

EPOTHILONES: NEW ACTIVE SUBSTANCE CONTRA CANCER

by Dieter Schinzer, Anja Limberg (p. 23)

The search for biologically active natural products for the development of new drugs has a long tradition. Mostly, these compounds were isolated from plants, but more recently, micro organisms, like bacteria and fungi – which exist in great variety on earth – play the major role. A very important example from plant sources – taxol[®] (registered by Bristol-Myers Squibb) was recently released for chemotherapy from Bristol-Myers Squibb in the US. Taxol[®] was isolated from the bark of the pacific yew tree.

Many compounds of microbial origin are already in use: e.g. as human and veterinary medical compounds (antibiotics), feeding additives for animals, insecticides, and herbicides for agricultural use. The search for further new secondary metabolites is therefore of general and of industrial interest. In contrast to primary metabolites, secondary metabolites are not essential for the growth of the organisms. The benefit of these compounds for the organism is protection against competitors and parasites; they have quite often antibiotic or fungicide activity. For that reason, epothilone, first isolated by German scientists from a strain of myxobacteria, was tested as a potential agent against fungi for agricultural use. When in 1995 its taxol-like mechanism was discovered, an international race for a synthetic entry to epothilone was started.

Three groups – including ours – finished independently almost at the same time within a few weeks difference their flexible strategies to the synthesis of epothilones. The first synthesis was published at the end of 1996. Therefore, epothilone can now serve as a structural lead, to develop optimized analogs. Epothilones have some advantages over taxol: higher water solubility, which might decrease infusion times, and even more important a much higher cytotoxic activity (factor 5 000) against multiple drug resistant (MDR) cell lines. Because of its simpler structure, derivatives can be synthesized more easily.

MUSICAL CREATIVITY AND THEIR ANALYSIS

by Tomi Mäkelä (p. 39)

Musical creativity can be studied using sketches which have been produced by an artist during the preparation of a work of art. Most musicological sketch studies concentrate on composition but performers as well may use individual notation that shows how their well-prepared interpretation or improvisation got its shape. The case of Igor Stravinsky is important due to his unique importance as a 20th-century musician and since his compositional sketches and preparatory versions are well-preserved in musicological archives like the Paul Sacher Foundation. Besides the specific problems of the Ragtime for 11 instruments (1918) a new typology for the classification of sketch material has been discussed in this essay.

IS THE EASTERN GERMAN ECONOMY DIFFERENT? A SURVEY TEN YEARS AFTER UNIFICATION

by Karl-Heinz Paqué (p. 49)

The paper surveys the state of the eastern German economy after 10 years of German unification. It depicts seven structural characteristics that make the eastern German economy different from the western one: (i) a strong transfer dependency, (ii) a moderately lower real income level, (iii) a substantially lower labour productivity, (iv) some major structural imbalances, (v) an infrastructure that has much improved, but not yet reached western levels, (vi) high unemployment, and (vii) flexible labour markets. The paper argues that, except for the flexibility of labour markets, all these characteristics have to be regarded as points of structural weakness rather than strength. Despite this fact, the eastern German economy is anything but the (permanently transfer-dependent) Mezzogiorno of Germany. Once a sufficient threshold level of investment will have taken place in the region, it may well be that a cumulative growth process will set in, comparable to that of Ireland in recent years. This is why the utmost political priority should be put on attracting new investment in a capital stock that produces tradeable goods and services, which can be sold in world markets.

DOES THE LIMBIC SYSTEM CONTROL THE FUNCTIONING OF OUR BRAINS?

Key concepts of the Research Program (Sonderforschungsbereich 426) on „Limbic structures and functions“ at the Otto-von-Guericke-University Magdeburg

by *Hans-Christian Pape, Bernhard Bogerts, Herbert Schwegler (p. 3)*

We know from every day experience that our reactivity to stimuli of the external world and our impulse to perform a certain type of activity are largely determined by what is called „internal states“ of the brain, such as attentiveness, motivation or emotion. How are these internal states defined, and what are their physiological and structural substrates? What is the neurobiological basis of pathological alteration of these states, and which, for instance, may lead to psychiatric disorders? What is memory, and how can emotional and rational, conscious and subconscious elements of memory be differentiated? Many of these questions are related to one system of the brain, termed the „Limbic System“. At the Otto-von-Guericke-University Magdeburg, a research program (Sonderforschungsbereich 426, funded by the German Research Association (Deutsche Forschungsgemeinschaft)) has been established, which is aimed at an improved understanding of structures, functions, and dysfunctions of the limbic system. Levels of analyses include molecular and cellular biology, integrative studies in functional neural networks, aspects of behavior and its pathological alterations in animal models and in humans, and clinical studies of neurological and psychiatric disorders.

THE EXPLORATION OF THE HUMAN BRAIN: A CHALLENGE FOR THE NEXT CENTURY

by *Henning Scheich (p. 55)*

The human brain is the most complex system in the known universe. Today it is at the verge to fathom itself. I shall indicate ways to scientifically approach the problems of subjectivity (mind-brain-problem) and of the generation of meaning, both aspects fundamentally distinct from technical systems of information processing. The view possible today with modern methods into the works of the human brain will not only generate new brain theories, but pave the way to long needed progress in neurology and psychiatry. It is likely that results from brain research in this century will lead to a new concept of mankind.

ADAPTRONICS AS A KEY TECHNOLOGY FOR INTELLIGENT LIGHTWEIGHT STRUCTURES

by *Holger Hanselka (p. 13)*

Adaptronics describes the field of technology in developing a new class of so-called **intelligent structures**. This concept starts out from the development of adaptive systems which, due to their self-regulating mechanisms, are able to self-adapt to different requirement conditions. This requires a system-optimized linking of sensors and actuators on the basis of new functional materials, such as piezoceramic fibers and patches with adaptive controllers. These new structural systems are then able to self-adjust to changing external conditions through self-optimization, thus preventing the occurrence of disturbing deformations, etc. As a result, it will also become possible to suppress vibrations right at the place at which they occur and, consequently, preclude structure-borne noise problems which are often linked with vibrations. In contrast to classical approaches employing special spring systems, hydraulic-pneumatic dampers, damping materials, etc., adaptive components form an integral part of the structure. They fulfill both load-bearing and actuator/sensor functions and, hence, are **multifunctional**. Therefore, adaptronics will become an essential prerequisite for further development of ultralight structures.

WHICH TYPES OF TV-SPOTS ARE BEST?

by *Uwe Ellinghaus, Bernd Erichson, Tanja Zweigle (p. 31)*

The article concerns the quantification of advertising quality. Due to the exploding expenditures for television advertising during the last years, dealing with qualitative aspects of advertising and resulting advertising efficiency becomes of increasing importance. This article tries to establish criteria for describing or measuring qualitative aspects of advertising and consequently to analyze, if certain types of TV-spots are more efficient than others. The effect of advertising is measured by aided recall. It is shown that on average TV-spots that either use a key visual or contain a story (i.e. a connected succession of happenings) are more efficient than others. The analysis is based on GfK-Digi*base, a digital data base for TV-spots, as well as GfK-Werbeindikator, an advertising tracking system, both of the German marketing research institute GfK, Nürnberg.