	2	4
15.1–16.9 years		1		1
Subadult subtotal	2	45	7	54
17.0–20.0		1		1
20.1–23.0	1			1
23.1–25.0				0
25.1–30.0			1	1
30.1–35.0	1			1
35.1–40.0	1		3	4
40.1–45.0	5	2	10	17
45.1–50.0	2		1	3
50.1–55.0	2	1	1	4
55.1–60.0	1			1
60.1–65.0	1		4	5
65.1–70.0	2		2	4
70.1–75.0	1		1	2
75.1–80.0			1	1
80.1–85.0				0
Adult subtotal	17	4	24	45
Totals	19	49	31	99

cemetery reuse and with the later construction activity in the central area of Prague Castle. This is the case in both urban and rural cemeteries around the world.

Salvage excavations in the immediate area of the Church of the Virgin Mary in 1946, 1950, 1955, and 1995 (Becker 2000a, 339–340) encountered similarly problematical sequences of burials. Excavations in 1950 of the areas designated as Courtyard II (see Fig. 4.1) encountered a number of grave cuts from which skeletons had been removed and curated during previous work in this area. The human remains from these locations attracted less interest than those of the royal family found nearby. The site of the small Church of the Virgin Mary was located during the 1950 field season. Archaeologists identified the remains believed to be those of Prince Spytihněv I in the tomb chamber within the foundations (Unit 13253; see Becker 2000a, 310–311, 342–347; and Smetánka et al. 1983).<sup>4</sup> The large tomb that fills much of the excavated floor area within the foundations of the Church of the Virgin Mary actually yielded the remains of three individuals. Two of these are believed to be the prince (or duke) and his wife (Vlček 1997). The extremely limited historical documents surviving from that period do not reveal her name.

The 1995 re-excavations of the graves located in 1950 recovered a surprising quantity of small bone fragments. This newly retrieved skeletal material was of use in providing archaeological confirmation of the locations of these earlier excavations by joining fragments with bones found during the 1950 excavations. Similarly, small pieces of skeletal material (i.e., ribs and skulls) were recovered from the royal tomb through sifting of the matrix in 1995. In August of 1997, I was asked to examine these fragments and determine how they related to the bones Prof. Vlček had studied.

Note should be made that both royal skeletons had been damaged by much later construction activity, possibly the construction of a trench. That activity, which took place centuries after the tiny church of the Virgin Mary had decayed and been “lost,” destroyed or displaced the bones of both royals from just below the thoracic vertebrae to the tarsal bones. Fragments of the royal couple displaced by this later building process may have been mixed within fills and layers dating from long after the dates of the original interments. None of the small quantities of human bone that were identified in the later excavation lots in this area, however, were conclusively identified as derived from the royal couple.

Only two graves were encountered during the 1955 excavations. In fact, these archaeological units identified only clusters of human bones that in

the field were believed to represent an adult (Unit 13462) and a child (Unit 13463). Osteological evaluation of the remains in Unit 13463, however, revealed that the bones identified as a child included portions of at least five people, two of whom were adult females (Becker 2000a). Some fragments from Unit 13462 were found to join with bones in 13463. Since both principal women (the most complete representation of bones within the unit) are represented by at least part of a right ulna, these three long bones are probably placed with the appropriate skeletons. A summary of the data relevant to the present study follows.

13462: Female; age  $70 \pm 10$  years; stature 157.0 cm

Three bones from this unit are intact or could be reconstructed to their complete length from which stature could be calculated:

Left femur = 398 mm ( $152.406 \pm 3.72$ )

Right ulna = 245 mm ( $162.374 \pm 4.30$ )

Left fibula = 331 mm ( $156.357 \pm 3.57$ )

These data are interesting because the calculated stature estimations for the femur and fibula fall beyond the error range for the ulna. This might suggest that more than one woman is represented. The statures calculated from the leg bones are in good agreement. If we assume that only one woman is represented by all three bones and that the fibula-ulna differences overlap, one may infer that this woman had relatively long arms. The tall stature calculated for the woman in Unit 13463 (see below) derived entirely from measurements of the arm bones. Whether she also had relatively long arms remains unknown, but the similarities suggest that these women may be closely related and are from the same population.

13463: Two young women and three children, identified as 13463A–13463E (see Becker 2000a):

13463A: Female; age  $26 \pm 5$  years; stature  $166.5 \text{ cm} \pm 1 \text{ cm}$

Stature calculated from two upper limb bones only

Right humerus = 322 mm; stature  $166.162 \text{ cm} \pm 1 \text{ cm}$

Left radius = 236 mm (estimated); stature  $166.794 \text{ cm} \pm 1 \text{ cm}$

#### Results of the Skeletal Study of the Tomb of Prince Spytihněv I

This impressive collection of skeletal remains from Courtyard II, which possibly represents an urbanizing if not an elite population of Prague during the important centuries when the early Czech state was forming, provides a useful sample for comparison with the bones of the royal family

(Vlček 1997). Ancient mtDNA from the bones of several royal dynasties can be compared with these individuals to determine their internal kinship relationships. They can also be compared with royal descendants and with royal families of central Europe (see Flury-Lemberg and Otavsky 1994).

#### *Prince Spytihněv I and His Wife*

The review of the bones of the prince and his presumptive wife was conducted as a double-blind study without consultation with either the historical record or with the results of Vlček's (1997) more detailed examination. The brief study that resulted, therefore, provides us with a second opinion that can be useful in interpreting the skeletal record. The findings from this brief reexamination are summarized here from the more complete report (Becker 2000a, 342–346). Of particular interest was the determination that the prince was about 65 years old when he died, some 25 years older than historical speculation. Since the historical record of his transition to power suggested that he was a child, this new evaluation requires a reevaluation of the sparse historical record. Vlček's (1997) evaluation of the skeletal record led him to propose an age at death of "41.7 ± 4.6 years," which curiously conforms with popular historical beliefs. Subsequent to my publication of a very different figure (Becker 2000a, 342–346), two teams (Brůžek et al. 2002; Sláma 2001) reviewed the evidence but did not contradict my evaluation.

#### Prince (Knize) Spytihněv I

Robust male; stature 178.383 ± 4.57 cm

The historical record suggests that Spytihněv I died at an age of about 40 years. My study of the bones of this massive male suggested a person who died at approximately 65 years of age. Dental wear suggests an age of only approximately 55 years, but all other features of the skeleton indicate an older individual (for the study of the dentition, see Becker 2000a, 342–343). For example, the spines on the right calcaneus suggest an age of 65+ years. Cranial suture closure suggests an age at death closer to 70, but suture closure rates have wide variability and therefore less accuracy in age evaluations.

The duke's skull is largely intact but has been heavily restored. The morphology of his skull attests to his impressive robusticity, which is confirmed by his prominent supraorbital tori and all metric indices (see Table 4.2, also Becker 2000a). A most interesting feature of this skull is on the right side of

the occipital bone, lateral to the midline. A circular depressed area (diameter 27 mm) at first glance appears to be a completely healed trepanation (cf. Becker 2003). Of interest is a slightly raised ring of bone surrounding the area of reparative bone formation. Thin pieces of the regenerated bone are missing, having been lost after death. Slight irregularities in the border of this feature hint at the possibility that this is the result of a blow with a round or pointed object or some other injury that predated his death by perhaps three to five years (see Arnott et al. 2003). Given the area of the skull where this feature is located, it is doubtful that the prince would have survived a penetrating blow from a long pointed object, although people frequently have been known to survive extensive cranial injuries. Damage from blunt force cranial trauma is more likely.

Of particular interest is the presence of the lateral incisor trait (see Pinto-Cisternas et al. 1995) on both the central and the lateral incisors. This feature is common among the Etruscans and throughout central Italy and is evident to a lesser extent at the extremes of the peninsula. It has not previously been reported from beyond that part of the Mediterranean, but by normal genetic distribution its presence is not unexpected.

As noted earlier, the central parts of the extended skeletons of the prince and his wife were cut through their centers by building activity. Thus, both are represented by elements of the superior skeleton and an assemblage of leg and foot bones that have been "matched" with the upper bodies. The only intact long bone of the prince is his left humerus, from which the length (347 mm) has provided the evaluation of stature (see discussion). Asymmetrical differences in robusticity of his long bones suggest that the Duke was left handed.

#### The Princess (Spytihněv's Wife, Name Unknown)

Robust female; age 50+; stature 159.106 ± 4.45 cm

The conservation process used with the skull has made measurements difficult, as the mandible has been affixed to the maxilla. In addition the long, thin face of this woman has been exaggerated by distortion that probably took place in the ground but now has been emphasized by the reconstruction process. This problem also should be noted for all of the skulls that are described in this report and was a factor that led to the decision to leave metric evaluations to another time.

Third molar agenesis was common in this population, but all 32 of this woman's teeth had erupted. Of note is the loss of one tooth before death; the

maxillary right central incisor. This is an unusual tooth to lose. While some analysts might postulate that this was the result of a violent blow to the face, I believe that it may reflect deliberate ablation (see Robb 1997; cf. Becker 1994, 1995a, 2000c). This woman has the same narrow central and lateral incisor mesiodistal dimensions, that is noted for the prince and is common within this Bohemian population. Dental wear suggests an age of 45–55 years, but social status might be considered an influence on this observation as her association with the prince may have provided a more refined diet and thus less dental wear (cf. Molleson 1994). Whether the elites of this period in Bohemia consumed a less coarse diet than commoners did has yet to be studied. Cranial sutures externally are obscured, but the internal sutures may indicate an age of 40–50 years, with a wide error range around these figures. The general lack of geriatric characteristics suggests that she died between 50 and 55 years.

Several traits on the skull are important for determining the origins of this woman. Very interesting is the full metopic suture, which had completely fused. An area surrounding this portion of the frontal bone had been broken off but now has been restored. No evidence can be seen of the lateral incisor trait. Both parietal foramina seem to be patent. A small ossicle appears at lambda in addition to two small examples in the left leg of the suture and at least one in the right. These seem fused and largely obliterated, if not obscured by the coating now on the bone. An interesting aspect about this facial structure is the slight nasal (left) guttering, a feature more common in North Africa and to the south.

#### *Individual Number 3 in the Prince's Tomb*

This identity of this female, aged 20–36 years, is unknown. She is represented only by the vault of her cranium. No postcranial remains can be specifically related to this woman, who is much smaller and less robust in every way than the prince's wife. The cranium of the second female in this tomb context is interesting (cf. Cucina and Tiesler 2006) but not as suggestive as some would like to think. The relationship of this individual to the prince and his wife lead to some interesting possibilities.

Photographs (see Vlček 1997) reveal that this cranium was situated toward the southwest corner of the tomb and was sited at a higher elevation than the heads of the royal couple. This suggests that it may have been added at a much later date. Most likely it represents the disposal of a cranium that had been disturbed from a grave somewhere in this general area and was deposited in this tomb. A third possibility is that it was from a

grave disturbed in the building of the small Church of the Virgin Mary and that the cranium was left inside the structure and later placed within the tomb. Her small size suggests that she is not a daughter of the royal couple who may predeceased her parents (but see Becker 1993). She might represent Ludmilla, mother of Spytihněv I, but this is purely speculative.

#### Discussion

The human skeletons buried in the area around the tiny Church of the Virgin Mary, as is the case for those buried around the Cathedral of St. Vitus, are almost entirely those of ordinary people. Grave goods are rare. An unusual exception that was excavated in 1926 comes from the area between the ancient Royal Palace and the Cathedral of St. Vitus. A thirteenth-century metal chalice and two bronze rings suggest a possible priest's grave (Frolík 1988). This late and deeply intrusive burial disturbed many earlier graves of commoners (Becker 2000a), whose bones provided much of our study sample. The recovery of the remains of two early members of the Přemyslid dynasty of Bohemia and numerous graves of other early residents of Prague offered direct evidence for comparing stature in this ninth-century population. Other studies have provided evidence that higher-status individuals experienced better health than their subalterns (Chapter 1). In their review of the skeletal evidence of the bioarchaeology of social complexity, "terminal adult stature" is among the categories the editors of this volume list. While I have reservations about status variations in many of the categories on this list, such as enamel hypoplasias, the available skeletal sample provides a means by which each may be tested. Here I offer data on one variable from one cemetery area within the area of Prague that includes Prague Castle and the surrounding high ground.

The impressive and important hill fort that evolved into the present Prague Castle has a number of burial areas. Several are now relatively well known through excavation. Some of these areas, such as the Riding School cemetery, include burials that date from occupational periods that can be relatively clearly placed in time through the presence of grave goods. The general area surrounding the Church of the Virgin Mary appears to have been used as a burial area since at least the end of the ninth century until the thirteenth century, possibly with some breaks or periods when no burials were made. Unfortunately, a nearly complete absence of grave goods and the churning up of the soil through constant reuse of the area have reduced the possibility of accurately dating these graves. The dates of in-

dividual graves and even of clusters of graves cannot be determined with precision.

The human remains from the skeletal population from the part of Prague Castle that is the center of this study, the courtyard zone in the area of the Church of the Virgin Mary, are limited in number due to later construction that now covers much of the area (see Fig. 2). The few bones that have been recovered had suffered extensive but entirely expected damage while in the ground due to their location at the center of an active area of building and renovations. Numerous other cemeteries throughout Bohemia have yielded impressive quantities of skeletal material that are well preserved and have been carefully recovered and stored. Nevertheless, the largely fragmentary bones from the area around the Church of the Virgin Mary provide some important clues to physical characteristics and biology of the people of the early Czech state.

That excavation also identified 22 relatively intact graves in Courtyard II in addition to the three adults represented in the princely tomb (Unit 13253). We cannot discount the possibility that the third person within the tomb, represented only by a partial cranium, derives from one of the many disturbed tombs noted nearby or perhaps from the location within the small church where the tomb was dug. Detailed examination of all the skeletal remains recovered from the area indicates that far more than 22 people had been buried at various times in this general location. A minimum number of 99 different individuals (based on the count of mandibles and left tibiae) now can be recognized from the bones recovered from the various excavations in the area of Courtyard II, the region immediately around and including the Church of the Virgin Mary (Becker 2000a, 337–349, Table 4). The bones from the earliest modern excavations in 1930 were combined into a single box for storage. Study of these commingled remains provides evidence of the presence of at least 28 people. The later archaeological excavations that identified units relating to skeletons can be grouped into approximately 55 additionally distinct individuals (27 from the 1930s; 19 from 1950; 2 from 1955; 7 from 1995). A primary goal of this skeletal study was to reassemble the remains from individuals whose bones may have been disturbed prior to this century and then recovered during these several periods of excavation (Becker 2000a, 337–340).

The Lumbe Garden Cemetery burials (see note 2 below), which date from approximately this same period of time, also have one person in each burial. In fact, the placement of the duke and his wife within the same tomb may be considered anomalous. Although the placement of couples side

by side is not rare, placement in the same physical grave is uncommon. I have found that pairing in single graves is common in only one location, medieval tombs from the area of Knossos on Crete (Becker 2005a). The unusual placement of the presumed wife of Spytihněv I in his grave should be considered when attempting to identify this woman.

An important observation is that the average stature of the women in this sample is much greater than I would have expected. From the courtyard area Unit 13382A, one woman's average adult stature has been calculated at 166.3 cm, the tallest in the sample prior to the 1999 identification of a female (13463A) with a stature of 166.5 cm. These findings are of particular interest when the results are compared with what has been published about Prince Spytihněv I and his wife. The impressive skeletal robusticity of both the prince and his wife speak to a diet and lifestyle quite different from those of the people buried around them. However, their respective statures are not at the top of the charts compiled from this study (see Table 4.2). This finding of the statures of the prince and his wife is also interesting because is similar to Molleson's discovery from a Romano-British site that principally dates from the period 300–400 CE. Molleson (1992, 44, 46) notes that although there is remarkable uniformity in the stature of that local British population, in the few excavated high-status "mausolea, some of which were used for the burial of members of a family of extraordinary physique," a clear divergence was evident. This same phenomenon seems to characterize Spytihněv and his people in Prague.

The data that are available from the bones of Prince Spytihněv I and his family provide a possible basis for confirming biological studies relating to social class and status (see Lasker and Mascie-Taylor 1996). While the prince and his wife were relatively tall within the range of males and females from this population, they were not the tallest individuals in this sample. The prince may have been descended from a line of chiefs, but formalities of royal marriages may not have been established by this time in Bohemia. This is suggested by his wife's stature, suggesting a possible marriage not based on status. Whether the stature of the royal family increased through time, as would be predicted by Lasker and Mascie-Taylor (1996), or remains within the normal range, as appears the case with these first members of the Přemyslid dynasty, is an interesting question to be explored in the future. Future studies also may consider if these characteristics of stature differences among various social classes may be useful in distinguishing the population of Bohemia from others and thereby help in the construction of cultural borders in antiquity.

Table 4.2. Metric measurements (in millimeters) from the three skulls in the tomb

Measurements <sup>a</sup>	Code	Duke	Wife	Third Skull
Glabella-occipital length	GOL	186	192	173
Nasio-occipital length	NOL	182	190	171
Basion-nasion length	BNL	111	126 (est.) <sup>b</sup>	97 (est.)
Basion-bregma height	BBH	143	140	128 (est.)
Maximum cranial breadth	XCB	141	137	130
Maximum cranial frontal breadth	XFB	124	113	114
Bizygomatic breadth	ZYB	134	129 (ext.)	
Minimum cranial breadth	WCB	indeterminate (damaged)	indeterminate (damaged)	76
Biasterionic breadth	ASB	120	115	110
Basion-prosthion length	BPL	100	115	89 (est.)
Orbital height left	OBH	36	36.5	31
Orbital breadth left	OBB	41	37	37
Nasal breadth	NLB	37.5	25	19.5
Palate breadth (exterior)	MAB	68	63	59
Mastoid height	MDH	34 (right)	28.5 (right)	
Mastoid width	MDB	31 (right)	25 (right)	
Bifrontal breadth	FMB	101	89 (est.)	92
Foramen magnum length	FOL	35	d	33 (est.)
Nasion-bregma chord	FRC	110	106	104
Nasion-bregma subtense	FRS	24	26	22
Nasion subtense fraction	FRF	50	47	49
Bregma-lambda chord	PAC	101	115	117
Bregma-lambda subtense	PAS	20	21	26
Bregma subtense fraction	PAF	60	63	47
Lambda-opisthion chord	OCC	101	85 (est.)	90
Lambda-opisthion subtense	OCS	31	25 (est.)	24
Lambda subtense fraction	OCF	49	37 (est.)	50
Age		65	45	?
Sex		M	F?	F

<sup>a</sup>Compare lists offered in Vlček 1997, 247ff. All measurements of bilateral features are from the left side unless otherwise noted.

<sup>b</sup>In cases of slightly damaged bones, length was estimated,  $\pm 2$  mm.

Table 4.3. Stature of individuals (in centimeters) from Praha Hrad, area of the Church of the Virgin Mary in Courtyard II

Individual	Female (n = 12)	Male (n = 5)
12194 (cf. 12215A)	—	—
Unnumbered Individual Y	158.4	—
Unnumbered Individual Z	155.1	—
12215A	154.8	—
12215B	—	174.4
13131	162.5	—
13140B [A?]	—	179.8
13194	164.2	—
13253: Royal Tomb Prince	—	178.4
13253: Royal Tomb Princess	159.1	—
13269	159.3	—
13270	159.1	—
13271	160.8	—
13273	—	170.6
13381A	—	170.4
13382A	166.3	—
13462	157	—
13463A	166.5	—
Ranges	154.8–166.5	170.4–179.8
Averages	160.3	174.7

Despite the massive size of the skull and long bones of both the prince and his wife, neither of these people are the tallest person found in the sample of graves from Courtyard II. Table 4.3 demonstrates that each is in the upper range for their sex categories, but not the tallest. But the figures for cranial dimensions (see Table 4.2, below) clearly reveal a powerfully built pair of individuals whose massive musculature alone makes them distinct among their contemporaries.

## Conclusions

In sum, the excellent contextual archaeological data enables us to examine diverse sets of skeletal material that have been excavated after intervals of many years and reassemble the information to provide a sample of 49 adults, of whom stature can be calculated for 17 individuals. The excavated area in Courtyard II within the Prague Castle around the structure identified as the Church of the Virgin Mary was used as a burial area for some period prior to the construction of the building. The cemetery around this church is similar to those found throughout the southern region of Europe during this period. The early tenth-century dates of the earliest interments of elite individuals in the tiny church correspond with dates known from Italian examples (Becker 1996a, 1997).

The principal individuals within the burial chamber of the church structure were identified as Prince Spytihněv and his probable wife. They were far more robust than the other people recovered in these excavations, but they do not demonstrate significantly taller adult statures than the lower-status peoples from their time. From this limited sample, stature, as a reflection of nutritional change through time and status differences within a contemporary population, was weakly correlated with the evidence of social rank, and therefore with status, within this forming early state.

Similarities in stature between the prince and others in this sample might be explained if the burials in the general area of the small church was used by other elites before and after the construction of this structure. For example, at the Farfa Abbey in Italy, the area immediately surrounding the apse was reserved for higher-status burials. Alternately, the similarities in stature may suggest that there was a lack of rigid social inequality and a relatively uniform pattern of nutritional intake during this early period of state formation. There are several possible explanations for the absence of strong evidence from stature data for social distance, and future research on oral health and stable isotope variation could definitively test the specific relationships between social status and stature. The use here of the Trotter and Gleser formulae for the calculation of stature depend on corresponding limb proportions of the Czech samples and the limbs used to calculate "American White" statures (cf. Becker 1999). Specific computations of formulae for determining stature in early Bohemia and the application of other biological approaches to evaluating status differences may better reveal how early state formation is reflected in the biology of the participants.

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## Notes

1. The Czech Archaeological Service arranged for this extraordinary feature of the early history of the Czech Republic to be preserved and made visible to the public. The vast numbers of visitors and tourists who enjoy the many wonders of Prague Castle may see the original foundations of the Church of the Virgin Mary, which now is several meters below the present ground surface. An impressive viewing window has been built into the north side of the passageway between Courtyards I and II of the Castle. This opens over the ancient church, which has been made visible through a significant feat of engineering that preserved the more recent constructions above the passage.

2. The Lumbe Garden cemetery, located only 400 meters NW by W of the Courtyard II area, does not have the extremely disturbed graves that are typical of Courtyard II. The area of the Lumbe Garden, which lies at the margin or just beyond the central region that is critical for understanding the Courtyard II burials, has neither the density of graves nor the considerable extent of construction that has created so many archaeological difficul-

ties for the recovery of intact skeletons within the Castle. As Boháčová (1994, 154) points out, the preservation and recovery of skeletal material was influenced by other factors that impede extensive comparisons between these two cemetery "populations." Becker (2000a, 228) notes that 148 people from 141 graves (and thus one person to a grave is the norm) were excavated from the Lumbe Garden area of the Prague Castle and dated to a period extending from the end of the ninth to the early eleventh centuries (Boháčová et al. 1988; Frolík et al. 1988; Smetánka et al. 1973, 1974; Smetánka 1994; also Frolík et al. 1992, 151).

3. An obvious anomaly in the age distribution of the people interred in this area of Prague Castle can be seen in Table 4.1 and warrants comment. The extremely low numbers, or near-absence, of perinatals and primiparas suggest to me that they are buried elsewhere (see Becker 2005b). The probability that separate cemeteries were used for these people or that perinatals were buried under the eaves of houses (*suggrundaria*; see Becker 1996b) or under the floors of houses (see Becker 1995b, 1997, 2006, 2007) can be addressed only through archaeological research and skeletal analyses from other locations in this area of medieval Prague.

4. Prof. Vlček inventoried the bones of the duke, his presumed wife, and a third skull (Unit 13253) in 1992. These skeletons are part of the Prague Castle Museum collections. Other skeletal collections from Prague and other parts of the Czech Republic are held in storage at the Anthropological Department of the National Museum in Prague. The principal depository of the vast collections available in Prague is the storage facility of the Anthropological Department of the Institute of Archaeology, located at Horní Počernice.

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