

## ABSTRACTS

### 1. Vratislav Havlík

The thesis, "Journalist Jan Hloužek before the National Court" aims to analyse the case of the Czech journalist, Jan Hloužek, who was on trial at the National Court in Brno between 9 and 23 April 1947. The Court focused on Hloužek's activities during the period of the Bohemia and Moravia Protectorate, when he was working as editor-in-chief of the Ostravská Národní Práce newspaper.

The research is primarily based on describing and analysing the court file from 1947, which is deposited in the National Archives in Prague. Articles of postwar press are also included.

Hloužek was found guilty by the Court for his journalistic collaboration and sentenced to 18 months in prison. When he was found guilty, Hloužek had already served two years in jail; therefore, he was released after the verdict. During the World War II, Hloužek wrote articles in support of Germany, but his ideas were inclined more towards the Czech people. He declared himself to be a victim, because he consciously accepted the responsibility of writing the articles.

The results confirmed that Hloužek was not an activist but a conformist.

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### 2. Drahomíra Knitlová

#### **Kinetics of Changes in Mitochondrial Morphology and ATP Production in Bovine Oocytes with Different Meiotic Competence During In-Vitro Maturation**

This study was designed to characterize the differences in chronological changes in the morphology of mitochondria and production of ATP in bovine oocytes derived from small and medium follicles with different atresia levels. Oocytes recovered from medium follicles (MF, 5-9 mm) by aspiration and from small follicles (SF, <5 mm) by total dissection of ovaries were categorized according to morphological qualities of their cytoplasm in groups of healthy and light atretic ones. Respiring mitochondria were stained immediately after isolation (in the Germinal Vesicle stage) and then after 3, 7, 16 and 24 hours (in the Metaphase II stage) of in-vitro maturation. Mitochondrial morphology was then assessed with the help of laser scanning confocal microscopy and a proportion of oocytes with clustered mitochondria was counted for each category. At the same time intervals, the production of ATP was measured using luminometry in samples containing single oocytes. Both parameters were examined in 40 oocytes in each group. The highest frequency of clustered mitochondria was found in both healthy and light atretic MF oocytes between 3 and 7 hours of maturation. In SF oocytes, clustered mitochondria appeared in a significantly lower proportion after 16 hours of maturation in the healthy group and after 24 hours of maturation in the light atretic group. The production of ATP continuously increased with time of maturation in all groups; however, in SF oocytes the levels were still significantly lower than in MF oocytes without regard to their atresia level. The increase was accelerated in all groups after 16 hours of maturation.

The results confirm that the process of cytoplasmic maturation is quicker in MF than in SF oocytes and is healthier than in light atretic groups. Different results of experiments with mitochondrial morphology and ATP production suggest that there is no relation between the formation of mitochondrial clusters and content of ATP in oocytes.

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### 3. Michal Kumstát

**Purpose:** The study aims to evaluate the differences in diet-induced thermogenesis (DIT) between two liquid meal-replacement shakes of different macronutrient compositions: high protein (HP) and high carbohydrate (HC) meals.

**Methods:** Four male subjects ( $26\pm 3,7$  y, body mass index  $24,6\pm 1,7$  kg.m<sup>-2</sup>) completed the crossover, single-blind, quasi-experiment designed study. During two separate occasions (non-consecutive days) indirect calorimetry measurement was taken. Production of CO<sub>2</sub>, consumption of O<sub>2</sub> and respiratory exchange ratio were monitored before and after ingestion of two isocaloric liquid meals with energy content of 7 kcal/kg per fat free weight. The postprandial period measurement lasted 180 min.

**Results:** An immediate and persistent thermic effect was caused by the test meals. The total DIT calculated in HP and HC meals was:  $51,8\pm 17,2$  kcal/180 min and  $32,13\pm 13,4$  kcal/180 min, respectively (where  $p = 0,14$ ). No statistically significant difference in postprandial energy expenditure between HP ( $0,29\pm 0,10$  kcal.min<sup>-1</sup>) and HC ( $0,18\pm 0,07$  kcal.min<sup>-1</sup>) meals was observed (where  $p = 0,14$ ). Elevated values of energy expenditure did not return to the baseline after 3 hours. The DIT, expressed as percentage of energy consumed, averaged  $8,7\pm 2,9$  % for the HP meal, compared to  $5,4\pm 2,3$  % for the HC meal (where  $p = 0,14$ ).

**Conclusions:** Results indicate that the macronutrient composition plays a significant role in metabolic responses. It was concluded that an increment in the energy expenditure above the baseline after ingestion of either protein-like or maltodextrin-like test meals is comparable. Due to a limited number of subjects involved in the experiment, further research is needed to validate the results obtained.

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### 4. Nad'a Satková

#### Jiří Svoboda's **Directorial Methods**

The study discusses Jiří Svoboda's way of direction and summarisation of the characteristic principles of his directorial methods. Based on the production, End of the Carnival, the study presents a detailed description and analysis.

Sources deposited in both private and public archives were explored. They included a script transcribed from a preserved audio recording accompanied by photographs and reviews in periodicals and newspapers. A scenic form of the production End of the Carnival staged at the Oldřich Stibor's Theatre Olomouc in 1963 was reconstructed on the basis of these sources and consequently, the analysis was accomplished in terms of five basic elements of stage productions.

Svoboda's productions were influenced by politics and ideology, because he was working from the 1950s to the 1980s when...; however, the analysis proved he managed to press his suggestions to his productions. The study compared Svoboda's productions with the works of his contemporaries and demonstrated that the main differences among them were based on principles of a stage design and work with props and their metaphorical changes.

The results confirmed that Svoboda succeeded in his fight against the political system and made his own independent directorial style different from that of his contemporaries.

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5. Daniel Továrňák

### **High-Performance Event Pattern Detection**

Event Pattern Detection (EPD) is used in a broad spectrum of applications, including algorithmic stock-trading, intelligent traffic systems and network monitoring as part of Every Event Processing System (EEPS). However, the performance, for example: throughput and latency, requirements for such systems are experiencing steady growth as the complexity and amount of events that need to be processed is on the increase.

In our work we are exploring high performance pattern detection over event streams. Rather than focus on the optimization of known algorithms running on sequential hardware, the utilization of highly parallel commercial-off-the-shelf Graphical Processing Units (GPUs) using NVidia CUDA is concentrated upon. Several parallel algorithms for pattern matching of strings known at the time are present. However, significant differences between these two problems are demonstrated.

Highly parallel pattern detection algorithms are proposed, a discussion about its design and used structures as well as pitfalls of such solution is conducted. Further, implementation-specific details and optimizations with regard to the NVidia CUDA architecture possibilities and limitations are explained. In particular, the reduction of CPU to GPU (and vice versa) memory transfers is debated.

For the evaluation of the solution suggested, several detailed throughput and latency benchmarks are performed with consideration given to a variety of factors, for example, pattern selectivity, pattern complexity and number of patterns. Based on the results, it is concluded that the usage of highly parallel GPU-based pattern detection may introduce extensive performance improvements to the event processing systems.

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6. (You might have this one from Alena's group already) Jiri Hiess

### **Atkis/Zabaged Improvements and Next European Spatial Data Infrastructures Needs**

The latest achievements in Saxonian-Czech cooperation led to better harmonisation of basic geodatasets maintained in accordance to particular national legal systems and technical standards. The geodatasets, ATKIS and ZABAGED, originally related to the scale 1 : 10,000, are useful both for scientific and practical purposes.

The development of the expiring concept of INSPIRE is paramount, as is a discussion on the future needs and requests of advanced European Spatial Data Infrastructure (SDI). The advanced concept "INSPIRE+" reflects the national and subnational SDIs already in existence, and adds new ideas and relations, and highlights new upcoming and underestimated tasks both for Geo-information science and technologies, and applied research. The long-time objectives are to develop European excellence, to improve the info-society infrastructural environment, to support the related services and business, and to intensify the international and cross-border cooperation.

The paper concludes with open questions and particular project and research outputs in order to contribute to the ongoing expert discussion.