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Cyber-Egyptology: Cybernetic methods applied on data from Ancient Egypt

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The sophisticated administration in the age of the pyramid builders offers a remarkable time span for research and a unique opportunity to analyse the dynamics of a complex society in a diachronic perspective. Although scholarly interest in the Old Kingdom administration has always been relevant, the grasping of its complexity and the tracing of the particular processes which led to changes and innovations of the system have been missing. Their study is crucial, because it adds a valuable insight to our knowledge of the varying Old Kingdom social and administrative structure.

Contrary to traditional approaches relying on statistics and logic, we will present an overview of our achievements in society development reconstruction covering both structural and dynamic aspects using a number of methods of cybernetic and artificial intelligence that provide and ensure: automated grouping people into families (uncertainty handling and logic), automated family tree building, layout, and visualization (various possibilities of visualization were implemented), automated detection of families with a significant level of nepotism (techniques of social network analysis and data mining), detection of strategic titles and powerful officials (information theory), development of administration during the Old Kingdom (hidden Markov models), assessment of society stratification from an individual perspective (community detection, Fruchterman-Reingold method), etc.

On the ground of this approach, we defined cyber-Egyptology as a process of interpretation based on (semi-)automated processing of data volume gained and used in Egyptology using a number of cybernetic techniques, aimed on the one hand to grasp mechanisms of society development and transformation, on the other hand to predict and to influence positively the future development of humankind.

Our interdisciplinary team is successful at better understanding of the ancient Egypt state and its legacy for future of our society, since then mechanisms worked which are effective also for our modern time. Our Egyptological-cybernetic cooperation excited interest as well and showed that big discoveries do not emerge only from the sand.

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