

LABOUR INVESTMENT AND THE ELITE IN THE EASTERN HALLSTATT ZONE

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INTRODUCTION

Gyula Rhé did something rather unusual in 1928: during the excavation of the tumuli near Somlóvásárhely, he estimated the volume of material constituting the mound. This happens to be the initial step of a method that I would now like to introduce.

ARCHITECTURAL ENERGETICS AND THE TUMULI OF THE EARLY IRON AGE

The main aim of this method is to assess the amount of energy or labour that a community has expended on various architectural features. In the following, I endeavour to apply this method to the tumuli that represent the dominant grave type within the so-called eastern Hallstatt zone (800-450 BC).¹ So far, studies investigating the characteristics of the eastern Hallstatt society have mainly focused on grave assemblages.² Based on these, a highly stratified and hierarchically structured society might have been expected.³ The analysis of burial architecture can nevertheless provide significant additional information regarding the characteristics of burial representation and social relations, if we accept the assumption that the estimated energy expenditure in tumulus construction is an indicator of the relation between the community and the deceased; and furthermore, that the burial architecture corresponds to the social status and prestige of the deceased.

In this analysis, tumuli are quantified in terms of labour costs, the standard unit most widely used is person-hour (ph), the time in hours that would be required for one person to complete the construction or task. Two basic kinds of information are needed for such an estimation: 1) the type and quantity of the raw materials from which the structure was built; 2) the unit costs (measured in person-hours) of the various tasks in the construction process. The latter kind of information can be derived from ethnographic observations, as well as from experimental data.⁴

STEP BY STEP

To begin with, the approximate volume of the entire structure, i.e. the tumulus, should be calculated. Of course, the best and most accurate way of measuring a given mound's volume is to conduct a ground-based LIDAR survey or a photogrammetric survey;⁵ or on the other hand, to make a digital reconstruction based

¹ As far as I know the method has only been used twice in the case of Hallstatt Age tumuli: Eggert, Manfred H. K.: Riesentumuli und Sozialorganisation. Vergleichende Betrachtungen zu den sogenannten Fürstenhügeln der späten Hallstattzeit. *Archäologisches Korrespondenzblatt* 18 (1988), 263–274; Rebay, Katharina: *Die hallstattzeitliche Grabhügelgruppe von Zagersdorf im Burgenland*. Wissenschaftliche Arbeiten aus dem Burgenland 107. Eisenstadt: Amt der burgenländischen Landesregierung, 2002. However, in these studies the authors did not apply a comparative approach.

² Recent examples: Keller, Christin: *Die Rekonstruktion sozialer Gruppen der Hallstattzeit zwischen Enns und Donau. Eine statistische Analyse* Berliner Archäologische Forschungen 14. Berlin: Verlag Marie Leidorf, 2015.; Schumann, Robert: *Status und Prestige in der Hallstattkultur; Aspekte sozialer Distinktion in ältereisenzeitlichen Regionalgruppen zwischen Altmühl und Save*. Münchner Archäologische Forschungen 3. München: Verlag Marie Leidorf, 2015.

³ Keller, Christin: *Die Rekonstruktion sozialer Gruppen der Hallstattzeit zwischen Enns und Donau. Eine statistische Analyse* Berliner Archäologische Forschungen 14. Berlin: Verlag Marie Leidorf, 2015, 236; Kristiansen, Kristian: *Europe Before History*. Cambridge: Cambridge University Press, 1998, 206; Teržan, Biba: *Starejša železna doba na slovenskem Štajerskem [The early iron age in Slovenian Styria]*. Katalogi in monografija 25. Ljubljana, 1990, 206.

⁴ Abrams, Elliot M.: *Architecture and Energy: An Evolutionary Perspective*. *Archaeological Method and Theory* 1. (1989), 47–87; Abrams, Elliot M. – Bolland, Thomas W.: *Architectural Energetics, Ancient Monuments, and Operations Management*. *Journal of Archaeological Method and Theory* 6/4 (1999), 263–291.

⁵ Magnani, Matthew – Schroder, Whittaker: *New approaches to modelling the volume of earthen archaeological features: A case-study from the Hopewell culture mounds*. *Journal of Archaeological Science* 64 (2015), 12–21.

on observations made during an excavation.⁶ For several reasons this is, naturally, seldom possible. As a result, I had to mainly use geometric estimations. Based on the reconstruction of Tumulus 115⁷ of the Százhalombatta cemetery, I calculated the volume of the tumuli to be the average of the volume of a cone and a spherical section with the tumulus' height and radius. I would like to emphasise again that this is a mere estimation and, truth be told, rather simplistic.⁸ However, there is an opportunity to slightly refine the above described method. Tumuli are constantly changing, for various evident reasons, including erosion, agricultural cultivation and other anthropogenic factors.⁹ Based on this and also on observations made during several excavations, a certain inversely proportional change might be assumed between the height and radius of the tumuli.¹⁰ Consequently, an average between the two volume-estimations (i.e. based on the cone or the spherical section, respectively) should be weighted by a coefficient determined as the reciprocal value of the quotient of the mound's height and radius.

Hence, the estimated volume of the tumuli is calculated as follows: $V = \frac{c+es}{e+1}$; where $e = \frac{r}{h}$, s = the volume calculated for the spherical section,¹¹ c = the volume calculated for the conical shape.¹²

Given that the volume of a spherical section is greater than that of a cone's with the same base diameter and the same height, in case of extensively flattened mounds, the negative effect of erosion might be somewhat balanced out. Take Tumulus 1 of Nové Kosarišká as a basic example. According to Magda Pichlerová, the dimensions of the mound were the following immediately prior to excavation: $d = 29\text{--}30\text{m}$; $h = 1.4\text{ m}$;¹³ and based on stratigraphic observations the mound's original diameter and height might have been $18\text{m} \times 20\text{m}$ and 3.3 m , respectively. Applying the above gives 450 m^3 in the first case, and 441 m^3 in the second.

Secondly, the various kinds of raw material used should be ascertained. Of course, tumuli consist chiefly of earth; however, there are a number of examples of mounds in Central Europe and Transdanubia that are to some extent built of stone.¹⁴ This is significant because the earth and stone could have been sourced in quite distinct places. It is fairly reasonable to believe that the earth would have originated from the close vicinity of the tumulus, ditches surrounding mounds are often identified as the source of the earth from which they

⁶ Pickett, Jordan – Schreck, John S. – Holod, Renata – Rassamakin, Yuriy – Halenko, Oleksandr – Woodfin, Warren: Architectural energetics for tumuli construction: The case of the medieval Chungul Kurgan on the Eurasian steppe. *Journal of Archaeological Science* 75 (2016), 101–114.

⁷ Gelesz András: Építészeti gondolatok a százhalombattai 115. sz. halomsír rekonstrukciójával kapcsolatban [Architectural thoughts on the reconstruction of tumulus 115 at Százhalombatta]. In: Poroszlai I. (ed.): *Százhalombatta, 115. sz. halomsír feltárása, konzerválása és bemutatása – 1998. május 27-én, a szakmai napon elhangzott előadások kivonata*. Százhalombatta, 1998, 21–26.

⁸ Regrettably, calculations based on geometric formulae tend to result higher values than the true volume. Magnani, Matthew – Schroder, Whittaker: New approaches to modelling the volume of earthen archaeological features: A case-study from the Hopewell culture mounds. *Journal of Archaeological Science* 64 (2015), 14.

⁹ Holl, Balázs – Czajlik Zoltán: Where are all the tumuli? Problems of interpretation in aerial archaeology. In: Czajlik Z. – Bödöcs T. (eds): *Aerial Archaeology and Remote Sensing from the Baltic to the Adriatic. Selected Papers of the Annual Conference of the AARG, 2012*. Budapest, 2013, 26.

¹⁰ Vékony-Vadász Éva: Előzetes jelentés egy koravaskori halomsír feltárásáról Süttön [Preliminary report on the excavation of an early Iron Age cemetery in Süttön]. *Communicationes Archaeologicae Hungariae* 3 (1983), 20; Patek Erzsébet: Der Tumulus Nr.177 von Sopron-Burgstall. *Acta Archaeologica Academiae Scientiarum Hungaricae* 43 (1991), 276; Mithay Sándor: A vazsari koravaskori temető és telephely [The early Iron Age cemetery and settlement at Vazar]. *Archaeológiai Értesítő* 107 (1980), 53–78; Pichlerová, Magda: *Nové Košariská: kniežacie mohyly zo staršej doby železnej*. Slovenské Národné Múzeum (Bratislava), Historický Odbor, Fontes 3. Bratislava, 1969.

¹¹ $V = \frac{1}{3}\pi h^2 [3(\frac{r^2}{2h} + \frac{h}{2}) - h]$; where h = the height of the tumulus and r = the radius of the mound

¹² $V = \frac{\pi r^2 h}{3}$; where h = height of the mound and r = the radius of the tumulus.

¹³ Pichlerová, Magda: *Nové Košariská: kniežacie mohyly zo staršej doby železnej*. Slovenské Národné Múzeum (Bratislava), Historický Odbor, Fontes 3. Bratislava, 1969, 25.

¹⁴ Gerdson, Hermann: *Studien zu den Schwertgräbern der älteren Hallstattzeit*. Mainz: Philipp von Zabern, 1984, 50.

are made.¹⁵ In contrast to this, based on examples around the Somló and Tátika Hills, stone might have been transported over a distance of nearly 2 km;¹⁶ whereas for the earth the distance is comparable with the radius of the mound.

Furthermore, we have to take into consideration the tasks related to the construction of the burial chambers built of stone and/or wood. Such activities include building the walls with dry-stone techniques, as well as in the preparation of the wood. The latter only modestly contributes to the overall expenditure of energy, thus even when wooden structures cannot be thoroughly documented, the reliability of the final estimations are only marginally affected (*Table 1*).

Unfortunately, the list of tasks related to the construction of tumuli is not yet complete. For instance we should reckon with the clearing and preparation of the area; however, the amount of labour expended here is hard to assess. Despite that it seems evident that this energy would correlate with the mound's size, or more precisely, its diameter.

Task	Coefficient	Reference
Excavating earth	0.5 m ³ /ph	Eggert 1988, 267
Excavating earth	0.76-0.9 m ³ /ph	Pickett et al. 2016, Table 3
Quarrying stone	330-500 kg/ph*	Erasmus 1965, 286
Loading	0.83 m ³ /ph	Pickett et al. 2016, Table 3.
Transportation by wagon	107 kg/ph/km	Pickett et al. 2016, 110; Schovsbo 1987, 179-181.
Chopping	6 pieces/ph	Marthieu–Meyer 1997, Fig. 5.
Building with dry stone technic	0.42 m ³ /ph	Müller 1990, 13-14.
Building with dry stone techniques	0.44 m ³ /ph	Erasmus 1965, 293

Table 1. Possible tasks and activities related to the construction of tumuli and the coefficients of labour investment corresponding to unit volume of material

*I tried to take into consideration the density of different kinds of rock, as a result, the coefficient is 0.19 m³/ph, in the case of limestone and 0.175 m³/ph in the case of basalt.

The absolute values derived from the calculations are, as mentioned above, actually mere estimations that in my view, are difficult to interpret by themselves. One of the greatest advantages of architectural energetics is that they facilitate comparisons between individual Hallstatt Age burial constructions, even when their inner structure is greatly dissimilar (*Fig. 1*), which occurs relatively frequently even within individual cemeteries or among tumuli built by the same burial community.¹⁷ This is truly significant, since the comparative approach should be mainly applied in the case of tumuli from a single cemetery. The reason for this, simply, is that different cemeteries have been affected by erosion or agricultural activities to different degrees, different raw materials were accessible and the number of available labour force was uneven.

¹⁵ Dobiát, Claus: *Das hallstattzeitliche Gräberfeld von Kleinklein und seine Keramik*. Schild von Steier Beiheft 1. Graz, 1980, 54; Offenberger, Johann: Gemeinlebarn. *Fundberichte aus Österreich* 19 (1980), 438–440; Sauer, Franz: Das Hügelgräberfeld im Wald von Schandorf. In: Sauer, F. (ed.): *Eisen – Gräber – Trinkgelage. Die Hallstattkultur und das Burgenland*. Wien, 2015, 54–63.

¹⁶ Darnay, Kálmán: A zala-szántói halmok és két magyar lovas sír [The tumuli of Zala-Szántó and the graves of two Hungarian horsemen]. *Archaeológiai Értesítő* 19 (1899), 276–280; Darnay Kálmán – Kleiszl Károly – Száraz Antal: Két Nagy-Somló-melléki lelet a hallstatti korból [Two Hallstatt Age finds from the Nagy-Somló area]. *Archaeológiai Értesítő* 15 (1895), 317–324.

¹⁷ Lázár Jenő: A sághegykörnyéki hallstattkori tumulus-sírokról [Hallstatt Age tumulus graves from the Sághegy region]. *Archaeológiai Értesítő* 78/1 (1951), 37; Dobiát, Claus: *Das hallstattzeitliche Gräberfeld von Kleinklein und seine Keramik*. Schild von Steier Beiheft 1. Graz, 1980, 55–56; Tomedi, Gerhard: *Das hallstattzeitliche Gräberfeld von Frög. Die Altgrabungen von 1883 bis 1892*. Budapest: Archaeolingua, 2002, 101–104.

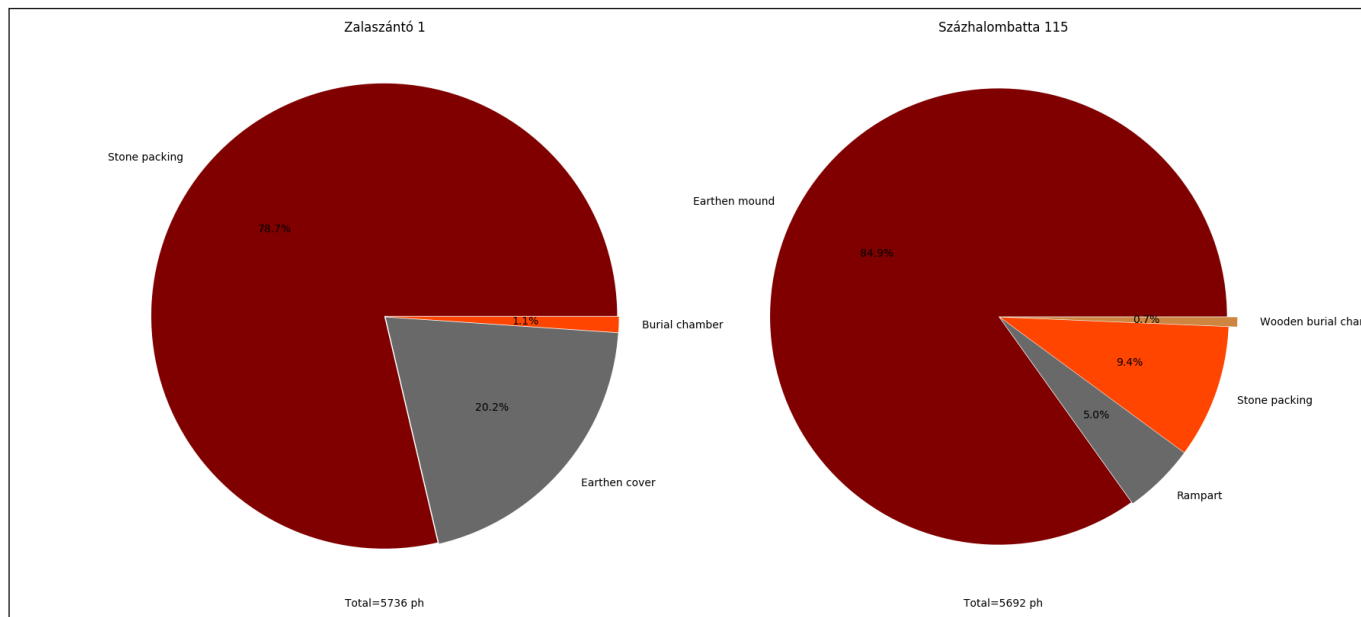


Fig. 1. Distribution of labour investment among different structural elements in case of Tumulus 1 near Zalaszentő and Tumulus 115 near Százhalombatta

AN EXAMPLE: THE KLEINKLEIN-CEMETERY

Due to its enormous size and the degree of its research, the Sulmtal cemetery provides an excellent opportunity to present the comparative approach of the method.¹⁸ From this cemetery there is sufficient data on 102 tumuli for the analysis to clearly indicate that during the use of the graveyard the average amount of energy expended on the construction of the burial mounds increased. *Figure 2* is intended to show tumuli identified as ‘princely’ and as the graves of ‘aristocrats’ played a decisive role in this process.

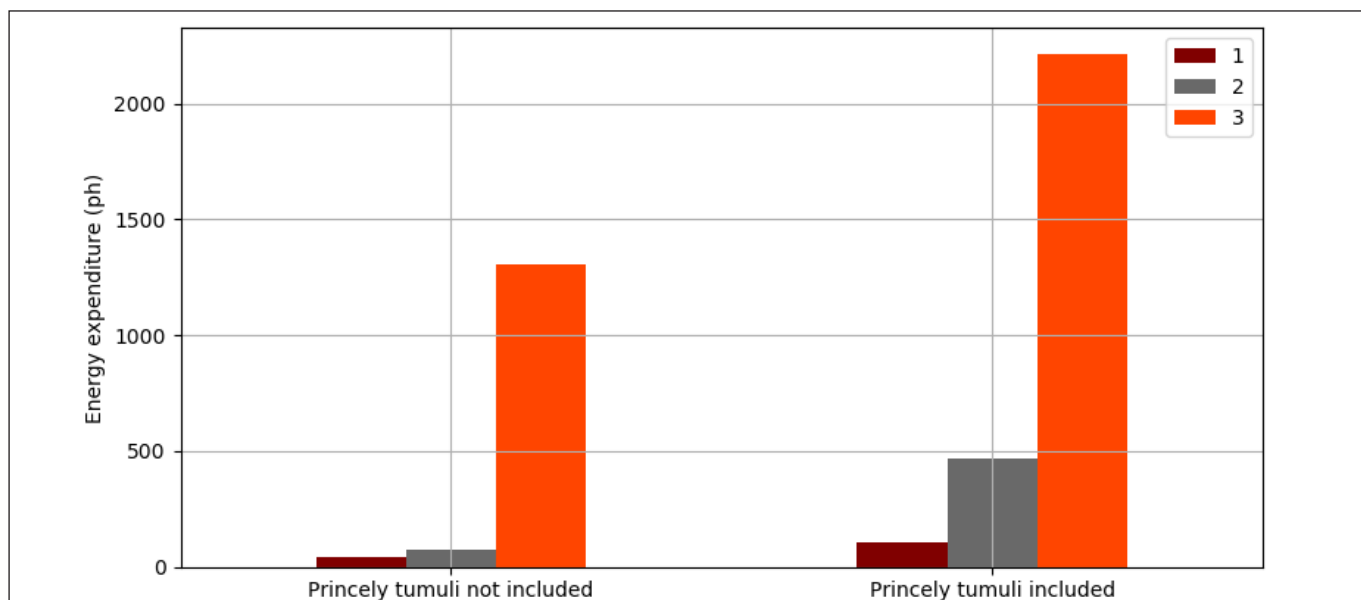


Fig. 2. Kleinklein, average energy expenditure on tumulus construction in each phase of the cemetery

¹⁸ The most extensive cemetery in the eastern Hallstatt zone is situated in Styria in the valley of the River Sulm, which once had more than one thousand mounds. Dobiát, Claus: *Das hallstattzeitliche Gräberfeld von Kleinklein und seine Keramik*. Schild von Steier Beiheft 1. Graz, 1980, 13; Mele, Marko: Eine ausgewählte Fundstelle: Der Burgstallkogel bei Kleinklein (Gemeinde Großklein). In: Hebert, B. (ed.): *Urgeschichte und Römerzeit in der Steiermark. Geschichte der Steiermark 1*. Wien: Böhlau, 2015, 502.

It is worth pointing out that this trend seems to be related to the formation of a particularly prominent elite and a more strongly hierarchical society during the second part of the Ha C period.¹⁹ The fact that this elite is present in the case of the Sulmtal cemetery can be clearly illustrated by the distribution of energy expenditure among the tumuli. It appears that around 87% of all energy was invested in the construction of a mere 10% of the tumuli, namely the graves of the elite (*Fig. 3*).

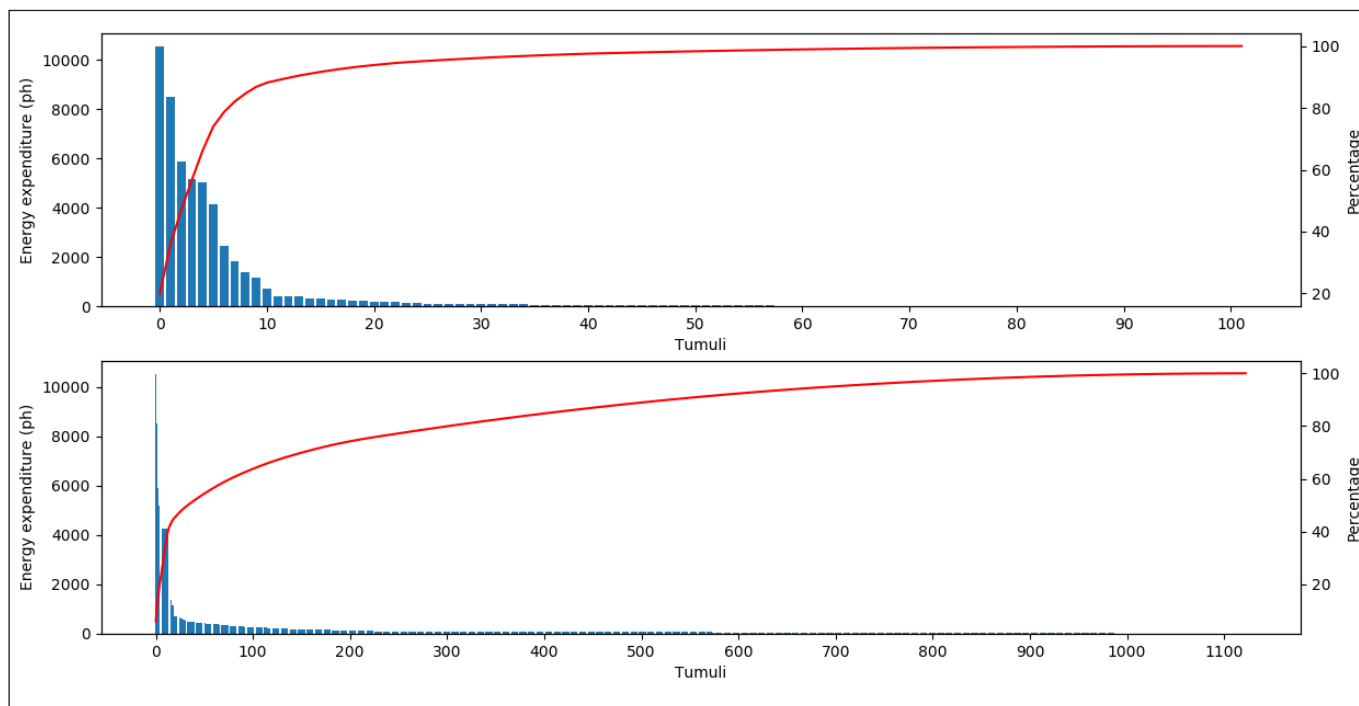


Fig. 3. Diagram of the energy expenditure's distribution in case of the Kleinklein cemetery, based on 102 and 1124 tumuli

If more than 1000 tumuli are taken into consideration, the graves of the elite comprise less than 2% of the cemetery,²⁰ but around 44% of all labour investment was associated with those graves.²¹ In other words, the community were willing to sacrifice considerable amounts of energy and resources for the people buried in these graves. This is more apparent in the cases of 'princely' tumuli. Architectural energetics enable us to make estimations of the numbers of work force involved in the construction according to the duration of the construction in days, Figure 4 shows such estimations for the construction of 'princely' tombs'. However, it seems unlikely that more than 700 men worked on a tumulus simultaneously, organising a one-week project with daily participation of around one hundred men must have consumed considerable resources. It is also worth mentioning the energy expenditure required to reach these farthest tumuli from the settlement (*Fig. 4*).

¹⁹ Teržan, Biba: *Starejša železna doba na slovenskem Štajerskem* [The early iron age in Slovenian Styria]. Katalogi in monografija 25. Ljubljana, 1990, 206; Keller, Christin: *Die Rekonstruktion sozialer Gruppen der Hallstattzeit zwischen Enns und Donau. Eine statistische Analyse* Berliner Archäologische Forschungen 14. Berlin: Verlag Marie Leidorf, 2015, 221.

²⁰ In this case I took into consideration some tumuli that have not been excavated yet, but due to their size and location might be seen as elite graves.

²¹ Frög is another significant and well-excavated site in the eastern Hallstatt zone with a great number of tumuli. According to the literature, a strong elite might have been present here as well. The distribution of energy expenditure among burial mounds seems to support this view. Based on 138 tumuli, 80% of all labour investment can be assigned to only 44 mounds (~32%).



Fig. 4. The number of labour force necessary for construction of 'princely' mounds at Kleinklein according to the available number of workdays²²

It is not by chance, that the values corresponding to the 'princely' tumuli increase. It appears, that these tombs form a clear chronological sequence;²³ which, among other factors, might suggest that among them a certain dynastic order could have existed.²⁴ Hence, it is likely that the subsequently built mounds were intended to outdo the preceding ones in dimension.²⁵ On the other hand, due to the fact that the great majority of the other elite burials appear during the last phase of the cemetery, it is also conceivable that builders of the more recent Fürstengräber felt compelled to exceed these graves in scale as well. It seems likely, due to the fact that the so-called 'aristocratic graves' tend to present various elements of the princely burial representation²⁶ (Fig. 5).

²² In my calculations I used 14-hour long workdays based on the sample of similar calculations regarding the Čertomlyk kurgan. Rolle, Renate – Murzin, Njaceslav. J. – Alekseev, Andreji J.: *Königskurgan Certomlyk. Ein skytischer Grabhügel des 4. vorchristlichen Jahrhunderts*. Hamburger Forschungen zur Archäologie 1. Mainz: Philipp von Zabern, 1998, Abb 24.

²³ Dobiát, Claus: *Das hallstattzeitliche Gräberfeld von Kleinklein und seine Keramik*. Schild von Steier Beiheft 1. Graz, 1980, 168; Egg, Markus: Sozialarchäologische Betrachtungen zu den hallstattlichen Fürstengräbern von Kleinklein (Bez.: Leibnitz, Weststeiermark) - eine Zwischenbilanz. In: Egg, M. – Quast, D. (eds.): *Aufstieg und Untergang. Zwischenbilanz des Forschungsschwerpunktes "Studien zu Genese und Struktur von Eliten in vor- und frühgeschichtlichen Gesellschaften"*. Monographien Römisch-Germanisches Zentralmuseum Mainz 82. Mainz, 2009, 40; Egg, Markus – Kramer, Diether: *Die hallstattzeitlichen Fürstengräber von Kleinklein in der Steiermark: die beiden Hartnermichelkogel und der Pommerkogel*. Monographien Römisch-Germanisches Zentralmuseum Mainz 125. Mainz, 2016, 210.

²⁴ Egg, Markus: Sozialarchäologische Betrachtungen zu den hallstattlichen Fürstengräbern von Kleinklein (Bez.: Leibnitz, Weststeiermark) - eine Zwischenbilanz. In: Egg, M. – Quast, D. (eds.): *Aufstieg und Untergang. Zwischenbilanz des Forschungsschwerpunktes "Studien zu Genese und Struktur von Eliten in vor- und frühgeschichtlichen Gesellschaften"*. Monographien Römisch-Germanisches Zentralmuseum Mainz 82. Mainz, 2009, 40; Egg, Markus – Kramer, Diether: Politischer Totenkult und sozialarchäologische Betrachtungen zu den Fürstengräbern von Kleinklein. In: Egg, M. – Kramer, D. (eds.): *Die hallstattzeitlichen Fürstengräber von Kleinklein in der Steiermark: der Kröllkogel*. Monographien des Römisch-Germanischen Zentralmuseums 110. Mainz, 2013, 435–36. Egg, Markus – Kramer, Diether: *Die hallstattzeitlichen Fürstengräber von Kleinklein in der Steiermark: die beiden Hartnermichelkogel und der Pommerkogel*. Monographien Römisch-Germanisches Zentralmuseum Mainz 125. Mainz, 2016, 210–211.

²⁵ Egg, Markus – Kramer, Diether: *Die hallstattzeitlichen Fürstengräber von Kleinklein in der Steiermark: die beiden Hartnermichelkogel und der Pommerkogel*. Monographien Römisch-Germanisches Zentralmuseum Mainz 125. Mainz, 2016, 225.

²⁶ Hansen, Leif: Das Panzergrab im Tschoneggerfranzl-Tumulus 2 bei Kleinklein (Gem. Großklein, Bez. Leibnitz) in der Weststeiermark. *Jahrbuch des Römisch-Germanischen Zentralmuseums* 54/ (2007), 208–209; Egg, Markus – Kramer, Diether: Die Sulmtalnekropole, der Burgstallkogel und die umliegenden Höhensiedlungen. In: Egg, M. – Kramer, D. (eds.): *Die hallstattzeitlichen Fürstengräber von Kleinklein in der Steiermark: der Kröllkogel*. Monographien des Römisch-Germanischen Zentralmuseums 110. Mainz, 2013, 411.

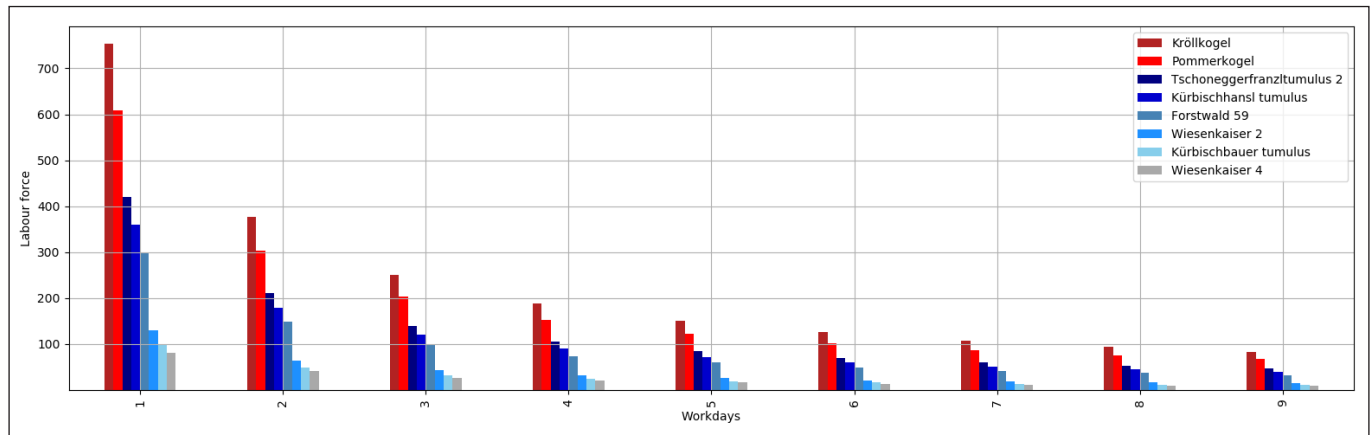


Fig. 5: The 'princely' (red) and 'stately' (blue) graves of Phase 3 of the Sulmtal-cemetery according to the amount of labour force required for their construction

In early societies, political power was represented by control over resources and the labour force of the community.²⁷ Given the challenging nature of organising the construction of such burial mounds, the person capable of managing it might perceive the process as a claim of legitimisation.²⁸ The mound being built thus reflects the rank of the deceased as much as it strengthens the new political situation.²⁹

WHAT ABOUT TRANSDANUBIA?

Given that our initial example was the Sulmtal cemetery, the tumuli between Schandorf and Felsőcsatár should be mentioned first among the sites of Transdanubia, simply because the five tumuli at Vaskeresztes provide excellent examples of the phenomenon observed at Kleinklein, namely, that vast amounts of energy were expended on tumuli with distinct topographical situations.³⁰ Unfortunately, until now, only one grave offers sufficient data for comparison,³¹ although that does not contradict my assumption that considerably less labour investment could be calculated for it. Two other questions also remain open to debate. On the one hand, it cannot be proven that a trend of increasing average energy expenditures is present here, as in the Sulmtal cemetery. Frankly, it cannot be ascertained yet in either of the cemeteries of Transdanubia (Fig. 6).

On the other hand, it is doubtful, whether the tumulus group near Vaskeresztes could be seen as a 'princely' graveyard similar to the one near Kleinklein. The two tumuli so far excavated are quite close from a chronological point of view, they are not sufficient to demonstrate a dynastical structure in themselves.

²⁷ Trigger, Bruce G.: Monumental architecture: A thermodynamic explanation of symbolic behaviour. *World Archaeology* 22/2 (1990), 125; Abrams, Elliot M.: Architecture and Energy: An Evolutionary Perspective. *Archaeological Method and Theory* 1. 1989, 60; Abrams, Elliot M. – Bolland, Thomas W.: Architectural Energetics, Ancient Monuments, and Operations Management. *Journal of Archaeological Method and Theory* 6/4 (1999), 268.

²⁸ Egg, Markus: Sozialarchäologische Betrachtungen zu den hallstattlichen Fürstengräbern von Kleinklein (Bez: Leibnitz, Weststeiermark) - eine Zwischenbilanz. In: Egg, M. – Quast, D. (eds): *Aufstieg und Untergang. Zwischenbilanz des Forschungsschwerpunktes "Studien zu Genese und Struktur von Eliten in vor- und frühgeschichtlichen Gesellschaften"*. Monographien Römisch-Germanisches Zentralmuseum Mainz 82. Mainz, 2009, 40–41; Egg, Markus – Kramer, Diether: Politischer Totenkult und sozialarchäologische Betrachtungen zu den Fürstengräbern von Kleinklein. In: Egg, M. – Kramer, D (eds): *Die hallstattzeitlichen Fürstengräber von Kleinklein in der Steiermark: der Kröllkogel*. Monographien des Römisch-Germanischen Zentralmuseums 110. Mainz, 2013, 435–36.

²⁹ Eckert, Anja: *Ein Grab für Könige und Bürger. Studien zum monumentalen Tumulusgrab als Mittel zur Selbstdarstellung mittelmeeischer Eliten vom 8. bis zum 6. Jahrhundert v. Chr.* Dissertation. Universität Hamburg, 1998. <http://ediss.sub.uni-hamburg.de/volltexte/1998/221/html/index.htm> (Access: 2017.10.13.)

³⁰ I would like to call attention to the so-called 'Törökdomb' [Turk's Mound] which is considerably larger in dimension than both the graves excavated and published by Mária Fekete. (Fekete Mária: Rettungsgrabung früheisenzeitlicher Hügelgräber in Vaskeresztes. *Acta Archaeologica Academiae Scientiarum Hungaricae* 37 (1985), 33–78.)

³¹ Barb, Alphons: Hügelgräbernekropolen und frühgeschichtliche Siedlung im Raume der Gemeinden Schandorf und Pinkafeld (Burgenland). *Mitteilungen der anthropologischen Gesellschaft in Wien* 67 (1937), 93–94.

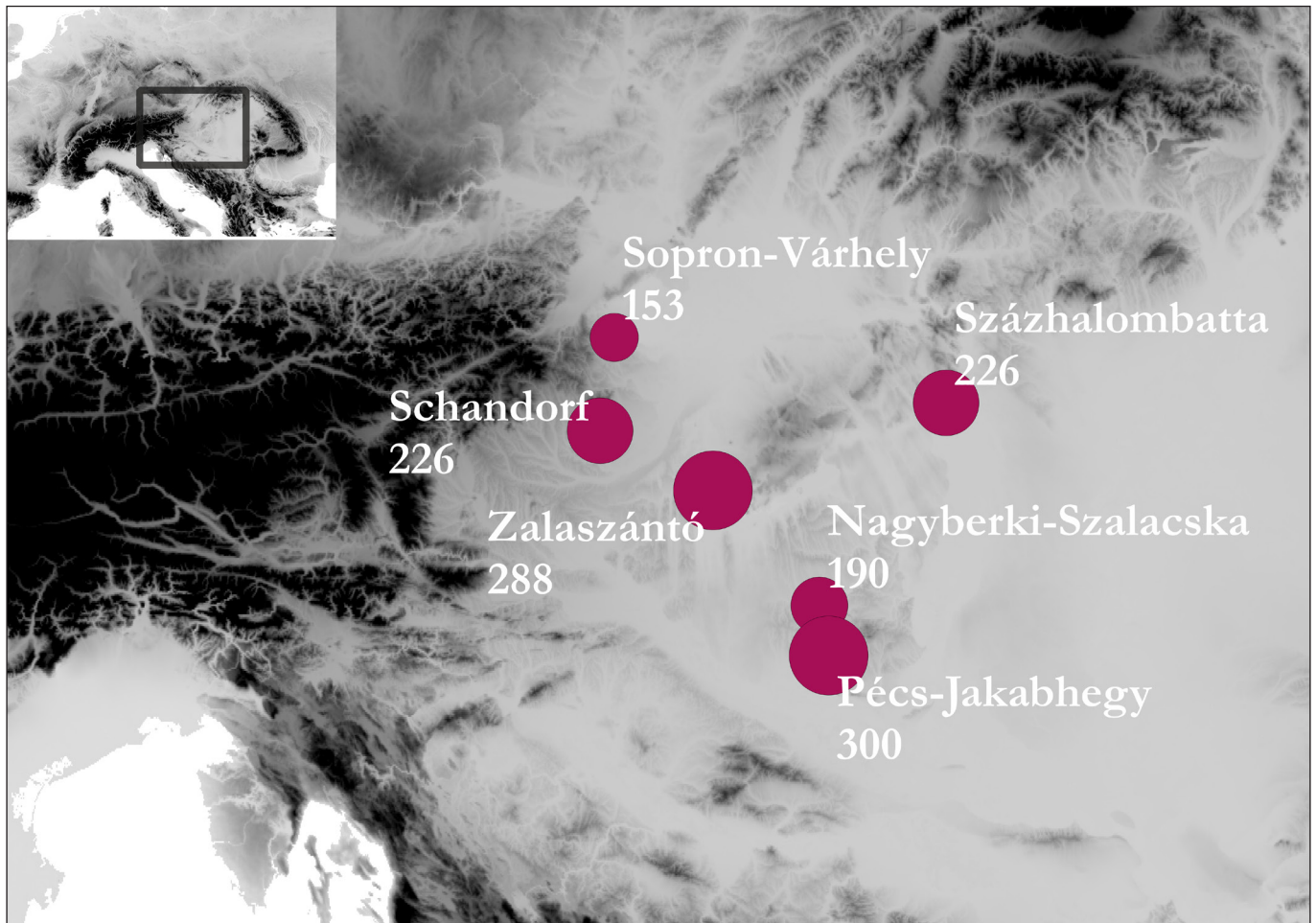


Fig. 6: Cemeteries of Transdanubia with more than 100 mounds

However, it is certain that the burial chambers with dromoi here also appear during the Ha C2 period, a structural feature that is closely linked to the elite graves throughout the eastern Hallstatt zone.³² Could this mean that a prominent elite capable of organising costly and demanding projects might also have existed in Transdanubia? In my view, despite the fact that such ostentatious grave goods as in the ‘princely’ graves of Kleinklein are still absent, but the answer might be yes. At this point, the example of the Zalaszentő cemetery is worth mentioning. Here, the greatest tumuli stand along a straight, north-south oriented line, and also form a distinct group separated from the rest of the cemetery. Although, the chronological relations are obscure, this alignment suggests a solid and stable concept, which might resemble the concept behind the subsequent erection of the ‘princely’ tumuli of Kleinklein. This is worth noting because the example of Zalaszentő also elucidates the possibility of ascertaining the presence of a stable and prominent elite even in cases where the grave goods do not support an assumption of this sort (Fig. 7).

The question arises as to whether there are graves in Transdanubia with grave goods that resemble the ostentatious elite graves of the eastern Hallstatt zone. The two groups of tumuli located on the northern and southern side of Somló Hill should now be mentioned. Until this point, I have chiefly discussed graves dated to the Ha C2-D1 periods, and as I wrote earlier, on average the ascent of particularly strong elites dates to the second part of the Ha C. Contrary to this, it appears that in the case of Somló Hill we might reckon with a significant centre of power even at the beginning of the Hallstatt Age.³³ This assumption is supported by

³² Egg, Markus: Zu den Fürstengräbern im Osthallstattkreis. In: Jerem, E. – Lippert, A. (Hrsg.): *Die Osthallstattkultur. Akten des Internationalen Symposiums, Sopron, 10.-14. Mai 1994*. Budapest: Archaeolingua, 1996, 53–86.

³³ Kemenczei Tibor: Früheisenzeitliche Trensenfunde vom Somlóberg [Early Iron Age Horseman Finds from Somlo Hill]. *Folia Archaeologica* 44 (1995), 89–90; Egg, Markus: Einige Bemerkungen zum hallstattzeitlichen Wagengrab von Somlóvásárhely, Kom. Veszprém in Westungarn. *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 43/1 (1996), 352.

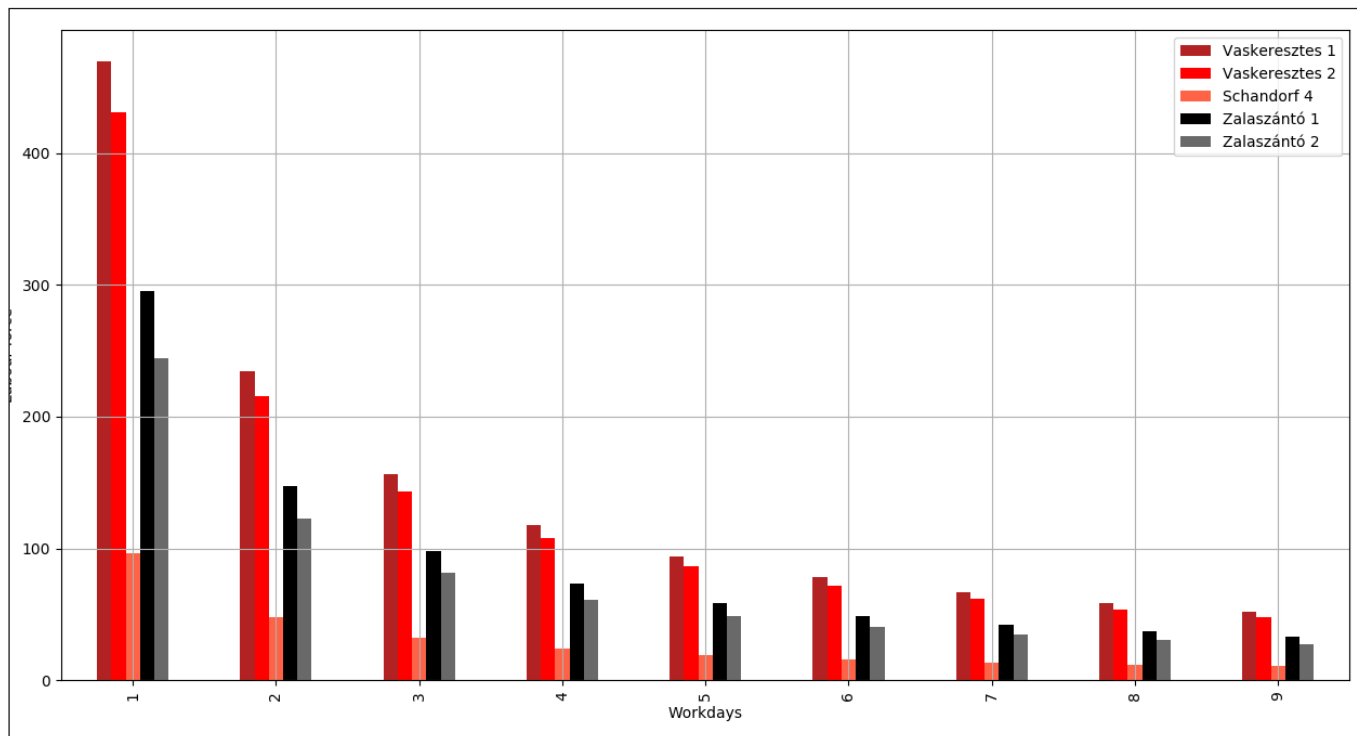


Fig. 7. The amount of labour force necessary for building the hitherto excavated mounds of Vaskeresztes and Zalaszántó according to the available number of workdays

the burial mounds excavated near Doba and Somlóvásárhely, where the grave goods indicate an elite that maintained contacts with various regions. Furthermore, the amount of energy expenditure estimated for these tumuli is considerable, even comparable with the values calculated for the contemporary ‘princely’ tombs at Kleinklein (Fig. 8).

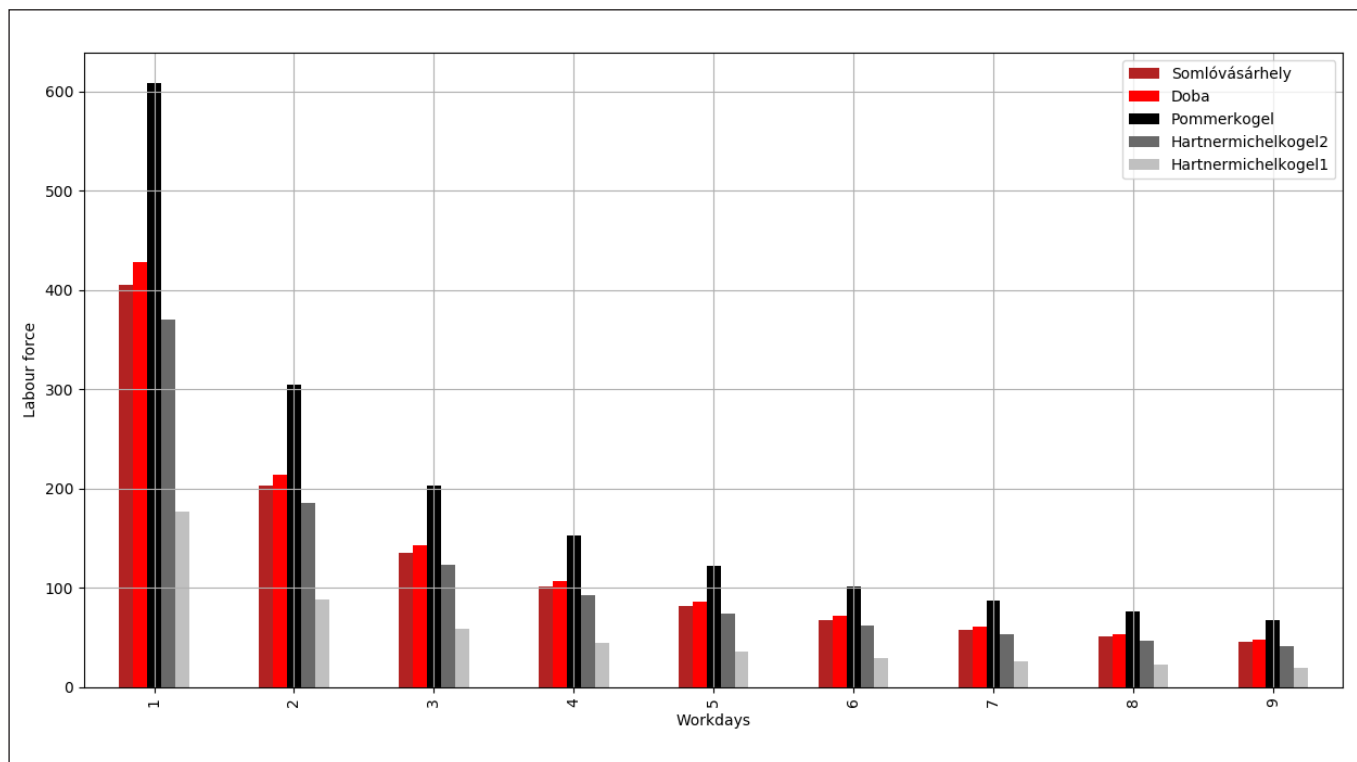


Fig. 8. The amount of labour force necessary for building the tumuli near Somlóvásárhely and Doba according to the available number of workdays

I cannot emphasise it enough that no firm conclusion could be drawn based on the current state of research. In spite of that architectural energetics seems to be able to contribute to the investigations of Hallstatt Age tumulus cemeteries with valuable information.³⁴

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