Rib-Addi, dem Herrscher von *Byblos, verwickelt war. In pAnast. I, 20,8 ist S. zwischen *Beirut im N und *Sarepta im S genannt. Im Bericht des *Wenamun I, 59–II,1 werden 50 Schiffe im Hafen von S. erwähnt, die in Handelsverbindung (*ḫbr*) mit *Wrktr* stehen. Später gerät S. unter die Herrschaft der *Assyrer. Die Könige der 25. Dyn. reizten S. zum Aufstand. Der Sieg *Assarhaddons wird auf der Stele von Sendjirli gefeiert: die dort dargestellten Feinde Assyriens sind anscheinend Abdi-Milkutti von S. und der Sohn *Taharqas, Uschanhuru (*Ns-Jnḥrt*), der auch im Text als nach Assur verschleppt genannt wird. Von der Tätigkeit *Nechos in S. zeugt ein Stelenfragment mit dem Rest seines Namens[1]. *Apries kämpft in S. im Rahmen seiner antibabylonischen Politik (Herodot II, 161; Diodor I, 68) als Bundesgenosse der Phönizier gegen Babylon oder zum Zweck der Loslösung von S. von babylonischer Herrschaft. Eine Bronzekanne und ein Sistrumhandgriff des *Amasis wurden in S. gefunden[2]. Aus der Zt, in der Phönizien und Äg. unter persischer Herrschaft standen, stammen anthropoide Särge aus S., die aus Äg. importiert waren[3]. Der Sarg des Königs von S. Tabnit (5. Jh. v. Chr.) war ursprünglich für einen *P3-n-Pth* hergestellt; die phönizische Inschrift, eine Warnung gegen Grabräuber, wurde in S. zugefügt. Mit diesem Sarg wurde der äg. Sarg einer Frau gefunden. Der Sarg des Esmun'azor II., des Sohnes des Tabnit, wurde ebenfalls aus Äg. eingeführt, allerdings ohne äg. Inschrift. Ein Altarbruchstück des *Hakoris wurde in S. gefunden[4] – ein Zeugnis der aktiven Asienpolitik dieses Königs. Ein weiteres Altarbruchstück dieses Pharaos wurde in *Akko gefunden[5]. Zur Zt der 30. Dyn. kämpfte *Nektanebos I. gegen die Perser, ein Kampf, der – ohne Erfolg – von seinem Sohn und Erben *Teos weitergeführt wurde. Dieser Konflikt endete mit *Nektanebos II., der den Fürsten von S. Tennes zum Aufstand gegen die Perser aufgestachelt hatte (Diodor XVI, 40–46). *Artaxerxes III. Ochos siegte 345 v. Chr. und bestrafte S. und den Fürsten dieser Stadt[6]. 332 v. Chr. näherte sich *Alexander der Große der Stadt, die sich ihm als Befreier und Herrscher ergab.

[1] PM VII, 384. – [2] PM VII, 384. – [3] PM VII, 384. – [4] PM VII, 384. – [5] Alan Rowe, A Catalogue of Egyptian Scarabs, Scaraboids, Seals and Amulets in the Palestine Archaeological Museum, Kairo 1936, 295–6, Tf. 38. – [6] Barag, in: BASOR 183, 1966, 6–12.

Lit.: Manfred Weippert, in: Kurt Galling (Hg.), Biblisches Reallexikon, Tübingen ²1977, 296–298 s.v. Sidon; Leclant, in: William A. Ward (Hg.), The Role of the Phoenicians in the Interaction of Mediterranean Civilisations, Beirut 1968, 9–31. R.G.

Sieb, zum Durchsieben von Getreide, Mehl, Sand oder zum Durchseihen der Biermaische, war ein flacher geflochtener *Korb[1]; dieser wurde auch als „Brausekopf" beim Baden und bei der Leichenwäsche[2] benutzt. Nach den Darstellungen auf den *Gerätefriesen hieß das S. *ḥnmt-wrt*[3] („Großer Brunnen"?). Diesen Namen führte auch die Himmelsgöttin *Nut seit den Pyr.[4] als Hervorbringerin des Regens. Im NR benutzte man den Deckel (*nqr*) eines großen Obstkorbes (*mnḏm*) als S.[5]

Die im Wb aufgeführten Wörter *mrḫt* und *sḫnkt* dürften kaum das S. bezeichnet haben; die kopt. Bezeichnungen[6] ˢⲥⲟⲗⲕ, ⲥⲱⲗⲕ, ⲥⲟⲣⲕ, ⲥⲟⲗⲃ, ᴬⲙⲉ̀ⲩⲥⲱⲗⲕ haben anscheinend keine äg. Etymologie.

[1] Vgl. Hayes, Scepter II, 408: Rand aus Halfagras, Korbboden aus Rohr oder Binsen (vgl. ebd., Abb. 47). – [2] Davies, Five Theban Tombs, 25, Tf. 20. – [3] Settgast, Bestattungsdarstellungen, 112–14, Abb. 4. Dort auch Hinweis auf die unrichtige Deutung als „Kissen" nach Jéquier, Frises d'Objets, 238 ff., die aber z. B. Erik Hornung, Das Totenbuch der Ägypter, Zürich-München 1979, 377 (zu Tb Spr. 178, 104) noch benutzt. – [4] Pyr. 638 c. 778 b. 827 c. 838 a. 842 d (mit Hinweis auf Reinigung). – [5] *nqr* „durchsieben" mit Darstellung in Beni Hasan II, Tf. 6; vgl. Helck, Materialien, 917. – [6] Westendorf, KoptHWb, 184. 522; s. aber 184 Anm. 4.

W.H.

Siedlungsgeographie. Settlement geography and spatial archaeology are important for understanding the economic and demographic processes fundamental to the Egyptian state. However, resolution and interpretation of the written and material record are limited by sources that are incomplete and shed little light on settlement function or administration, and by inadequate archaeological attention.[1] Few excavations have focused on residential, rather than monumental site areas, and in Middle Egypt there are over 50 tells (koms) whose original names have been lost and that have not even been archaeologically explored.[2] Despite these limitations, the existing cultural topographies[3] and geographical-toponymic gazeteers[4] represent a body of information unsurpassed by that available for any other complex society. These data have served for studies of historical settlement networks[5] and, in conjunction with the archaeological record, allowed thematic examination of settlement morphology or genesis.[6] The methodology of settlement geography[7] and spatial archaeology[8] is to analyze patterns and processes at three scales: micro (at the level of the component houses and other structures), meso (in regard to internal aggregation of farm complexes, agricultural villages, or

multifunctional towns), and macro (in terms of spatial and hierarchical configuration or interaction of settlements).[9]

A. *Micro-Scale.* The basic rectangular house plan of historical Egypt first appears midway in the Predynastic Naqada-II sequence,[10] paralleled by development of increasingly elaborate, rectangular graves,[11] and exemplified by a contemporary mud model (*Hausmodell).[12] During the early Dynasties quadrilateral forms become characteristic of elite residences, tombs, shrines, glyphs and seals (*Architekturdarstellung),[13] although the earlier, round or oval forms probably persisted in rural areas, judging by round squatter dwellings erected among the ruins of *Hierakonpolis during the late OK.[14] Dyn. 3 houses at Hierakonpolis form interlocking rectangular walls, enclosing compartmentalized living units and courtyards with ovens and storage buildings,[15] conforming in principle to Ricke's early Dynastic model compound.[16] These large complexes, ranging from 190 to over 350 m² in size,[17] contrast with smaller, one-room houses with attached yards and that measure only 27–57 m², found in the northeast sector of Hierakonpolis.[18] During the OK and MK more standardized, geometric arrangements for upper-class domestic architecture develop that make increasing use of columns, double storeys, porticos, and courtyards (*Haus, *Hausbau, *Haus-Darstellung),[19] to approximate Ricke's model NK house.[20] Nonetheless, the sinuous, irregular layout of the late NK settlement inside *Medinet Habu[21] cautions that the Amarna prototype was limited to 'planned' row-housing and elite residences, or to desert-margin sites with unrestricted space, while less regular forms remained prominent in the crowded, floodplain villages. Such a dichotomy persists to the present day.

In terms of house size, Kemp[22] used the measurements from Kahun (el-*Lahun), *Deir el-Medineh, and *Tell el-Amarna (North Suburb) to show that 92–98% of the house dimensions exhibit approximately lognormal distribution, i.e., except for the largest mansions there was no sharp break due to social status or wealth. This finds support at Kahun, where a dozen or so houses in the walled-off, laborer and craftsmen sector (west) are larger than any of those in the central sector, directly linked to the elite mansions.[23] Nonetheless, most of the houses in the homogeneous craftsmen's settlement of Deir el-Medineh have courtyards and overall dimensions of 40–90 m²,[24] comparing closely with the inferred craftsmen's row-houses at Amarna (40–110 m², most with small courtyards), and contrasting with the laborers' row-houses (East Village) at the latter site, with 40–50 m² size and lacking courtyards.[25] Workmen's houses had four rooms, the one next to the street serving mainly as an animal shelter, the central room used for eating and sleeping, and the two small rear ones for storage and food-preparation. The average house size for Kemp's sample[26] is 63 m², probably representing the basic space required by a nuclear family of 4 or 5 people. Houses larger than 200 m² (the one-sigma upper limit of Kemp's sample) probably housed extended families as well as domestic servants.[27]

B. *Meso-Scale.* The archaeological evidence elucidates the lay-out of Egyptian towns (*Stadtanlage). "Planned" settlements and at least some administrative centers had geometric street grids; some streets were regular, [28] while others were encroached upon by houses or enclosures and were correspondingly irregular.[29] Alleys between houserows appear to have been 2–4 m wide, intersecting streets 4–10 m wide, with the major thoroughfares at Tell el-Amarna exceeding 25 m,[30] although there is no reason to assume that such roadways were generally kept free of impediments or rubbish. Other, traditional towns and agricultural villages certainly had sinuous or maze-like roadways with numerous dead-ends.[31] Distinctive, 'neighborhood' clusters of houses evolved in Tell el-Amarna within only a few years, although such quarters were not socially homogeneous, and pockets of smaller houses were inserted among larger compounds,[32] as suggested by the tale of encroachment of less fortunate neighbors upon the mansion of Ra'ia.[33] Residential areas tended to crowd civic monuments or temple precincts, through organic growth[34] or by design.[35] Many towns were fortified by a wall or keep, especially during the early Dynasties and Late periods,[36] although there is little information about the degree to which fortified or defining walls (Stadtmauer) were maintained during times of political stability or how they may have restricted town expansion.

Towns were generally situated on the higher and drier ground provided by natural river-bank levees (active or abandoned, of the *Nile and its *Delta Branches, or of the *Bahr Jussuf), the sand islands ("turtle-backs") of the Delta, or on the desert edge.[37] All larger towns were situated on navigable waterways, including now-abandoned channels of the Nile or Bahr Jussuf[38] and larger canals (*Kanal), because of the advantageous communications (*Hafen, *Schiffahrt). The case that the majority of Predynastic and almost all Dynastic settlements were located within the alluvium is not just a "theoretical" one:[39] (a) Twelve of the key Predynastic cemeteries of U.E. lack related habitation sites on the desert edge and must belong to settlements within the flood-

plain;[40] (b) They key Upper Egypt early Dynastic sites of Hierakonpolis, *Elkab, and Thinis (el-Birba) are situated within the floodplain on alluvial soils, as are the traditional political and religious centers that formed the capitals of U.E. nomes 2, 4–7, 9–11, 13–15, and 20; (c) In L.E., eleven early Dynastic towns, either traditional religious centers or archaeological sites, are documented within the central and eastern Delta,[41] while there are three further early Dynastic cult centers within the western Delta.[42]

The functions of the average Egyptian town are obscured by the lack of titles or formal occupations that might identify merchants or shop-keepers, by the minimal information provided by the titles of government officials or bureaucrats as to their actual responsibilities, and by little more than a rudimentary understanding of how towns were administered with respect to the countryside, the temples, or the central government.[43] Thus the role of the town in regional market exchange (*Handel, *Markt) and in the national, vertical redistributive system remains largely inferential. During the OK, *ḥwt* appears to designate royal economic and administrative centers of varying size, one of the roles of which appear to have been tax-collection (*Abgaben und Steuer).[44] During the NK the key administrative centers had a royal appointee probably equivalent to mayor (*Bürgermeister). Nonetheless, in attempting to weigh the functional role of Egyptian towns, it is necessary to use proxy data such as the status of a nome (*Gaue) capital, the presence of elite or royal cemeteries, of a mayor, of one or more temples, of attached villas or suburbs, and of a fortress or quarry.[45] Less problematical are specialized towns, such as the fortresses and trading-centers of Nubia and the western Delta periphery,[46] or the priest and artisan settlements linked to major temples or mortuary cults.[47] In view of the lacunae in regard to information about economic functions and urban institutions, the specific urban character of the larger Egyptian towns cannot be defined.[48] The intimate linkage of administrative and population centers with traditional temples and key shrines already meets the criteria for one definition of "urban."[49] Yet the archaeological verification of a Dyn. 4–5 "industrial center" within Hierakonpolis, devoted to flint-knapping, stone-vase cutting and copper smelting, but not linked to a mortuary cult,[50] now suggests that craft quarters were common in other population centers. This cautions against applying the label of "sacred cities" to Egyptian towns. In any event, as in 19th-century Egypt, the majority of the population of even larger centers was probably employed in agriculture (*Landwirtschaft).

NK distinctions exist for "metropolis" (*nwt*), "town" (*dmj*), and "village" (*whjt*),[51] but no criteria can be inferred[52] so that a functional settlement hierarchy is better based on proxy data, such as those devised by Butzer to rank and distinguish "large village," "small center," "large center," and "city" for U.E., the *Fajjum, and L.E. nome 1.[53] But functional hierarchies need not be equivalent to population classes, which can be better inferred from settlement size. The following dimensions have been obtained by planimetry of report plans or topographic maps, exluding temple complexes or walls, for the specified periods: Nubian fortresses[54] 0.15–1.3 ha (MK/NK); *Elephantine[55] 1.6 ha (OK), 3.5 ha (MK); Hierakonpolis[56] 5 ha (OK); Elkab[57] 9 ha (Early Dynasties); (*Tell) Edfu[58] 8.5 ha (Ptolemaic); *Luxor over 280 ha (NK); *Abydos over 1 ha (OK/MK)[59] *Hermupolis about 100 ha (NK); el-Manshah (*Ptolemais) 27 ha (Ptolemaic); Amarna[60] 380 ha (NK); Antinoopolis about 85 ha (Roman); *Hebenu 15 ha (Roman); Oxyrhynchos about 100 ha (Coptic); el-*Hibe[61] 9.5 ha (Late); Kahun[62] about 12 ha (MK); *Medinet el-Fajjum 170 ha (Roman); other Fajjum koms up to 12 ha (Roman); *Memphis[63] 31 ha (OK) and over 79 ha (NK); *Tell el-Jahudija[64] 13.7 ha (NK); *Bubastis[65] over 64 ha (Late); *Athribis 48 ha (Roman); *Tell el-Dabʿa[66] 350 ha (NK), *Tell el-Faraun[67] 25 ha (Hellenistic); *Thmuis[68] 89 ha (Late); *Mendes[69] 31 ha (Late); and *Tanis 105 ha (NK). Using a mean population density of 500 persons per hectare,[70] this suggest that OK Memphis had some 15,000 inhabitants, the key OK provincial centers perhaps 500–2000 people each. For the NK, metropoleis such as Thebes, Amarna and Tell el-Dabʿa (Pi-Ramesse, *Ramsesstadt) each probably had over 150,000 inhabitants at their zenith, with Memphis, Tanis and Hermupolis having in the order of 40 to 50,000 people, while the other provincial centers may have had 3000 to 7000 people. The total non-military population of the MK and NK Egyptian centers in Nubia can hardly have been more than a thousand or two. During the Late and Hellenistic periods, a dozen or so key Delta and Nile valley centers probably had populations in the order of 15,000–80,000, with second-echelon provincial cities having no more than 6000 inhabitants. These rough estimates serve to confirm the prevailing impression that OK towns were quite small, and that the total population of places larger than 1000 was probably less than 50,000 people. Urban growth greatly accelerated during the NK and was characterized by a succession of striking "primate" cities, explicable by a strongly centralized administration. The population in places larger than 1000 probably exceeded

500,000, but even so urbanization was still less marked than in mid-19th century Egypt.[71] During the Late period the number of medium-ranking cities expanded notably until, in Hellenistic times, the urban population probably exceeded a million (excluding *Alexandria), suggesting patterns comparable to those of pre-industrial, 19th century Egypt.

C. *Macro-Scale.* The geographical distribution of settlements in Egypt was related to (a) the geomorphic and biotic mosaic in the Delta, the Fajjum, and the valley; (b) the quality of site locations with respect to flood patterns and agricultural suitability; (c) access to navigable waterways and overland trade routes; (d) politically-favored centers of economic and political administration; and (e) the cumulative impact of prehistoric social aggregation, local historical trajectories, the changing role of cult centers, and the political and economic strategies of the central government.

Site networks in the valley were linear, with respect to the higher ground provided by the banks of the Nile and Bahr Jussuf, allowing for longer term shifts in river axis and meander geometry.[72] In the Delta and Fajjum, settlements preferentially followed several, radial water-courses, while everywhere the linear desert margins provided additional opportunities for villages and cemeteries. This longitudinal organization, essentially north-south and contrasted against the surrounding deserts (*Ostwüste, *Westwüste), was reinforced by (I) the corresponding arrangement of flood basins and the minor, diverging and converging basin channels upon which irrigation patterns (*Geographie, *Be- und Entwässerung, *Kanal, *Schaduf) were predicated; (II) the corresponding, often symmetrical disposition of soil qualities and agricultural organization from the levee crests, down the levee backslope and across the basin floors, to local backswamps, and ultimately the desert edge;[73] (III) both accessibility and trafficability as a function of the same channel axes. External factors that influenced transverse contacts were mineral resources within the deserts (*Bergbau), as well as trade routes (*Karawanen) determined by location of the Libyan oases (*Bahrija,*Farafra, *Charga), of the wadis providing access to the Red Sea (*Rotes Meer), and the coastal steppes west and east of the Delta where Egyptians interacted with rival peoples (*Libyer; *Asiaten; *Kanal, Nil–Rotes Meer).

More subtle than this background schema were the cultural processes and still-enigmatic events that led to the early Dynastic emergence of specific administrative and cult centers (*Tempel), commonly linked to the equally problematical nomes (*Gaue).[74] During the OK, NK and Late periods the *Delta (*Mareotis) was successively the focus of organized economic development,[75] as was the Fajjum (*Birket Qarun) during the MK and under the Ptolemies (*Kolonisation). Middle Egypt, especially in U.E. nomes 16–19, was agriculturally underdeveloped and thinly populated until Graeco-Roman times.[76] During the OK and MK, Egypt had a single urban center, at Memphis; settlement hierarchies were poorly developed, with modest provincial centers in those U.E. nomes that merit historical attention during Dyn. 6–12, as well as a number of major and minor "temple towns." During Dyn. 18 Thebes developed as a primate city, with additional large centers at Hermupolis and Memphis, and a temporary metropolis at Amarna, which briefly usurped some functions of both Thebes and Hermupolis. Under the Ramessids a new metropolis/was created at Pi-Ramesse and later shifted to Tanis, while the population core of Egypt subsequently remained in the Delta.[77] The agricultural productivity, the commercial contacts to Asia, and the strategic position evidently led to this shift. At the provincial level, two or more tiers of administrative centers, temple towns, and fortresses served to link the mass of simple agricultural villages to the seats of centralized, political power.

Kauffman[78] has applied a sophisticated computer program from location theory to test the economic rationale of the U.E. settlement network. It shows the nome capitals were efficiently distributed at average river distances of 22 km, with several notable exceptions. The program (I) chose *Esna as the best administrative center for U.E. nome 3; (II) juxtaposed *Kom Ombo with Elephantine in U.E.1, and Abydos with el-Birba in U.E. 8; (III) preferred *Sako to *Hardai in U.E. 17; and (IV) generally minimized the administrative/economic role of U.E. capitals 12, 16–19, and 21–22, and specifically that of the east-bank towns in this sector. The program selected all but one of the towns with mayors (exception: Sako) as the logical administrative centers of U.E., demonstrating the economic efficiency of the Ramessid settlement network in Egypt.

[1] Manfred Bietak, in: Kent R. Weeks, ed., Egyptology and the Social Sciences, Kairo 1979, 97–144; Bietak, in: JEA 65, 1979, 156–160. – [2] See the 1:100,000 maps of M. Jacotin, Atlas géographique: description de l'Egypte, Paris [2]1826, and of the Survey of Egypt, Kairo 1932–36 (latest edition, Army Map Service, Washington 1959–60, Series P677). – [3] Hermann Kees, Das alte Ägypten, Berlin 1955; Montet, Géographie; Otto, Topographie; Fischer, Coptite Nome; Serge Sauneron, in: BIFAO 62, 1964, 33–57; André Bernand, in: MIFAO 41, Kairo 1971; Adelheid Schlott, in: MDAIK 28, 1972,

109–113; Helck, Gaue; Horst Beinlich, in: TÄB 2, Tübingen, 1976; Dieter Kessler, Historische Topographie der Region zwischen Mallawi und Samalut, TAVO Beiheft B 30, Wiesbaden 1980; and especially the individual topographic entries in the LÄ. – [4] Émile Amélineau, La géographie de l'Egypte à l'époque copte, Paris 1893; Gauthier, DG; PM; John Ball, Egypt in the Classical Geographers, Kairo 1942; Gardiner, Onomastica; Lacau-Chevrier, *Sésostris Ier*; pJumilhac. – [5] Butzer, in: BSGE 33, 1960, 5–36; David O'Connor, in: P. J. Ucko, R. Tringham and G. W. Dimbleby, Man, settlement and urbanism, London 1972, 681–698; Karl W. Butzer, Early hydraulic civilization in Egypt, Chicago 1976, chap. 6. – [6] Herbert W. Fairman, in: Town Planning Review 20, London 1949, 32–51; Badawy, Architecture I–III; John A. Wilson, in: C. H. Kraeling and R. M. Adams, eds., City invincible, Chicago 1960, 124–136; Barry J. Kemp, in: Ucko et al., op. cit. (v.n. 5), 657–680; Kemp, in: Antiquity 51, Oxford 1977, 185–200; Kemp, in: World Archaeology 9, London 1977, 123–139; O'Connor, op. cit. (v.n. 5); Harry S. Smith, in: Ucko et al., op. cit. (v.n. 5), 705–719; Kemp and O'Connor, in: International Journal of Nautical Archaeology and Underwater Exploration 3, New York 1974, 101–136; Bietak, in: Kent R. Weeks (ed.), Egyptology and the Social Sciences (v.n. 1). – [7] The more traditional, descriptive/analytical approach is exemplified by Gabriele Schwarz, Allgemeine Siedlungsgeographie, Berlin [2]1961; Georg Niemeier, Siedlungsgeographie, Braunschweig [2]1972; Harald Uhlig and C. Lienau, eds., Basic Materials for the terminology of the agricultural landscape, 2 vol., Giessen 1967–72; James E. Vance, This scene of man, New York 1977. For comprehensive presentation of the functional/processual approach, incorporating "land rent" and "central place" models and positive theory, see Michael Chisholm, Rural settlement and land use, London 1967; Ronald Abler, John Adams and Peter Gould, Spatial organization, Englewood Cliffs, New Jersey 1971; and Peter E. Lloyd and Peter Dicken, Location in Space, New York 1972. – [8] In archaeology the counterpart to "traditional" settlement geography is represented by Kwang Chi Chang, ed., Settlement Archaeology, Palo Alto 1968, and Ucko et al., op. cit. (v.n. 5). The "processual" counterpart is reflected in David Clarke, ed., Spatial Archaeology, London 1977; Gregory A. Johnson, in: Annual Reviews in Anthropology 6, Washington 1977, 479–508; Karl W. Butzer, Archaeology as human ecology, Cambridge 1982, chaps. 12–14. – [9] Clarke, op. cit. (v.n. 8), 11ff.; Butzer, Archaeology (v.n. 8), 232ff. 243ff. – [10] At *Mahasna rectilinear, intersecting walls of wattle and daub are suggested by post-moulds, see Mahasna and Bet Khallaf, pl. 4. At *Maadi a rectangular structure, 2.5 by 5 m, is indicated by shallow foundation trenches and several post-moulds, with round huts as well as another rectangular wall intersection nearby, see Vandier, Manuel I, 510ff., fig. 345. Also relevant are the parallel, mud-brick walls around kilns at Abydos, see Peet, Cemeteries III, 1–7, fig. 1. – [11] Beginning in mid-stage IIb at *Armant, see Kaiser, in: Archaeologia Geographica 6, Hamburg 1957, 69–77. The Painted Tomb at Hierakonpolis is a late example, see Kemp, in: JEA 59, 1973, 36–43; Barbara Adams, Ancient Hierakonpolis: supplement, Warminster 1974, 86f. – [12] El Amrah and Abydos, 42, pl. 10. – [13] Ricke, Bemerkungen AR I, especially figs. 3. 9–10; Emery, Archaic Egypt, chap. 6. – [14] Michael A. Hoffman, in: American Antiquity 39, Washington 1974, 35–50, fig. 3. – [15] Fairservis, Weeks and Hoffman, in: JARCE 9, 1972, 7–99. – [16] Ricke, Bemerkungen AR I, fig. 14. – [17] Fairservis, op. cit. (v.n. 15), figs. 12–15. – [18] Hierakonpolis II, pl. 68; Garstang, in: ASAE 8, 1907, 132–148. – [19] Ricke, *Bemerkungen AR I*, 89ff.; Badawy, Architecture I, 53ff.; II, 12ff., figs. 1b.2b. – [20] Herbert Ricke, Der Grundriß des Amarna Wohnhauses, WVDOG 56, Leipzig 1932, 25ff. – [21] Hölscher, Medinet Habu I, pls. 5.9–10; V, 14ff. – [22] Kemp, in: World Archaeology 9, London 1977, figs. 2–3. These data are confirmed by those from Medinet Habu (v.n. 21); Deir el-Ballas, see Lacovara, in: Fs Dunham, 120–122; and Tell ed-Dabʿa (el-Chatanah), see Bietak, in: MDAIK 26, 1970, 15–41. – [23] Kahun, Gurob, Hawara, 23, pl. 15. – [24] Deir el Médineh (1934–35), FIFAO 16, Kairo 1939, pl. 1–14. 26–34; Geneviève Sée, Grandes villes de l'Egypte antique, Paris 1974, 36ff. – [25] CoA I, 51ff., pl. 1–2. 16; II, pl. 2–7.9; Ricke, Grundriß (v.n. 20), pl. 2ff.; Badawy, Architecture III, 76ff. – [26] Kemp, in: World Archaeology 9, London 1977, fig. 3. – [27] E.g., the Hekanakhte Papers. See also Smith, op. cit. (v.n. 6), in regard to partitioning of houses through divided inheritance. – [28] Hassan, Gîza IV, 1932–33, fig. 1; Kahun, Gurob, Hawara, pl. 15. In regard to street grids, see Fairman, in: Town Planing Review 20, London 1949, 32–51, and Badawy, in: ZÄS 85, 1960, 1–12. – [29] Amarna (v.n. 25) or Deir el-Ballas (v.n. 22). – [30] Dimensions based on Early Dynastic Hieraconpolis (v.n. 18), MK Kahun (v.n. 23), and NK Amarna (v.n. 25). – [31] Deir el-Medineh (v.n. 24) or Medinet Habu (v.n. 21). – [32] Kemp, in: Ucko et al., Man, Settlement and Urbanism (v.n. 5); id., in: World Archaeology 9, London 1977, 123–139. – [33] Caminos, LEM, 164ff. 410ff. – [34] So, for example, at *Tell Edfu, and *Abydos, see Kemp, in: Antiquity 51, Oxford 1977, figs. 1–2; or at *Memphis, see Memphis II, pl. 1; Kemp, op. cit., and Bietak, in: Kent Weeks, ed., Egyptology and Social Sciences (v.n. 1). – [35] Specifically, Amarna (v.n. 25), see Kemp, in: JEA 62, 1976, 82–99; and Tell ed-Dabʿa, see Bietak, in: MDAIK 26, 1970, 15–41. – [36] O'Connor, in: Ucko et al., op. cit. (v.n. 5); for a partial list of fortified towns, see Butzer, Early Hydraulic Civilization (v.n. 5), table 2. – [37] Butzer, op. cit., 12ff. 33ff.; Manfred Bietak, Tell el-Dabʿa II, DÖAW (Gesamtakademie) 4, 1975, 48ff. 99ff.; id., in: Kent Weeks et al., Egyptology and Social Sciences (v.n. 1); also *Geographie. – [38] Butzer, op. cit., 16f. 35, fig. 1. – [39] See Kemp, in: Antiquity 51, Oxford 1977, 197. – [40] E.g. *Abadijeh, El-*Amra, *Harageh, *Abusir el-Meleq, *Gerzeh, *Tarchan, *Matmar, Mostagedda, *Badari, *Qau el-Kebir, Mesaeed, and *Naga ed-Deir, see Kaiser, in: Archaeologia Geographica 6, Hamburg 1957, 69–77; id., in: MDAIK 17, 1961, 1–53; Butzer, in: BSGE 32, 1959, 43–87; Butzer, in: MDAIK 17, 1961, 54–68. – [41] Bietak, Tell el-Dabʿa II (v.n. 37), 99ff., fig. 12. – [42] *Buto, *Sais and *Xois, see Wilson, in: JNES 14, 1955, 209–236; also Butzer, Early Hydraulic Civilization (v.n. 5), 93ff. – [43] Some of these problems are discussed by Kemp, in: Ucko et al., op. cit., (v.n. 6). –

[44] See Atzler, in: CdE 47, no. 93, 1972, 17–44. – [45] Butzer, op. cit., 59 f. – [46] Badawy, Architecture II, 198 ff.; III, 446 ff.; Kemp, in: Ucko et al., op. cit. (v. n. 5), 651–656. For the western Delta NK entrepots, see *Bubastis, *Heliopolis, *Pelusium, *Tell el-Jahudija, and Bietak, Tell el-Dabʿa II (v.n. 37), 194 ff. – [47] Helck, in: MDAIK 15, 1957, 91–111. – [48] For various viewpoints see Wilson, in: Kraeling and Adams, City Invincible (v.n. 6); Atzler, in: CdE 47, no. 93, 1972, 17–44; Helck, Wirtschaftsgeschichte, 107 ff.; Kemp, in: Antiquity 51 (v.n. 6); Bietak, in: Weeks, op. cit. (v. n. 1); Bruce G. Trigger, in: Weeks, op. cit. (v.n. 1), 23–56. – [49] See Wheatley, in: Ucko et al., op. cit. (v.n. 5), 601–637. – [50] Fairservis et al., in: JARCE 9, 1972, 35 ff., fig. 13; Hoffman, in: American Antiquity 39, Washington 1974, 35–50. – [51] AEO I, 31* (101); II, 1* (313). 205* (421). – [52] Bietak, in: Weeks, op. cit. (v.n. 1). – [53] Butzer, Early Hydraulic Civilization (v.n. 5), 59 ff., tables 2–3; Barbara A. Kauffman, The maximal Covering Location Problem as a Simulation of Decision Making in Ramessid Egypt. Unpublished Anthropology M.A. Thesis, University of Chicago 1981. – [54] Badawy, Architecture II, 208 ff.; III, 457 ff. – [55] Kaiser et al., in: MDAIK 30, 1974, 65–90. – [56] Fairservis et al., in: JARCE 9, 1972, fig. 3. – [57] Clarke, in: JEA 7, 1921, 54–62. – [58] V.n. 34. – [59] V.n. 34. – [60] V.n. 25. – [61] Robert J. Wenke, The el-Hibeh Project. Unpublished Report to National Science Foundation, Washington 1981. – [62] V.n. 23. – [63] V.n. 34. – [64] Badawy, Architecture II, fig. 90. – [65] Labib Habachi, Tell Basta, SASAE 22, 1957. – [66] Bietak, Tell el-Dabʿa II (v.n. 37), fig. 21. – [67] Ibd., fig. 2. – [68] Robert K. Holz, D. Stieglitz, D.P. Hansen, E. Ochsenschlager, Mendes I, Warminster 1980, pl. 18. 22. – [69] Ibd. – [70] The average space and population of Beni Suef, el-Minya, Mallawi, Asyut, Akhmim and Girga in 1897 (see Gabriel Baer, Studies in the Social History of Modern Egypt, Chicago 1969, table 2, for city populations) indicates about 400 persons per ha. The average size of workmen's houses at Amarna was 63 m² (see above), suggesting about 75 m² of public and private space for perhaps 4.5 people, or 500 persons per ha. Badawy, in: JARCE 7, 1967, 103–109, uses Amarna data with different assumptions to derive a similar figure of 639 per ha. An overall number of 500 per ha can be suggested as a reasonable and conservative value. – [71] Baer, op. cit., 133 ff. – [72] V.n. 37. – [73] See Bietak, Tell el-Dabʿa II (v.n. 37), 52 ff. 75 ff. – [74] Helck, Gaue, 199 ff.; id., Verwaltung, 196 ff.; Eva Martin-Pardey, Untersuchungen zur ägyptischen Provinzialverwaltung bis zum Ende des AR, HÄB 1, 1976; O'Connor, in: World Archaeology 6, 1974, 15–38; Fischer, Coptite Nome, 18 ff.; Butzer, Early Hydraulic Civilization (v.n. 5), 103 f. 108. – [75] Butzer, op. cit., 93 ff. – [76] Ibd., table 3; p. 100 ff., figs. 12. 14; id., in: BSGE 33, 1960, 5–36; O'Connor, in: World Archaeology 6, 1974, 15–38. – [77] See Russell, in: JARGE 5, 1966, 69–82. – [78] Barbara Kauffman, op. cit. (v.n. 53). K.W.B.

Siegelung. *ḥtm(t)*, *sḏ3(t)* und *ḏbʿ(t)* braucht man wenig differenziert sowohl für „Siegel" als auch für „Siegeln" (= „S."), „(Lehm-)Verschluß mit S." und „Versiegeltes", d.h. „Etwas, das mit einem gesiegelten (Lehm-)Verschluß verschlossen ist" [1]. Ursprünglich ist die S. „mit" (*m*) dem Siegel [2]. Wohl seit dem MR sind Produkte und Ämter „auf" (*ḥr*) dem Siegel von jemandem eingeschnitten, d.h. ihm unterstellt [3]. *ḥrj-* „befindlich auf" ist in Titeln damals „der (dessen Name) auf dem Siegel ist", aber auch „der (dessen Name) auf dem (Lehm-)Verschluß ist" [4]. Analog siegelt man „auf" Verschlüsse und sogar „auf" Siegel, d.h. auf Verantwortung der Inhaber. Die Varianten *ḥtm ḥr ḥtm(t)* [5], *ḥtm ḥr ḏbʿt* [6] und *ḏbʿ ḥr ḥtm(t)* [7] weisen *ḥtm(t)* und *ḏbʿ(t)* praktisch als Synonyma aus. Die Substantiva lauten *ḥtm* oder *ḥtmt*, *sḏ3t* und *ḏbʿt*. Mit direktem Objekt bedeutet das Verb *ḥtm* nur „verschließen" [8], mit *ḥr* speziell „siegeln auf", d.h. „versiegeln". *ḏbʿ* ist in beiden Konstruktionen das eigentliche Verb „(ver)siegeln". In *ḥtm ḥr*, *ḏbʿ ḥr* muß das Wort „(Lehm-)Verschluß" nicht genannt sein: In CT IV, 329p–r siegeln z.B. *Schu und *Tefnut „auf" eine Tür, d.h. auf ihren (Lehm-)Verschluß, der unter Aufsicht der *Maat(?) als *ḥrt-sḏ3t* gestellt wird [9]. Die ursprünglichen *Rollsiegel werden zeitlich von *Knopfsiegeln und anderen Stempeln, vor allem *Skarabäen und *Ringen, abgelöst. Die Nomenklaturen bleiben aus diesem Grund etwa gleich. *sḏ3(t)*, das eigentliche Wort für „Rollsiegel" bzw. „S. mit dem Rollsiegel", schwindet im MR. Seit dem NR erscheint *ḥtt* „Siegel mit eingeschnittener (*ḥtj*) Inschrift" [10], doch auch dieses Wort gebraucht man sekundär als „(Lehm-)Verschluß mit S.", so in *ḥtm ḥr ḥtt* [11]. Das Siegel markiert als „Unterschrift" einerseits die Habe des Siegelinhabers, andererseits garantiert der Siegelinhaber die Unversehrtheit von dem, was er versiegelt, vor allem, wenn er seine versiegelte Habe veräußert [12]. Deshalb bedeutet „Siegeln", ein Recht einer versiegelten Urkunde gemäß (*r*) [13] zu erwerben oder (!) abzutreten [14]. Da man oft nur im Auftrag des Königs mit einem Amtssiegel siegeln darf (*Dekret, *Rollsiegel) [15], erfindet man fiktive Siegel, die fiktive Aufträge in Schrift und Bild festhalten [16]. Fiktionen der FrZt sind Totensiegel, die man nicht einmal zum Siegeln von Grabbeigaben braucht [17]. Aus fiktiven Siegeln entstehen *Amulette, d.h. Siegel, die nicht mehr zur S. dienen. Nur in der FrZt kommen kollektive Siegel und S. vor, woraus man auf die Existenz von Verträgen, Urkunden mit S. beider Parteien schließen kann [18]. Auch *Brandstempel gelten als Siegel [19], zumal das Rollsiegel-Determinativ (später als Stempel-Determinativ gedeutet) den Gebrauch gestempelter Metallgewichte, d.h. von Münzen, vermuten läßt [20]. Sonst werden Lehmverschlüsse versiegelt, von Gefäßen, Beuteln, Säcken, Körben [21], Stoffballen, Kästen, Türen und Fenstern sowie von Urkunden, was zur Abstraktion des Begriffs der S.