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Il serait évidemment stupide de vouloir nier les progrès de la science médicale ou de les ignorer. Mais il ne serait certainement pas moins déraisonnable de ne pas tenir compte des côtés négatifs de notre médecine. Des problèmes extrêmement difficiles et complexes qui nous paraissent insolubles il y a quelques années ont été résolus entretiens. En revanche, des tableaux nosographiques apparemment simples sont pratiquement inguérissables. Mais avant d'examiner à qui en est la faute, nous allons encore présenter un autre exemple qui éclaircit cette situation:

Il existe dans l'édifice des connaissances de notre médecine une brèche géante et surprenante. Cette brèche s'appelle: cause des maladies. Si nous demandons la cause des maux de tête qui généralement s'appellent maux de tête nerveux, si nous désirons connaître la cause d'une obésité, d'une constipation chronique, d'un ulcère ou d'un asthme bronchitique, nous sommes obligés de dire, si nous sommes honnêtes et un savant devrait toujours l'être, que nous sommes incapables de répondre.

Il est d'une certitude absolue que nous allons mourir. La mort est une nécessité autant que la naissance. La vie sur ce monde est basée sur le principe de la naissance et de la mort. Cela est compréhensible vue l'évolution. Car l'évolution n'est possible que par le fait de naître et de mourir. L'évolution repose sur le changement subit du matériel génétique, changement uniquement possible par une nouvelle naissance. C'est pourquoi ce principe est constant dans la nature. L'évolution est l'événement subordonné auquel tout ce qui est vivant sert. Mais, d'autre part, nous ne devons pas oublier que la tâche de l'homme en ce monde consiste d'abord à réaliser sa vie de la meilleure façon possible.

La vie a été donnée à l'homme comme une véritable tâche. Dans ce cas, il existe aussi la possibilité de se conduire soi-même et sa vie à l'échec. Il y a échec lorsque l'homme ne vit pas vraiment. Sous «vraiment vivre», j'entends utiliser au mieux toutes les capacités et possibilités qui reposent dans l'homme. L'expression «au mieux» est à souligner car un homme est rarement capable de porter à l'épanouissement tout le lot de ses capacités. Chacun doit faire un choix. Mais la véritable vie est un procédé dynamique. Elle exige, jusqu'à notre mort, la réalisation ininterrompue de nos possibilités. Le fait de ne pas s'épanouir déclenche vraisemblablement la possibilité de tomber malade, possibilité qui sommeille dans chacun de nous.

L'homme a besoin de la communauté il a besoin d'un groupe d'hommes, grand ou petit et auquel il se sent rattaché, dans lequel il se sent estimé, dans lequel il éprouve un certain degré de sécurité et où il peut jouer un certain rôle. En d'autres mots, il a besoin d'amour. L'enfant peut, ainsi que nous en avons maintenant la certitude, mourir du manque d'amour. L'adulte n'est plus si dépendant de l'amour mais il en a quand même une impérieuse nécessité. Nous savons aussi que les Juifs déportés mouraient dans une proportion considérable déjà pendant le transport au camp de concentration et surtout pendant les premiers jours de leur détention. Ils ne pouvaient pas supporter ce fardeau psychique qui constituait pour eux une sentence de mort. Tels sont quelques facteurs que nous ne pouvons pas contrôler avec la méthode des sciences naturelles.

Il n'y a pas d'être vivant qui soit uniquement physique et chaque psychique est uni au physique dans ce monde. Entre les deux, il n'existe pas de rattachement causal mais les deux sont complémentaires. Tout dans l'homme contient ces deux côtés, le physique et le psychique. La difficulté pour nous consiste dans le fait que nous devons constamment séparer l'un et l'autre qui pourtant son inséparablement liés. C'est pourquoi, la médecine des sciences naturelles et celle de la psychologie réunies peuvent seules nous faire reconnaître l'ensemble.

Le pathologiste Büchner a dit, un jour, que la médecine doit rester enchaînée aux rocs de la science naturelle. Si ces paroles signifient que la façon de penser et la méthode des sciences

naturelles auront toujours leur place dans la médecine, on n'a rien à y objecter. En revanche, si on désigne une seule façon de réfléchir comme c'est souvent le cas aujourd'hui, on est bien obligé de parler d'une chaîne, mais dans un sens différent.

Butenandt, un grand naturaliste de notre temps, dit verbalement: «Si nous voulons comprendre toute la réalité, les apparitions de la vie dans l'ensemble, nous devons absolument avancer sur le chemin de l'intégration afin que de nombreux résultats isolés puissent être obtenus grâce aux diverses méthodes des sciences naturelles et spirituelles. Chaque discipline scientifique apporte sa contribution à l'image que nous avons de la vie. Aucune n'est indispensable mais toutes ensemble sont engagées sur cette voie.»

Fritz Haller, Soleure

### Au sujet des caractéristiques des points indiqués dans les systèmes géométriques réguliers

(Pages 425-438)

Le dessin de cette tâche est d'apprendre à mieux connaître les caractéristiques et les relations de points marqués dans des systèmes géométriques réguliers et de démontrer également que de tels systèmes sont conformes à la loi, démonstration obtenue en les rendant visibles sous forme de modèles. Cela s'effectue en admettant que de ces expériences découlent des règles et des modèles qui servent de base ou d'appareil de travail à la planification de structures de plus de trois dimensions.

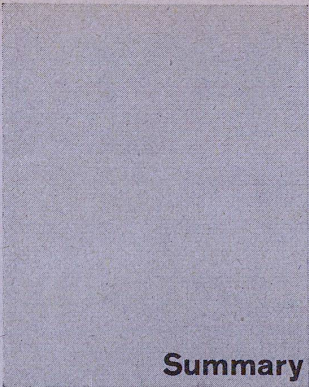
Le premier rapport de travail a comme tâche de retenir des observations et de trouver le point de départ de considérations concrètes. Ce document revêt le caractère de feuilles de travail qui servent de matériel d'information pour un exposé ultérieur. Sur ces feuilles, les travaux sont réunis selon un ordre chronologique. Des hypothèses, des analogies ou des résultats ont été placés aux endroits où ils ont été décelés ou identifiés.

Si on devait parvenir à définir exactement les caractéristiques et les relations réciproques de ces points marqués, on pourrait peut-être s'imaginer des systèmes géométriques spatiaux comme étant un réseau de points avec certaines caractéristiques et relations. Il n'existerait plus d'espaces, de surfaces et de lignes. Ils seraient tous le résultat de caractéristiques et de relations des points marqués.

Les champs de force choisis de points indiqués produisent un réseau d'ordres géométriques similaires à des atomes se formant sur certaines structures géométriques grâce aux caractéristiques de leurs champs de force. Considérations finales du 1er rapport de travail:

Chaque système a des caractéristiques typiques concernant sa géométrie, les mouvements du montage et le flux des forces. Il doit être possible d'ordonner des systèmes selon ces caractères distinctifs et peut-être il sera possible de les classer d'après des origines, des familles et des membres. Grâce à cette distinction, il serait éventuellement possible de déterminer des systèmes, comme en botanique où des plantes sont déterminées d'après une classification. Une fois que l'on connaît les caractéristiques des origines, des familles et de leurs membres, il devrait être possible de profiter de ces connaissances lors de la construction de maquettes de travail et ensuite aussi dans la planification de systèmes de construction.

Il serait évidemment prématuré d'établir l'inventaire des résultats découlant de ce premier rapport de travail. Le résultat principal des observations faites est que l'on peut vraisemblablement inventer des maquettes de travail pour la planification de systèmes. Il y a encore beaucoup de questions qui attendent, dans ce domaine, une réponse et de nombreux résultats nécessitent encore une vérification avant de pouvoir les accepter définitivement.



## Summary

Franz Füeg, Solothurn

### Integral Construction Research

(Pages 407-411)

Industrial production and human criteria

Integral research requires close cooperation among several disciplines and demands quite another approach from that needed in research which is carried out within the confines of one single discipline. It presupposes a methodology of research and planning, which looks at the single problem within the context of the whole and not only, as at the present time, concentrates on the single problem with the vague hope that one day it may find a place somewhere within the whole system.

Present-day construction research is characterized, especially in the development of building materials and construction elements, by intensive research activity which for the most part or even completely lacks coordination of endeavours and research methods and exchanges of information on findings. In many fields there is still a complete lack of international contacts. In this connection, there is no explanation why - as is still assumed at the present time - most of the findings, in Finland, let us say, ought to differ from those in Italy.

The results of every research project are dependent on the questions asked, the organization of the investigation and the make-up of the team. Integral research cannot be carried on by one discipline alone; it calls for teams which are composed of different disciplines, the activities of which are not sharply differentiated one from another but overlap in ways that are very difficult to define precisely.

Construction research is an interdisciplinary field of research like no other: planning people, builders, physicists, chemists, construction, electrical and mechanical engineers, mathematicians, cybernetics men, biologists, physiologists, climatologists, sociologists, psychologists, market researchers, economic geographers, legal men, politicians, manufacturers, contractors: The list is by no means finished!

Each of those involved differs in his working methods from those in other disciplines and speaks a different language. And there is as little agreement in the subject to be investigated as there is in language. A creation of such a consensus is a pre-requisite of a system of integral construction research: a laborious enterprise!

The above list of professions amounts to a sevenfold division of research according to disciplines (ill. 7):

Planning methods  
Construction technology and production  
Economy  
Building codes and politics  
Medicine and health  
Sociology  
Social ethics

However, even the extension of construction research to cover such a large number of disciplines is not sufficient. In reality, "building" is subject to influences proceeding from all spheres of thought, investigation and action (ill. 8).

The working method of each discipline differs from that of any of the other disciplines, depending on the field of study and the given approach to the field of study. However, it is not this difference alone, but rather the different points of view and the different idioms, that make communication so difficult and make it so hard for agreement to be reached among the various branches of research, so difficult that a kind of auxiliary research discipline is needed to assist in interdisciplinary understanding, what could be called a "discipline of disciplines".

As for the architects, the interdisciplinary dialogue can lead to a tightening up of their language. If they wish to be understood by men from other fields, they have to recognize the validity of a general linguistic, terminological code, and they must no longer, like so many, deliberately promote a lack of understanding by employing a pretentious fanciful jargon that is calculated to excite the interest of lay readers and listeners.

Integral construction research is system research: it investigates and



furnishes orientation on properties of individual phenomena in the dependence of entire systems, in a complex of dependences, represented by a building, a housing estate, a city, a region and their planning, production, modification and use.

Present-day construction research is mainly restricted to the investigation of individual parts and does not concern itself with subsidiary consequences. For this reason, in view of the technological resources available and the economic, medical and social consequences, it is inadequate, so that Graham Greene has the architect Querry say: "The new houses are bad for love."

The object of construction research is subject to continuous and – at the present time – rapid transformation; this transformation is identical with the transformation of the social structure, political tendencies and with the developments in technology and in the economic system. The growth and application of the findings of construction research are contributing to the general development. The development which it furthers itself is like that outside its own sphere of development, in that it too is an object of construction research. Otherwise the findings of the research would quickly become dated and would simply become pursued for its own sake.

Therefore the object of integral construction research will be also the transformations and developmental trends in the total social, political, technological and economic processes of reorientation.

Therefore most construction research will not yield definitive and generally valid findings, but results that are dependent on the level of technology, the state of society and its developmental tendencies and on the situation in the fields of politics and the economy, and thus changeable like all these factors.

The rapid transformation to which the object of construction is subjected has as its pre-requisite the condition that research make known its findings and come to grips with the knowledge accumulated in other fields. In addition, an internationally effective information technique is necessary, something which, like integral construction research, has been lacking up to the present time.

Every research project is limited by the time situation, the resources available, the methods employed and the place of its application. The limits are fixed at the point where research can be carried on exclusively by means of scientific methods; it is all the more limited where technology and life constitute a joint research object. Research also comes up against limitations where our knowledge has become "unnecessarily distinct to the point of obscurity" and the mind is not able to pursue new lines of inquiry.

And another boundary is fixed by the playful desire of man one day, without heeding the consequences, to realize the unprecedented and so, stressing the human aspect, to transform the world abruptly.

Research has different means available from those open to artists; their tools of knowledge and the process of realization open to them are quite different. Indifference is just as negative in science as in art, if science seeks to contain unalterable reality within norms and then proposes these norms as unalterable. The task of research is to ascertain the normative. Construction research would miss its point if it regarded life and development as other than alterable. It probably fulfils its task best if it can set up laws of alterability.

The idea of the guiding concept presupposes a knowledge of actual reality. Only from reality itself does a guiding concept derive meaning, so that it is not replaced by a dozen others tomorrow.

On the basis of this knowledge of the alterability of things, there is now being made an attempt to leave open what is unknown, so as to give the principle of alterability every chance to operate. And thus "flexibility" becomes a further guiding concept. The alterability of constructive and town-planning systems ought to make possible adaptation to new findings, relationships, claims and conceptions. Every mobile or flexible system is,

however, unthinkable without fixed points of reference, on which it can be "hung" and by which only it can be determined where, how and to what extent it is, must be and can be flexible and not flexible.

It is my expectation that with the aid of scientific research we can acquire that knowledge which will permit us to design an adequate picture, a theory of the reality of man, of society, of the architectural environment and its alterations.

The present development transcends the grasp of those who feel responsible. Many who could assume responsibility owing to their position and their power, would have to be won over to the ideal of assuming responsibility; politicians, business men, scientists.

Town-planning and architecture have the best chance when planning sees its problems in relation to the whole. On the basis of their special tasks, planners and architects, in contrast to other professions, do have the tendency to see things in relation to the whole.

We do not know what the "whole" is. We know only that it is something quite different from what is recognized and supposed to be the case according to present-day knowledge.

Jacques Henry, Zurich

### Construction research as a constituent discipline within general systems research

(Page 412)

Research is carried out in various branches of science, such as physics, biology, sociology, engineering, in an endeavour to discover laws which regulate the erection of parts into total systems.

From the epistemological and theoretical scientific point of view, we have to do with an empirically discernible system when, for the totality to be investigated, the conditions of partition, constitution, extension, organization and objectification are satisfied. To put it somewhat more thoroughly – though without considering certain restrictions – we have a total or holistic system, when its empirically discernible, partial components can be identified as belonging to it (condition of partition), when these components constitute not merely a collection of things (sum) but a holistic association of things discernible empirically as a totality (condition of constitution), when the individual components themselves are systems (sub-systems) and the totality to be investigated – again as a component – belongs to an empirically discernible system (super-system) superordinated to it (condition of extension), when certain specific empirically discernible norms can be ascribed to this totality and its sub- and super-systems (condition of organization), and when this totality can be represented or objectified in a quite specific spatiotemporal order, which is designated a theoretical field of representation; this logical field can be Euclidean, non-Euclidean, in accordance with probability theory, topological, etc. (condition of objectification). The result of all this is that "sub-systems" can belong to systems or "systems" to super-systems, with its being possible for a system to be simultaneously a component of several systems, sub- or super-systems, which naturally greatly complicates research into totalities.

The human being as 'member of a family', 'neighbour', 'worker', 'citizen', 'soldier' belongs simultaneously to the most various sociological systems; the interrelations obtaining between this individual and these systems are what make him into the concrete member of the extraordinarily complex sociological association that we call society, the community.

The man-made work of architecture represents another system, whose obvious role is to house man, his institutions and activities, a system, that is to say, that also and simultaneously belongs to the most various,

most complex associations of systems. Construction research that is concerned exclusively with building problems in the narrow sense is not in a position to create that context that would even approximately do justice to the systems "man" and "community". Presumably such construction research would be sketchy in that it would not even be able to define correctly its proper task – let alone its methods and strategies.

We can have an obviously effective and useful construction research only if its object of investigation, the structure, which can be a house or a city, is regarded as a sub-system within the holistic association of a total system. This requires that construction research be pursued as systems research.

Because no general systems research theory exists as yet which could furnish objective orientation on the limitations and possibilities of construction research, and that at once and exhaustively, construction research can, for the time being, only proceed on a pragmatic basis on the principle of greatest urgency, with the tasks regarded as pressing being tackled as optimally as possible.

We believe that at the present time every kind of applied research applies and must apply, to some extent, this pragmatic, optimizing approach.

For all these reasons, we regard the establishment of institutes for theoretical systems research as at the present time far more urgent and important than the creation of construction research institutes, seeing that integral construction research presupposes a solidly grounded, but still lacking general systems research theory.

Wilhelm Vogt, Brugg

### The contribution of sociology to construction and housing project planning

(Pages 418–419)

The questions architects and planners are asking sociologists are becoming ever more frequent and ever more urgent.

Often the sociologists cannot or will not give any answer, and, where an attempt is made to work out an answer, despite the best will on both sides, misunderstandings frequently arise.

As for the grounds for the questions which architects put to sociologists, we can learn something if we stop and consider what questions architects ask sociologists or if we note the areas in which precisely no questions at all are asked.

In questions involving the detached house or industrial constructions, it seems to me, architects do not consult sociologists, but they do consult them on problems connected with apartment houses and housing estates. In the case of detached house or industrial building, in contrast to apartment houses and housing estates, the owner is clearly identified and, in general, is identical with the final user. In the case of the apartment house, the owner is known, to be sure, but he may not be identical with the user, so that owner and architect can, to begin with, in programming, proceed only from their conceptions of the wishes and requirements of future users.

For some time now architects have been uneasy because they realize that their own conceptions of the wishes and requirements of users need not necessarily coincide with reality. For this reason, they turn to the sociologists in order to discover what the real wishes and requirements are.

The same thing applies to the planning of apartment house projects.

However, in the case of housing estate planning, complex planning, there emerges another problem: The owner is in this case not clearly defined.

For a long time – and in many places today as well – the idea was exclusively to leave it to the planner himself to procure the legal bases for the execution of his plans, but now in many quarters people are beginning to realize that the "realizing of plans" means influencing social transformations in a given direction.

Important reasons for the mounting need for sociological consultation are to be sought in the fact that certain components of the traditional role of the owner, namely the determination of the building program on the basis of the wishes and requirements of the users and the possibility of directing the execution of a plan are no longer operative in the traditional form.

Sociologists are in general very reserved about answering questions from architects and town-planners.

One reason for this is quite obvious: Sociology has simply not yet concerned itself with many of the problems confronting the planner; not enough work has been done yet in some sectors. A complete sociology of the ordered spatial complex does not exist yet.

However, not only does such a special sociology not yet exist, but in the subjects handled traditionally by the science of sociology hardly any attention is devoted to the spatial dimension.

The statements of the science of sociology have to be formulated with a high degree of precision; very little is to be attained by means of generalities.

Planners make very severe demands on sociologists, and there are no immediate answers to their questions, and for a long time to come a great deal of work will have to be devoted to answering them.

There are questions which, however, we may not legitimately ask the sociologist. These include, mainly, questions as to a normative determination of the guiding ideas employed in planning. It is just as wrong for sociologists to design guiding concepts for human welfare as for architects to do so.

There is in principle no justification for any given professional guild, whether architects, planners, sociologists or other "experts", to prescribe to the general population how they have to organize their living space and their way of life.

Of the many reasons responsible for difficulties in understanding between architects and planners on the one hand and sociologists on the other, I should like to mention only the following:

Differences in language and in concepts, Differences in means of expression, Problems of close cooperation.

The structure of the language and of the mode of thought of architects and of sociologists is fundamentally different.

Sociologists are trained in a science which in its evaluations is oriented toward the natural sciences, e.g., as regards the rules for establishing concepts and as regards objectivity and verification. The conceptual structure of the sociologist's science is essentially analytical and hierarchically ordered.

The architect's approach is synthetic; his work counts only if it constitutes a closed entity. His concepts designate not abstractions, but realities.

These differences can be illustrated by means of an example: "The architect thinks of the concept of the public as something like the Roman Forum. The sociologist, on the other hand, associates with the concept of the public economic and political circumstances, i.e., 'structures that are not sensuously perceptible.'"

The differences in the means of expression of the two disciplines are enormous.

The sociologist knows only the verbal statement, at the most the mathematical statement, in any case only the abstract statement, while the architect expresses himself in the drawing, in the plan and finally in the building.

What has been said above will probably make it sufficiently clear that sociology can furnish a meaningful contribution to the planning of buildings and housing complexes only if the sociologists work together with planning people and architects in an institutional framework of mutual aid and if each can understand, if not speak, the other's language. This implies, however, that the architect is no longer just an architect, but is becoming a bit of a sociologist. The same thing applies, in the other direction, to the sociologist. This means, in other words, that the man who fits



into an interdisciplinary team in the way called for here moves away, to some extent, from the specific values of his own professional discipline.

This means that his prestige can decline in the eyes of his professional colleagues, because his work is no longer "purely sociological" or "purely architectural". This drop in prestige is, as it were, the price that has to be paid for admittance to an interdisciplinary team, a price that not everyone is willing or in a position to pay.

Arthur Jores, Hamburg

#### Limits of medical science

(Pages 420-424)

The picture given us by modern medical science is very ambiguous. This observation may come as a great surprise, since what the public is accustomed to hearing about medicine is generally highly positive. It would also be foolish to deny the reality of its achievements or to ignore them. However, it may be just as foolish to overlook the negative aspects of medical science at the present time.

Extremely difficult and complicated problems, regarded as insoluble up until a few years ago, have been resolved, and relatively simple appearing pathological pictures are practically without remedy.

There exists in the training of our modern medical men a great and astonishing gap. This gap is the cause of illness. If we inquire into the causes of some of the commonest ailments, such as the headache, which we call nervous headache, obesity, underweight, chronic constipation, high blood pressure, an ulcer or asthma bronchiale, we have to confess that we simply do not know the answer - if we are honest, and a man of science should always be honest.

The fact that we shall die is an absolute certainty. Death is a necessity, just as is birth. Life in this world is based on the principle of being born and dying. This becomes comprehensible from the standpoint of evolution, for evolution is possible only through the agency of births and deaths. Evolution, after all, is based on the abrupt mutation of the genetic material, and this is possible only if there are constant new births. Consequently, this principle is merely the continuously sustaining principle of nature. Evolution is the superordinated process subserved by all living things. However, we must not overlook the fact that the task of man in this world is to make the best he can of his life. Life, then, is presented to man as a task in the true sense of the word. It is the plenitude of all his innate capacities, which he is called upon to develop. Everyone must in some way make a choice. However, authentic real life is a dynamic process and demands, until the day we die, that we realize all our potentialities. Not to unfold all our capacities stimulates the possibilities, slumbering within all of us, of illness.

Man needs the community, he needs a group of fellow human beings, no matter how small it may be, to which he can inwardly belong, in which his existence is recognized, in which to some extent he can experience a feeling of security and in which he can play a certain role. In other words, he needs love. The human child, as we now know, can actually die for lack of love. The adult is no longer so dependent on love, but he remains dependent on it. We know that the transported Jews on the way to the concentration camps and especially during the first days after arrival there had a particularly high death rate. They were not able to survive this experience. This severe trauma was a death sentence for them too. All these are factors which we do not grasp by means of exact scientific methods.

There is nothing living that is merely corporeal and nothing mental that is not bound up with the bodily realm in this world. Between the two there is no causal relationship, but both are polarities, two poles complementing each other. Everything in the nature of man has two sides, a bodily and a

mental side. Our difficulty is that we have to separate the two, which are always bound up with each other, if we wish to explore them more closely, because the methodical approach in the two cases is widely different. Thus only medical science and psychology working together can give us a total picture. The pathologist Büchner once said that medicine has to remain shackled to the rock of natural science. There can be no real objection to such an assertion. However, as is still frequently the case, if this is the only approach, we really do have to speak of shackles, albeit in a different sense from that intended above.

The investigator Butenandt says the following: "If we wish to comprehend all of reality, the appearances of life as a whole, the only thing left for us is to proceed on the basis of integrating numerous individual findings, which can be attained by means of the most varied methods of the natural sciences and philosophy. Every scientific discipline makes its own contribution to the total picture we have of life. Not one of them is dispensable, and all together are constantly on the quest for the truth."

Fritz Haller, Solothurn

#### On the properties of designated points in regular geometric systems

(Pages 425-438)

The aim of this project is to obtain more detailed knowledge of the properties and interrelationships of designated points in regular geometric systems, with a view to tracing out norms in such systems and making these visible in the shape of models. This is done in the opinion that there result from such a procedure rules or models which can serve as a working basis or as instruments for the planning of multidimensional structures.

The aim of this first project report is to record observations and to define the point of departure for a more concrete approach. It appears in the form of work sheets, which could furnish material for a subsequent definitive summary. The different stages of the project are assembled chronologically on these sheets. Hypotheses, analogies or results are entered at the places where they have been set up or recognized.

If it should prove possible to give exact definition to the properties and reciprocal relationships of these designated points, it could be possible to imagine, perhaps, spatial geometric systems as a network of points with specific properties and relationships. There would no longer be any volumes, surfaces and lines. These would come about as the results of the properties and the relationships of the designated points. Just as atoms group themselves, under certain conditions, into specific geometric structures on the basis of the properties of their fields of force, the selected fields of force of designated points generate a network of geometric arrangements.

Concluding remarks on the 1st project report

Every system possesses characteristic properties in respect of its geometry, movements occurring during assembly and stress distribution. It has to be possible to arrange systems in accordance with these features and perhaps have them classified into phyla, families and members. On the basis of this grouping, it might be possible to determine systems as, in the science of botany, plants are designated on the basis of a system of classification. Once we know the properties of the phyla, families and members, it should be possible to make practical use of these findings in the construction of working models and, later on, also in the working out of construction systems.

It is too early to sum up any results after this first stage of the project. The main finding yielded by the investigations is that in all probability working models can be invented for the planning of systems.

Many questions remain open, and many findings require checking before they can be accepted.