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ÕPPEASUTUSE RUUMIPROGRAMMI PLANEERI-MISE JA RUUMIKASUTUSE PÕHIMÕTTED ORGANISATSIOONIKULTUURIS

Arvi Altmäe, professor, PhD

Summary

Solution of the Correlation of Order and Chaos in Planning a Room Program

The problem of chaos and order in the sense of architecture is a traditionally central and permanent problem. A human being creates order; chaos and elemental forces are the characteristics of nature, a wild and untouched environment. At the same time the notion of order has changed in the course of time. Taking into account post-modernistic values in planning a room program of a higher educational establishment is an important stage in the development of an organizational culture.

Thus proceeding from the TQM philosophy of quality assurance and student-centeredness resulting from it are also changing the volume of building development as for their location and logistics of functional connections. In the planning of higher educational establishment, in an architectural meaning, the management, which has traditionally dominated in the central position, is being replaced by student-centeredness. In the meaning of power, the management will be replaced by a lower hierarchy of management and withdraws from the central position to the outskirts. The central position for students is expressed by the location of bigger auditoriums, a student theatre, a café and other rooms necessary for rendering services to students in architecturally emphasized centres, where it is possible to secure the rooms with necessary functional connections.

Room-usage and Cultural Dimensions. Taking the theory of proxemics into room-usage is an important factor in the development of a group-centred culture of a higher educational establishment by establishing synergic working conditions for free creativity, innovation and enterprisingness.

VIA HANSEATICA EUROOPA TRANSPORDIVÕRGUSTIKUS

Enno Lend, professor, PhD

Kokkuvõte

Euroopa Liidu kõrgetasemelise töögrupi (Wider Europa for Transport/HLG-2) poolt kokkulepitud transpordiühenduste arengute osas puudutab Eestit ja Lätit eelkõige intermodaalne ühendus Balti sadamatest Moskvani: Tallinn – Peterburi – Moskva ja Ventspils – Riia – Moskva. Venemaa-suunaliste vedude arengus peaks Eesti pool nägema Tallinn – Peterburi – Moskva suunda laiemalt: lisaks põhikoridoridele ka nende doonorkoridore. Via Hanseatica (VH) arendamine on vajalik eelkõige majanduskoridorina, mis toetaks nii kauba- ja sõitjateveo ning sellega seotud infrastruktuuri arengut Eestist kuni Saksamaani. Seetõttu tuleb VH strateegias erinevalt ajaloolisest VH kontseptsioonist kavandada ida-lääne suunalise maanteetranspordi ja ka koosmodaalse (co-modality) transpordiühenduse arendamine. Via Hanseatica ei ole üle-euroopalise transpordivõrgustiku (Pan-European Network) iseseisev transpordikoridor, kuid ta haakub nii Via Baltica kui ka tulevase Rail Baltica koridoridega ja seetõttu on oluline VH kui majanduskoridori kontekst. Transpordi- ja logistikateenuste arendamine on globaalse tarneahela lahutamatu osa. Mistahes transpordikoridori arengu edukus oleneb selle koridori tagamaast (VH osas Venemaa ning Ida- ja Põhja-Euroopa), logistikakeskuste võrgustikust, transpordi koosmodaalsusest ning transpordi- ja logistikateenuste pakkujate innovatsioonist. Käesolevas artiklis analüüsitakse VH transpordikoridori Eestisse jäävat lõiku. Artikkel põhineb 2006. ja 2007. aastal käesoleva artikli autori poolt teostatud uuringul: Via Hanseatica transpordikoridori ja selle arenguvööndi eeluuring.

VH majanduskoridori kontekstis on kõige kiiremini arenenud veonduse ja laonduse sektor Tartumaal, stabiilne seis on Ida-Viru ja Valga maakonnas. Jõgevamaal on veondus-laondus-sektor pigem langeval trendil. Kindlasti on vajalik VH maantee infrastruktuuri arendamine ja nüüdisajastamine. Uuringu teoreetiline ülevaade ja ettevõtluse analüüs näitas, et majandus-tegevuse ja tööhõive näitajad ei parane üksnes VH infrastruktuuri arendamisega. Seda seost saab nimetada „nõrgalt positiivseks“. Põhjus on selles, et Eesti on küllalt väike ja olulistest veosuundades on olemas alternatiivsed võimalused. VH transpordivõrgu arendamine teeb kaupade ja sõitjate piirkonnast lahkumise ja sisenemise lihtsamaks. See tähendab ka seda, et transpordi infrastruktuuri arendusprojektide juurutamisel võivad majanduslikult pigem rikkamad ja arenenud piirkonnad kui mahajäänud piirkonnad – meetmete mõju on asukoha-spetsiifiline.

Võtmesõnad: Via Hanseatica, transpordikoridorid, logistika, ettevõtlus

Summary

Via Hanseatica in European Transport Network

The development of transport connections which were agreed upon by the high-level European Union work group (Wider Europe for Transport/HLG-2) concerns Estonia and Latvia as for inter-modal connection between the Baltic seaports and Moscow: Tallinn – St Petersburg – Moscow and Ventspils – Riga – Moscow. Transport in the Russian direction Tallinn – St Petersburg – Moscow should be seen in a wider perspective by the Estonian party: in addition to the main corridors the donor corridors as well. Via Hanseatica (VH) development is first and foremost necessary as an economic corridor, which would support both goods and passenger transport and the development of connected infrastructure from Estonia to Germany. Therefore, differently from the historic VH concept the

VH strategy should envisage the development of road transport as well as co-modality in the east-west direction. Although Via Hanseatica is not an independent transport corridor of the Pan-European Network, it harmonizes with both Via Baltica and future Rail Baltica corridors and therefore the context of VH as an economic corridor is essential. The development of transport and logistic services is an inseparable part of the global supply chain. The efficiency of any transport corridor depends on the background of this corridor (in case of VH, Russia and Eastern and Northern Europe), the network of logistic centres, co-modality of transport and innovation of the transport and logistic service providers. This article analyses the stretch of the VH transport corridor, which is located in Estonia. It is based on the research conducted by the author of this article in 2006–2007: preliminary study of Via Hanseatica and its development zone.

In the context of the VH economic corridor the fastest development is observed in the transport and warehousing sector in the Tartu county; in the Eastern Viru and Valga counties the situation is stable. In the Jõgeva county a downward trend can be observed in the transport and warehousing sector. It is essential to develop and update the VH road infrastructure. The theoretical survey of the research and business analysis revealed that the indicators of economic activity and employment cannot be improved only by developing the VH infrastructure. This connection can be called „vaguely positive“. This is because Estonia is quite small, and alternative ways exist in essential transport directions. The development of the VH transport network makes it easier for goods and passengers to enter and leave the region. It also indicates that in implementing the development projects of transport infrastructure the gain is bigger for economically more developed and richer regions than for backward regions – the effect of measures is location-specific.

Keywords: *Via Hanseatica, transport corridors, logistics, enterprise*

MATERJALISÄÄSTLIKUST EHITAMISEST

Jaan Rohusaar, professor, PhD

Summary

About Material Sparing Building

With building a big part of the state's gross domestic product is created. But unfortunately in Estonia a large share of building materials and structures are imported goods. Foreign trade deficit, from which not a small part form steel and specific building structures and parts, has been in recent years continuously several milliards EEK a quarter.

In the near future the fact that non-renewable natural resources are running low will start hindering the development of world economy. A reasonable use of non-renewable natural resources and energy carriers has become essential. Especially important is economical use of steel because there is no alternative to steel in terms of modern construction technology.

Industrial buildings, bigger trade enterprises and also simpler sports buildings are built as a rule as steelwork buildings where frameworks consist of posts and plane girder trusses supporting on them. In the current approach architectural, building technological and many other issues are left aside and we concentrate only on the material consumption study.

It has been shown in our works that the ratio of the span and height of a framework with a minimum material amount is $1/6.5 \dots 1/7.5$. Taking into account the principle of material concentration it is rational to use the frameworks' space 8...12 metres and battens of strut-framed purlins. For covering a cold as well as insulated roof it is suitable to use corrugated iron with a height 45 mm, supporting on sprengel beams. In this way economy of materials is achieved and also labour force expenses decrease.

We have created a calculation logarithm in our works, with the help of which it is possible to determine the expected material amount per unit of the area being covered kg/m^2 if the span length of the building, strength indexes of the material being used and expected load are known.

As supporting structure of bigger and especially unique buildings it is suitable to use plane as well as spatial steel frames. From the material consumption viewpoint pre-stressed spatial steel frames are especially useful.

TEHNOSIIRDE INTELLEKTUAALNE KAPITAL

Leo Valdma, professor, ScD

Summary

The Intellectual Capital of Technological Transfer

In this article are given the valid models of technological transfer in global inter-state economical competition.

The suitability of Estonian knowledge-based economical orientation is motivated by bringing the state nearer from peripheral production to the production with high surplus value.

The importance of the higher education of applied technical science as the intellectual capital of technological transfer and adaptation is pointed out.

HOONE AUTOMATISEERIMINE

Jaan Võrk, professor, PhD

Kokkuvõte

Kokkuvõtteks niipalju, et praegusel ajal, kus energiahinnad kasvavad kiiresti, on oluline küttekulude minimiseerimine. Kirjanduse [2] andmetel võimaldab korralikult projekteeritud ja häälestatud automaatjuhtimise süsteem anda kuni 20–30% kokkuhoidu kogu maja energia-tarbelt, sealhulgas valgustuselt kuni 75%. Suures osas piirdub praegune individuaalelamu automatiseerimise tase Eestis seadmete juhtimisega, praegu kättesaadavate tehniliste seadmete ja automaatikavahendite valik lubab aga käsitleda individuaalelamu kütte- ja ventilatsiooni-süsteemi kui protsesside tasandi juhtimisülesannet. Üheks oluliseks probleemiks kujuneb protsessimudelite koostamine, mis sõltuvad ka konkreetsest ehitusest. Vajalik oleks tüüp-lahendite (näidislahendite) koostamine näiteks IHC või X10 baasil.

Summary

Automation of the Building

The building automation system is described as a hierarchical system, consisting of two main levels: device control level and process control level. Suitable home automation systems for private houses, like X10, IHC, Hometronic are freely available in Estonia, but building automation is limited mainly with the device control level. As energy efficiency is fast becoming a serious part of real estate management, it is needed to give special attention to the optimal control of ventilation and heating system.

LOOVUS JA SELLE ÄRGITAMISE METOODIKAD

Tiit Tiidemann, professor, PhD

Summary

Creativity and Methods for developing it

There exist researches about the trends of developing main business ideas throw decades. According to this in the year 2000 west countries thought that success is guaranteed by a high quality of production but the Japanese declared that in the first place must be the design of totally new products, inventing actions. In the new century the innovation and creativity industry time starts. Training for it and creativity methods make teaching necessary. The most attractive method is The Theory of Inventive Problem Solving (TIPS or TRIZ). But TRIZ is a quite complicated net of tools. It takes time to educate oneself in TRIZ, and not every man is able to concentrate on it. At least one week basic and advanced training courses are necessary. The result may be the increase of inventive ability of every engineer.

RAHVASTIK JA VÄHEMUSRAHVUSED (ÕIGUSLIKUD JA POLIITILISED ASPEKTID)

Mõisteid ja mõtteid

Gabriel Hazak, professor, PhD

Summary

Population and Ethnic Minorities (Legal and Political Aspects)

The article deals with actual, topical and rather problematic concepts, such as policy, nation, citizenship, naturalization, ethnic minorities, integration and assimilation, nationalism, patriotism versus jingoism (chauvinism), internationalization and cosmopolitanism, sovereignty – self-reliance and independence, state's existence de facto and de jure, occupation and annexation, re-gaining independence of the Republic of Estonia and legal continuity. The article ends with conclusions and de lege ferenda proposals, made by the author. The author stresses that in the Estonian case integration as such does not mean the relinquishment of something important or conflation of nations by approximating ethnic groups but rather the clear expression of desire and will by an individual or group of individuals to integrate by affirming it with their deeds; state and society on the other hand support integrating parties by every means. The author finds in the concluding part that the society must get used to greater openness for discussions even in sensitive and complicated issues. Reticence and talking across at each other, sore and rigid reaction to critics will not benefit the settlement of problems.

There are several suggestions, made in the article, with regard to amending and improving the election law, the law of citizenship and cultural autonomy of ethnic minorities.

The presented material in the article is meant for students and all other parties who are also interested in the topic.

PIHUSTATUD BARJÄÄRPINNETE OMADUSED

Toomas Pihl, professor, PhD

Kokkuvõte

Barjäärpinded ja mitmesugused pindmaterjalid võimaldavad tõsta materjalide töötemperatuure, mootorite võimsust ning vähendada soojuskadusid. Antud uuringus on võrreldud termo-pihustatud ja lahustipõhiste keraamiliste materjalide struktuure ning omadusi. Uuritud on ka gaasileekpihustatud pinnete nakketugevuste sõltuvust pihustuskaugusest. Uudse pindamis-moodusena on uuritud lahustipõhiste keraamiliste materjalide pindamistehnoloogiat ning struktuure. Lisaks laboriuuringutele toimuvad ka ekspluatatsioonikatsetused.

Summary

The Properties of Different Barrier coatings

The following conclusions have been drawn for flame sprayed powder and solvent based ceramic coatings. The bond strength was investigated for flame sprayed coatings and it is an important property when using with thermal barrier coatings. The best results when using them are possible to achieve with plasma spraying. According to results it can be concluded that using thermal barrier coatings with engine parts it is possible to rise highly the efficiency of the engine work and lower the costs.

PAEKASUTUSE PAKILISED PÄEVAPOLIITILISED JA PERSPEKTIIVSED PROBLEEMID EESTIS

Rein Einasto, professor, PhD

Kokkuvõte

Käesolev kompilatiivne ülevaade paekasutuse pakilistest probleemidest mõneti oma kooli-keskses käsitluses ei saa olla kõikehõlmav. Pakilisemaist päevapoliitilistest peakasutuse küsimustest kerkivad esile paepealsete maastiku- ja kodukujunduse vajadused kohaliku pae taaskasutusele võtust ja uute karjäärade rajamise raskused killustikutootmise kasvu kindlustamiseks kohaliku elanikkonna mõistetava vastuseisu tõttu. Viimasega seotud küsimuste arutamiseks laiema avalikkuse osavõtul korraldati ka mais Tallinna Tehnikaülikoolis mäekonverents, kus TTK paeuringute laboris tehtud töö tulemusena esitati mitmeid ettepanekuid: ESMAJÄRJEKORRAS tuleb riiklik paeressurss kaevandada ehituste alla planeeritud aladelt, põhjavee püsitasemest kõrgemale jäävatest paelasundi osadest, paekarjäärade vanades osades kuhilatena vedelevad ja kaevandamata jäetud jääkvarud, paepõhjaliste kruusakarjäärade paljandunud paelasundist, planeeritava raudtee ümbersõidu rajatavast teesüvisest ja killustiku toormena kasutada ka lagunevate tehiskivihoonete varemeid lammutades. Suur võimalus on kasutada hoonete sisekujunduses mitmeid dekoratiivseid paekivisorte, mis pole ilmastikukindlad. Nende paetüüpide dekoratiivsus põhineb selliste omapäraste tunnuste olemasolul, nagu mikrokihilisus, katkestuspinnad, püstakud, ussikirjad (bioturbatsioon) ja värvilised lisandid, nagu glaukoniit, kukersiin ja rauaühendid. Paekasutuse olulisemaid valdkondi probleemsete seas on muinsuskaitse raamidesse kuuluv rajatiste kultuurikaitse. Paekasutuse võimaluste laiendamiseks ja loodushariduse süvendamiseks on vajalik maakondade kohalikesse muuseumidesse luua esinduslikud paekivi püsiekspositsioonid. Tallinn vajab rahvuslikku geoloogiamuuseumi, mille ainsaks sobivaks kohaks on Lasnamäe põhjamurd Maarjamäe paelava ääres taimestiku kaitseala kõrval ühises hoonekompleksis Riikliku Loodusmuuseumi ja Loodushariduskeskusega.

Summary

Urgent Tropical and Perspective Problems of Limestone Usage in Estonia

The present overview on immediate issues in limestone usage cannot be all-embracing. The most urgent mundane political concerns on limestone usage emerge from the expanded need for limestone as a road and home design material, resulting from enlarged landscape and home design. It is difficult, however, to open new pits, due to strong resistance from the local population. In order to find ways how to resolve this conflict a conference on quarrying was held in the Tallinn University of Technology in May where several suggestions, based on earlier research, were presented. The first one emphasised that the state limestone resource is to be quarried from the areas designed for future buildings; from the areas where limestone layers lie higher than is the permanent level of subsoil water; from residues that lie in disordered racks in old, neglected limestone pits; from limestone layers that have been bared in limestone-based gravel pits; from road drafts planned for railway detour, and by demolishing abandoned crumbling stone buildings. Huge opportunity is to use in the internal design of buildings various different decorative limestone varieties that are not weather proof. The decorativeness of these limestone varieties is based on such unique features as micro-bedding, discontinuities, stands, snake

patterns (bioturbation), and coloured additions, such as glauconite, cucersite, and iron compounds.

One of the most important but also problematic areas is cultural protection within the framework of national heritage protection. In order to expand limestone usage and to deepen natural education it is necessary to make impressive permanent limestone expositions to local museums in the counties; Tallinn as the capital is in need of a national geological museum. The only suitable place for this is Lasnamäe Northern Pit near Maarjamäe limestone clint next to plant protection area in the same building with the National Natural Museum and Centre of Natural Education.