NOV-71

Cybernetic Notes on

THE EFFECTIVE ORGANIZATION OF THE STATE

with particular reference to industrial control

Stafford Beer
Santiago
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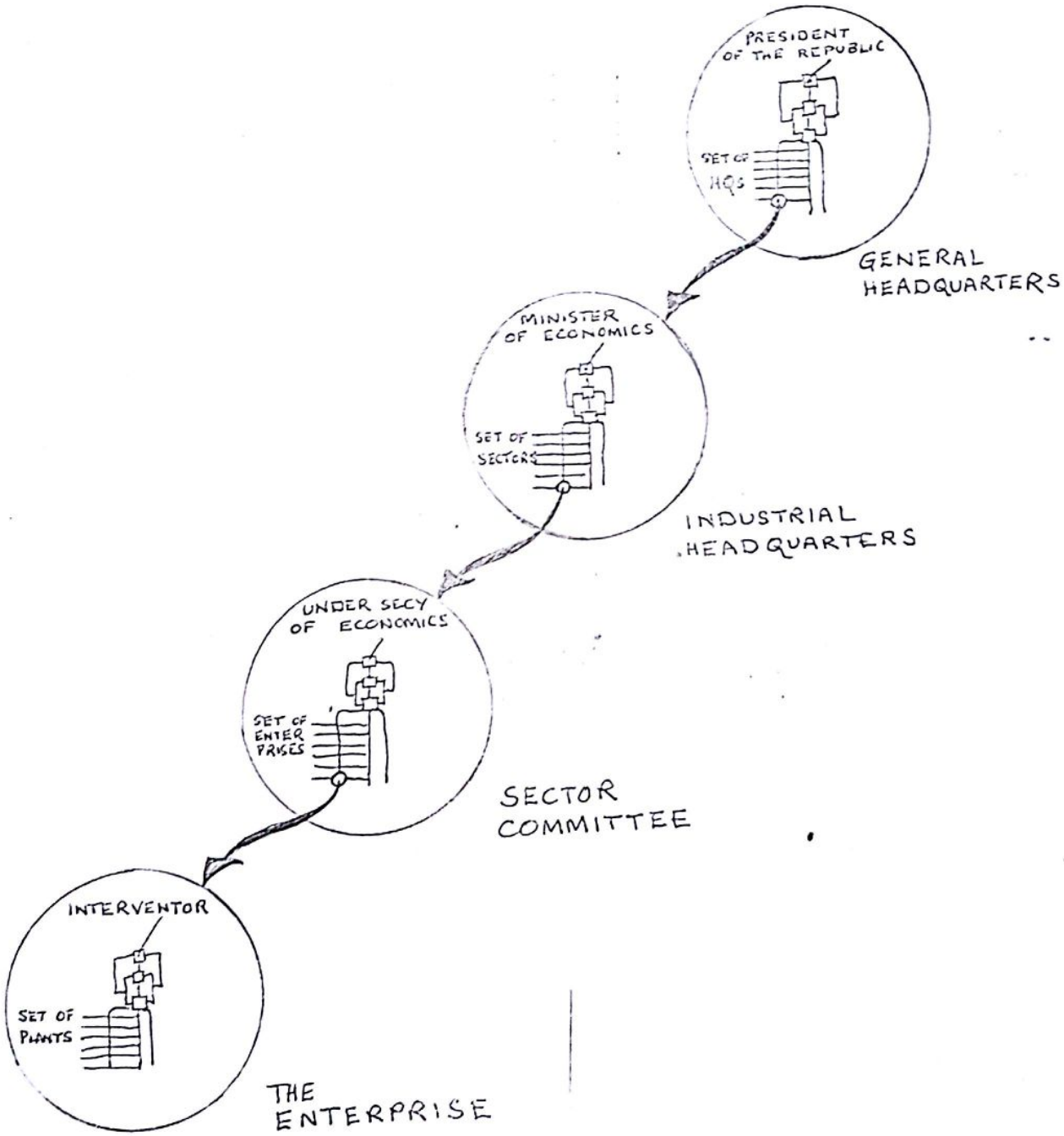
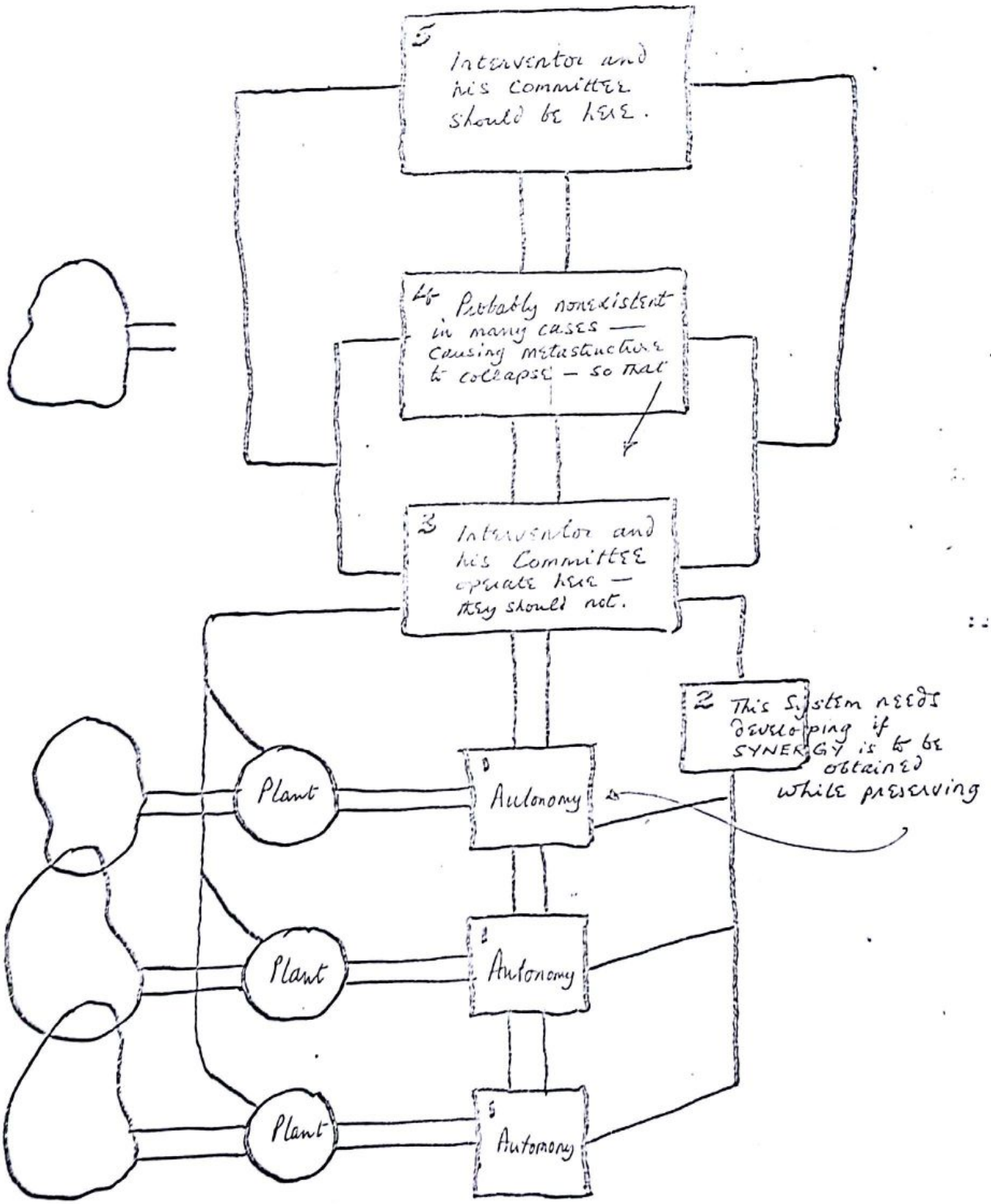
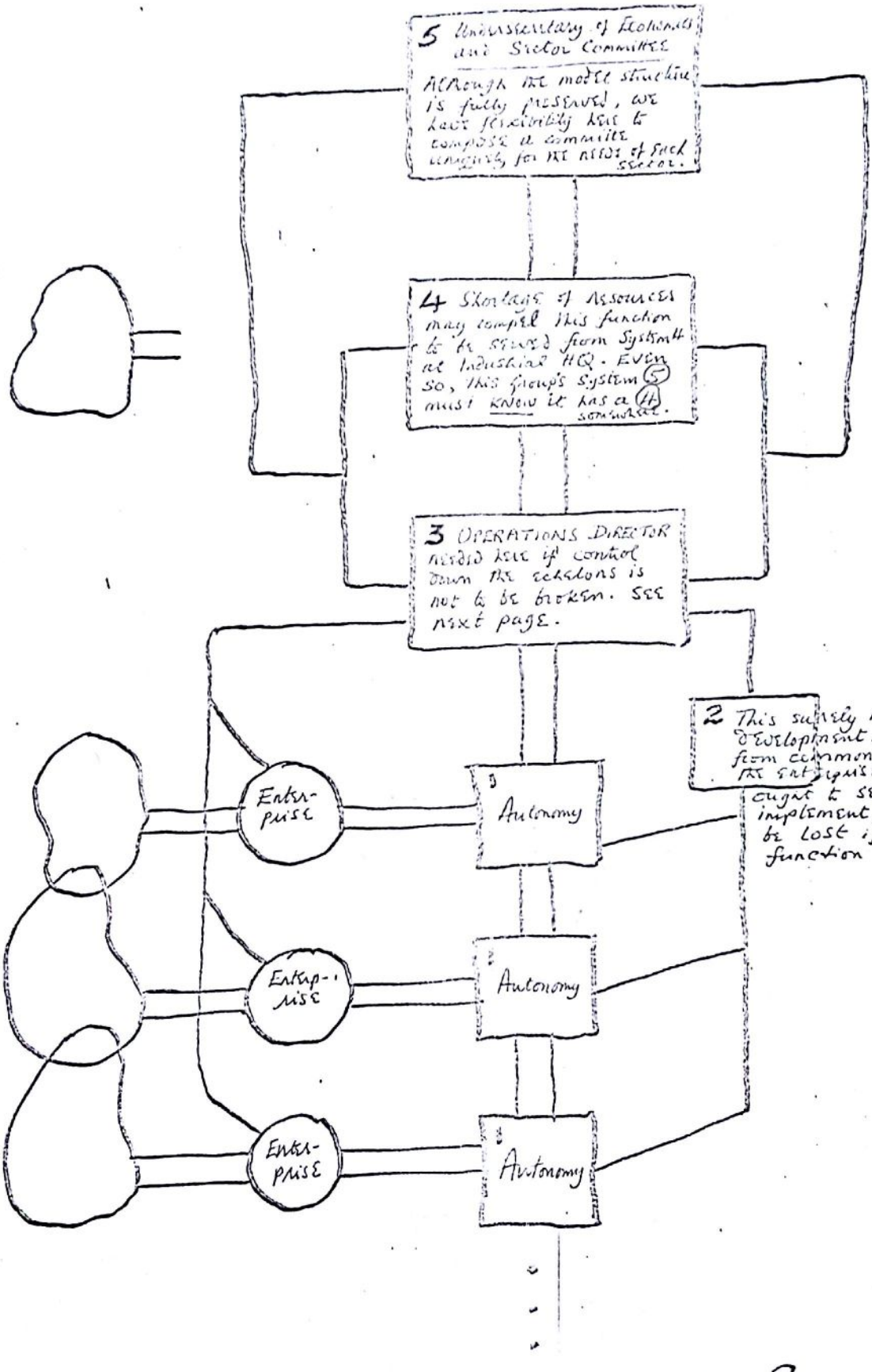
These notes assume a full understanding of the structure and operation of the hierarchic cybernetic model of a VIABLE SYSTEM.

RECURSIVE MODEL OF CONTROL STRUCTURE





Notes on the Organization of the Enterprise



Notes on the Organization of the Sector

As I study the systemic dynamics of the total recursive model in the light of the realities of 1971, I see System Three within the Sector as critically important.

Consider:

- Sector Committees were first conceived to support young and inexperienced political appointees.
- Their function in this model is certainly System Five.
- Many people (perhaps some of them) will see Sector Commitees as coordinating, planning, administering and not as controlling.
- Then if 5/4 policies are channelled downward simply by an "Executive Secretary" performing the 3 function, the link is fairly weak.

Secondly:

- The need to find 250 interventors, to groom 250 successors to interventors (as well as to make a host of other new appointments) must stress the country's resources of able leadership.
- Variety amplifiers are needed to deal with this.
- The Sector System Three is structurally capable of amplifying by a factor of about 16 (number of enterprises divided by number of sectors)
- In fact, we said, the link is weak.

Thus the conclusion I draw from the model is that it would pay to give priority to the appointment of tough, able managers as Sector Operations Directors.

THE CONCEPT OF AN INDUSTRIAL HEADQUARTERS

The next echelon in the recursive model involves the creation of an Industrial HQ.

Obviously this has a lot to do with CORFO. Is it owned by CORFO? Is it in CORFO? is it linked to CORFO via the Ministry?

I Offer this tentative suggestion:

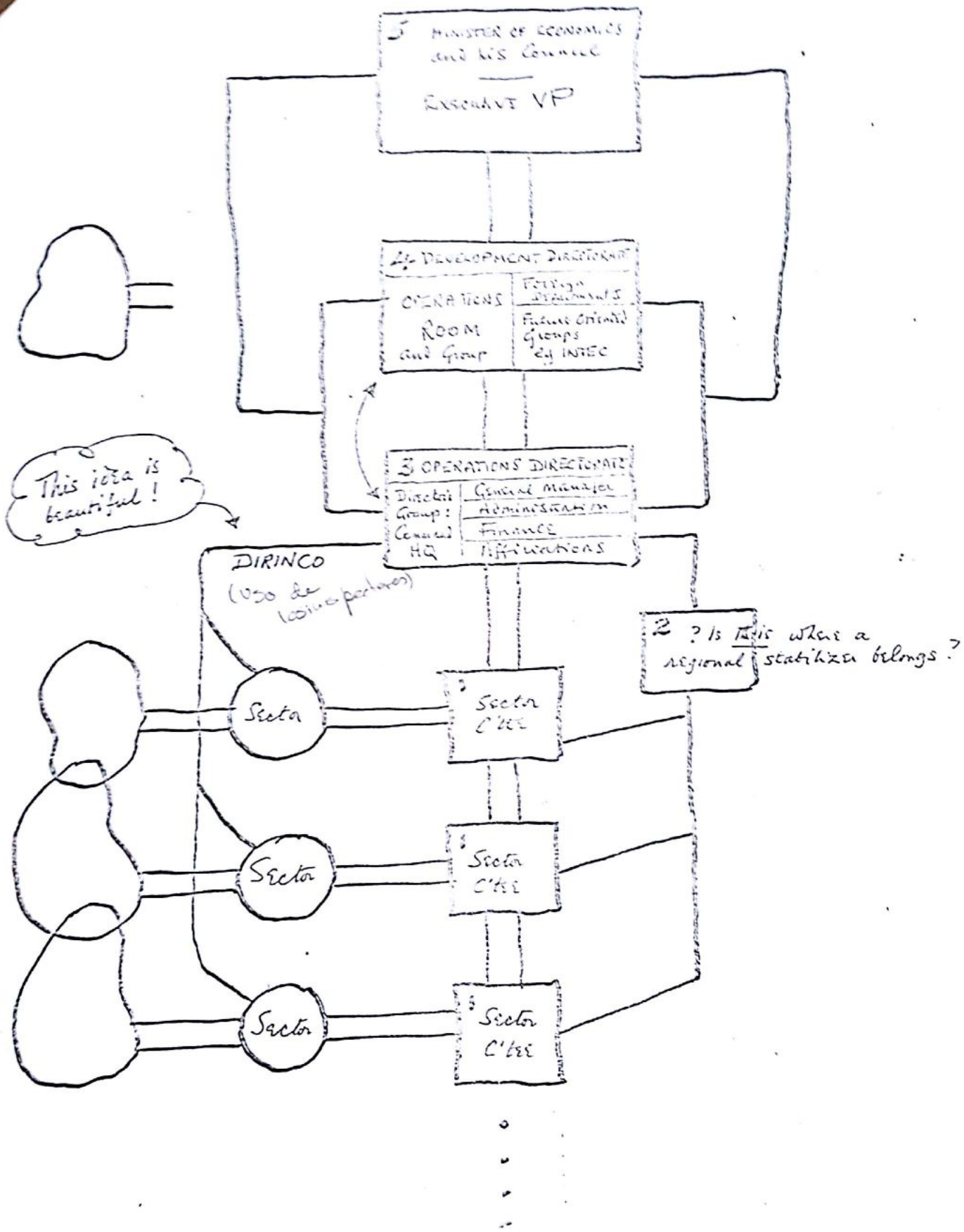
- The Industrial HQ is CORFO

In order to see whether this makes sense, I proceed to map the existing CORFO onto the viable system model, and then ask:

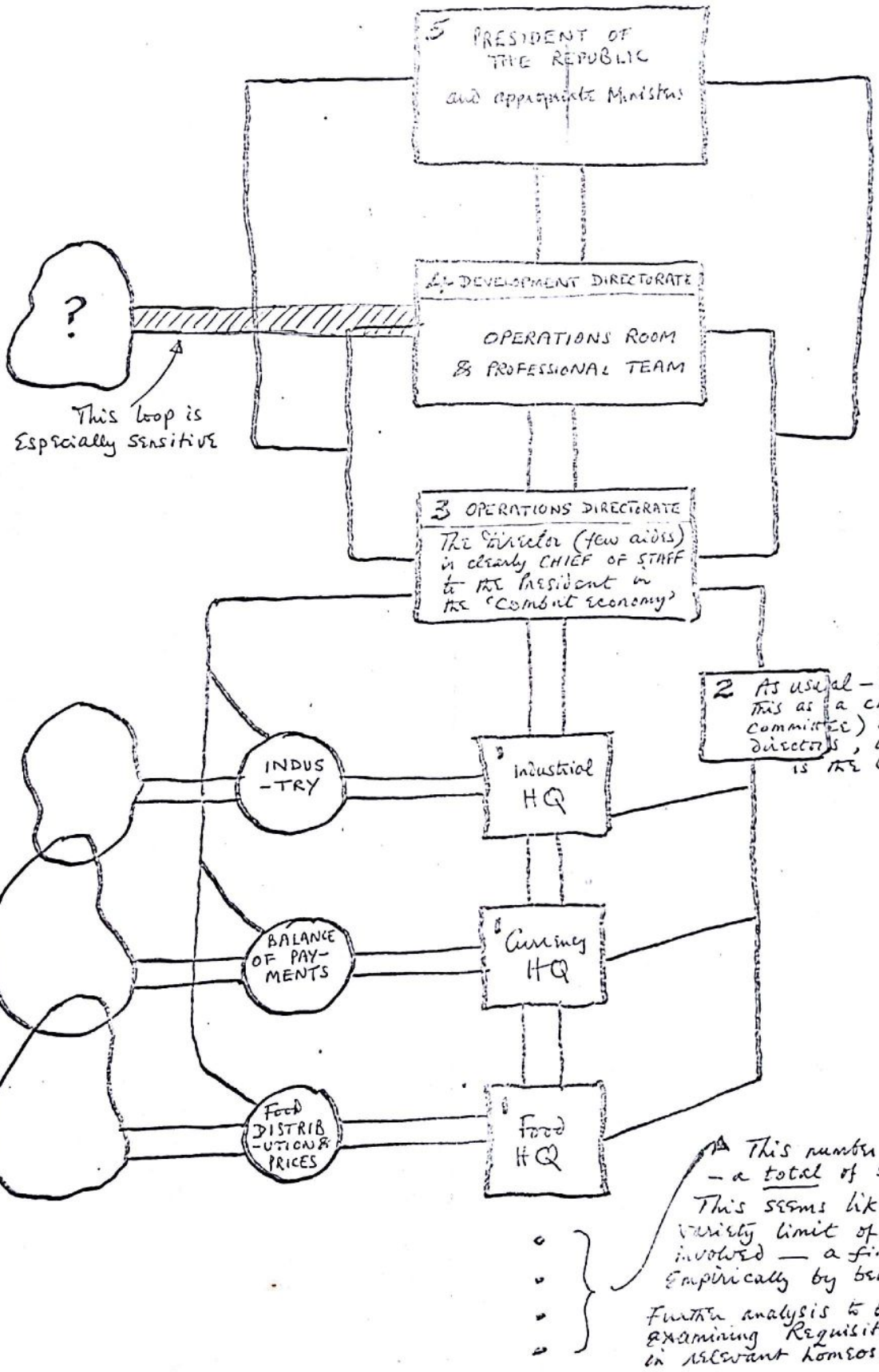
- Does this look like an Industrial HQ?

The tentative answer to this is that it does, so long as it acquires a focus in an OPERATIONS ROOM staffed by a strong (through not large) professional group.

See over.



CORFO Conceived as the Industrial HQ



Notes on the Organization of the General HQ

ABOUT PLANNING

Planning is a process of decision to commit resources NOW towards some future outcome.

Planning is a continuous, adaptive process.

It follows that only managers can plan, and that they need a continnous service in aid.

Every manager has a planning function.

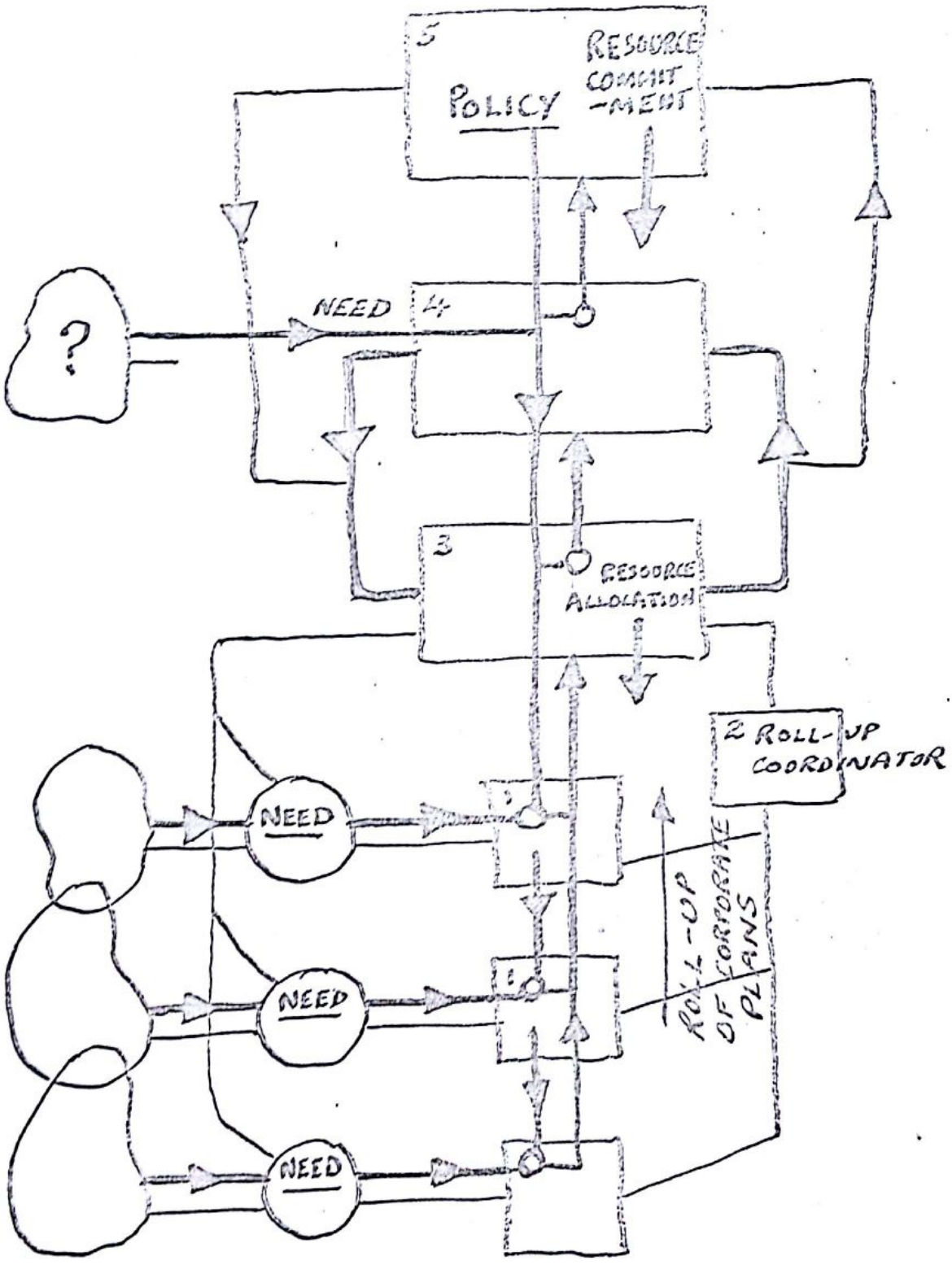
There is a great temptation to over-centralize planning. The dangers are very serious:

- Top management is inundated with variety, and cannot take successful decisions.
- Junior management is robbed of its autonomy, and becomes frustrated.

Then we need a system of variety filtration, which may be called ROLL-UP.

According to roll-up, the planning process starts when needs generated in System One intersect with policies decending from System Five. System One makes its interpretation of this collision, and proposes an outline (i.e low variety) intention. System One intentions are then rolled-up (by System 2) into general statements about resources proposed to be committed in certains areas.

These first intentions may be approved, rejected, or modified. In the latter two cases a great deal of waste in an initial elaboration of the plan is saved.



The Start of Roll-Up, with Higher Homeostasis & Metacontrol.

If planning is to go ahead, to a further stage, this will be communicated by System Three -while System Two is the interpretor of the extent to which a second phase of work should go. This is because there will be correlations between the work going on in different Systems One, and is intended to prevent oscillation. Of course all this planning is a proper function of the System Four of the individual System One.

Now System Three is a resource allocator in this process.

But System Four is the planning centre for the totality, and is making other plans.

So now we see the Three-Four homeostat in operation, coordinating the roll-up with the corporate requirement, under the guidance of the System Five metasystem. These activities too are marked on the previous diagram.

This is how variety filtration basically works in planning. When we turn to the recursive model, it is clear that each echelon also constitutes a filter.

So there is much to do to design the system properly -as there would be for any other system.

The point about THIS system is that it destroys the dogmas of centralization and decentralization alike. This approach is organic. It is also higly economical, because variety is suppressed wherever it is not needed.

It is a job in variety engineering.

THE NERVES OF GOVERNMENT

ABOUT INFORMATION

Quite apart from variety reduction by inserting filters at nodes of the system, there is another technique to recommend.

At general HQ it is evident that the number of individual measures (tons, cars, people, escudos, and so on indefinitely) that might accrue is alarming. What do all these figures mean? The people at CAP may know very well that a certain tonnage output is worse than usual, or that a certain fluctuation in output is to be expected. HQ people cannot master that kind of information for the whole of industry; GHQ people still less.

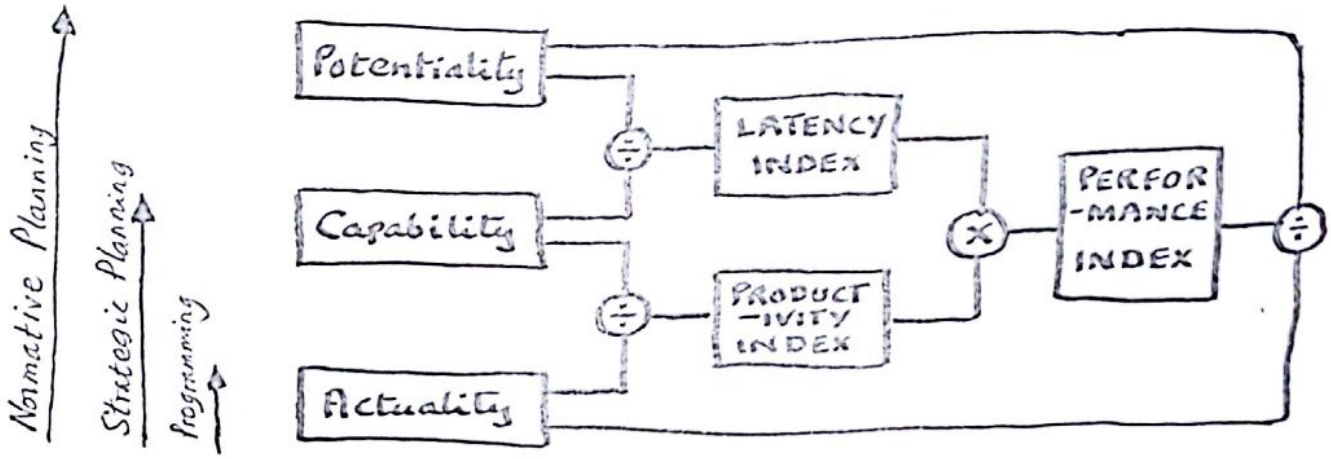
By using indices (which compare actual results with various norms : we destroy variety inmediately -by having only one unit of measurement.

Secondly, because the measures are homogeneous, they may be grouped statistically, and subjected to further variety reduction by the use of probability theory.That is, while data are circulating round any one homeostat, a statistical filter inspects them. And reports results that cannot be ascribed to chance (according to some fiducial limit) to the metasystem.

So, Thirdly, we have another variety reducer -perhaps the most effective of all-which offers a UNIFORM STRUCTURE, throughout industry, for monitoring every homeostat.

The total impact of these three filters on the managerial capacity to handle proliferating variety is gigantic.

A Triple Index of Performance for ANY Activity



Examples:

200 > ·5
100 > ·5 > ·25
50

Output in tons

40 > ·5
80 > ·8 > ·4
100

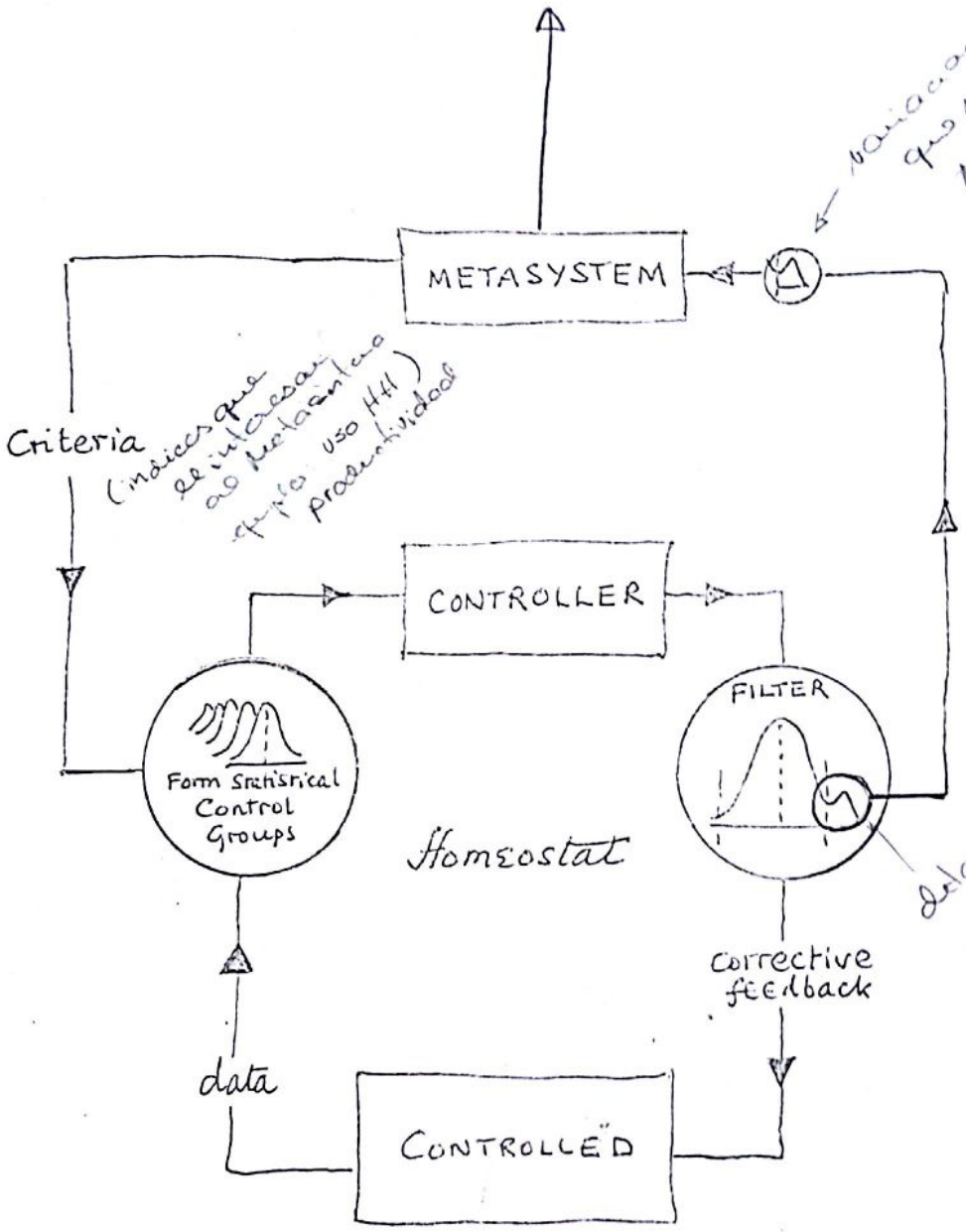
Hours of manpower

600 > ·67
400 > ·5 > ·33
200

Profit in Escudos

Many problems connected with indices are discussed in S & C 'Controlling Enterprises'

and I will send an early paper on the mechanics of the job.



Uniform Monitoring Structure for Indexical Variety Manipulation