INTRODUCTION TO THE DISCIPLINE
OF FUNDAMENTAL DESIGN METHOD

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F.D.M. is a meta-system, tuned to produce ‘the optimum solution to the sum of the true needs of a particular set of circumstances’. When this requirement has been clearly understood, and accepted as the over-riding control on all thinking, a person will continue to grow in capability. His rate of growth in the ability to analyse and solve major problems, and to become truly creative in various fields of endeavour, will then depend solely on his response to what the discipline dictates.

*Nature of F.D.M. Controlled Thinking*

F.D.M. has been developed for obtaining an improved approach and achievement in the analysis and solution of major industrial problems. Whilst being suitable for application to problems of the most complex nature, it is equally applicable to open-ended, ‘real-life’, problems of any magnitude. It can be applied in the actual moment of live thought; one does not have to rely on either a pre-planned strategy, or an after-the-event examination. It is not a theory, produced in some remote academic vacuum. It is a reality, born of many thousands of hours of toil and reflection in tackling a wide range of major problems.

These problems, and the personalities of hundreds of people, have all contributed something of significance to the development of the discipline. It could not have developed except through trial and error of this kind. It has taken a lot of years and a lot of effort to arrive at our present understanding of how any individual can quickly achieve a new order of control over his own work, in whatever field this work happens to lie. It is my hope that this understanding will not be lost and that it will help to pave the way for human achievements of a magnitude that would currently seem to be an impossibility.
The Essence of F.D.M.

Essentially, the discipline of F.D.M. is simple, but the learning process that makes it possible is likely to be beset by many frustrations and disappointments, and raises problems of describing what it is like. As with learning to drive a car, to sail, to vault, to swim and a host of other skilled operations it is far easier to do than to describe once one has, through actual experience, acquired a feel for what is involved.

The problem of appreciating what is needed and possible is doubly difficult since whereas one is left in no doubt of one’s failings in co-ordinating and controlling physical skills, a low order of skill in co-ordinating and controlling one’s own thinking is not immediately obvious. Anyone who has not considered the matter deeply can be pardoned for deluding himself that his own thinking is already highly disciplined and that the forms which it produces are therefore eminently satisfactory. With reflection, there comes the realization that if a person’s thinking does produce appropriate form—even fifty per cent of the time that he is intent on so doing—then such a person is indeed fortunate.

F.D.M. Controlled Thinking cannot begin to make sense until a person is prepared to admit that his own thinking could usefully be subjected to control of a higher order. A person must also have privately agreed not to quarrel with the term F.D.M., or try to equate it to what is done under other names, or to what already exists in the controls that are exercised. F.D.M. has to be recognized merely as ‘factor X’ where X stands for the kind of further control that is needed. Similarly, F.D.M. training is recognized as ‘factor Y’ where ‘Y’ represents a means of producing X. Both X and Y, whilst having some common characteristics, will differ in many others to suit the personality and current level of development of the particular individual. One must not expect either X or Y to be reducible to a universally binding formula if each is to suit one’s own special needs and hold the key to control of a high order.

Improving the Control over Thinking

The simple cybernetic element can serve as a point of departure for developing an understanding of what is involved in establishing a higher degree of control over one’s thinking:
The input (I) is from without (various recorded data, the problem, the problem situation and the total environment) and also from within (one’s memory, feeling, etc.). The output (O) may express itself in ideas, lines, figures, decisions, etc. The process (P) is likely to be largely beyond the spotlight of consciousness, and at the onset the control (C) will be only partially conscious. In order that thinking shall be more capable of producing form that is truly appropriate to the total circumstances applying, it is necessary to obtain an enhanced awareness of certain aspects of I, O, P, and C. The extent, and the direction, of the increase in awareness that is required will be different for every person. The point at which this awareness needs to develop into a deep understanding, such as can be used as the basis of enhanced control, will similarly be a unique requirement of the particular individual.

It has been necessary to draw attention to differences in requirements. Yet even the reference to the simple cybernetic element serves to suggest certain similarities that underlie these differences. By involving oneself in a process of careful observation and reflection, such as is undertaken in F.D.M. training, it is possible to develop an understanding not only of special aspects of the particular problem and of one’s own response to it, but also of matters that are truly fundamental. Such fundamentals relate both to all problems and problem-situations and to all thinking and mental actions that such problems require. The process of acquiring such understanding has to proceed in two directions: to uncover facets and factors of I, O, P, and C, and to interpret their essential nature, extrapolating beyond them to the ideal. There are also various checks that have to be introduced into this process to ensure that a balance is maintained between the subprocesses of observation, interpretation, and idealization, so that what is discovered may correspond with what exists and with what ought to exist.
As this process continues there is a massive expansion of awareness, and subsequently of understanding. This expansion includes progressively more of the person—problem—solution relationships and it develops in depth to explore the intimate circumstances and inner mechanisms of one’s mental life. Provided that the checks mentioned are all operating, this process cannot degenerate into pointless or morbid curiosity, but remains full of purpose: to pursue intelligently the possibilities for greater achievement and performance that such understanding reveals.

**The Fundamental Dimensions**

There are three dimensions which I believe are fundamental to the whole of creation. These dimensions, which I have called ‘Media’, ‘Matter’ and ‘Meaning’, are related in a triangular system, or spectrum, which has many levels within itself and recedes to a point (the absolute):

![Fig. 2](image)

Real control over thought and action—necessary if the form that is devised is to be truly appropriate—implies making Media + Matter meaningful; i.e. Discerning/Producing/Realizing Factor X (Meaning) from the corresponding factors Y and Z in the ‘Media’ and ‘Matter’ dimensions, at the requisite (all?) levels of the spectrum. To test the concept I have listed a hierarchy of aspects and relations of the three fundamental dimensions. (See table on pp. 168/9, first published in the Institution of Mechanical Engineers proceedings, Vol. 183, Pt. 1, No. 16.)

The three fundamental dimensions figure prominently in the F.D.M. discipline and training. They provide a means of rapidly getting to the essentials of a complex problem and, because of the character of the various levels within the spectrum, are equally suited to dealing with physical and psychological aspects. This last point will
be recognized as significant if we recall the importance, for major problem analysis, of the relationships and interplay between the problem and the problem-solver. It is naive to assume that major problems can be analysed and solved without the problem-solver’s strengths and weaknesses having a major influence on the nature and quality of the solution. In, say, politics, few could doubt the truth of this, but in a field like engineering, where our attention focuses on physical laws, mathematics and engineering theory, influence and bias imposed by the problem-solver tends to escape notice. With the increasing use of computers, and the ever greater range and sophistication of theory involved in problem analysis, the demands on the total-being of the problem-solver progressively grow. Hence many of the factors and relations in the spectrum, which may appear of little importance, assume a significance in the solution of complex problems.

The problem and the problem-solver are always linked by a process in time. It is this process to which the fundamental dimensions, in any or all of their levels, are applied. The process moves quite naturally from point to point, and at each point one of the aspects and relations of the fundamental dimensions assumes a special, overriding significance. But at every point in the process the essential objective must remain the same: to make Media+Matter meaningful.

At one point in the process this can occur only if the attention is concentrated on, say, physical laws and energy conversions. At another point the problem-solver may be allowing his pride, fears or fantasies to get in the way of intelligent and appropriate action. Hence at this point the fate of the project on which he, and perhaps a whole department, is working hangs on his making a massive correction (in his control loop C) to render Media + Matter meaningful at levels which are practically all within the Personal/Psychological portion of the spectrum.

It should be noticed that I am using the word ‘process’ to apply to any and every part and level of the approach. The process therefore includes all calculations, speculations, strategies, tactics and individual judgments. It is just as necessary to stand outside a mathematical calculation one is making, and enquire whether Media+Matter is meaningful in the particular context and moment in time, as it is to stand outside an intuitive impulse that projects an exciting idea or suggests that some pattern of relationships is important.
ASPECTS AND RELATIONS OF THE THREE FUNDAMENTAL DIMENSIONS

MEDIA (Factor Y) — MEANING (Factor X) — MATTER (Factor Z)

Ref.  Ref.  Ref.
1. Eternal  51. Ground  56. The Self
2. Invisible  52. Being  57. Affective
4. Noosphere  54. Spirit  59. Id
5. Infinite  55. Will  60. Independent
7. Omnipotent  63. Unconscious  64. Creative
9. Coherence  67. Dream  68. Spontaneity
10. Macrocosm  69. Madness  70. Myth
11. Complemental  71. Mysticism  72. Fantasy
12. Void  73. Elastic  74. Discord
13. Potential  75. Conflict  76. Mental Vacuum
14. Transcendental  77. Austerity  78. Feel
15. Signal  79. Urges  80. Hope
17. Unknown  83. Empathy  84. Trust
18. Certain  85. Receptivity  86. Openness
19. Probability  87. Selflessness  88. Listening
20. Synthesis  89. Awareness  90. Inspiration
22. Significance  93. Impression  94. Metaphysics
23. Substance  95. Energies  96. Apective
26. Need  27. Appropriateness
34. Dynamic  35. Directivity  36. Mass
40. Free  41. Germination  42. Metamorphosis
43. Growth  44. Renewal  45. Decay
46. Dissatisfaction  47. Progress  48. Changes
49. Criteria  50. Situation  51. System
52. Possible  53. Probable  54. Past
55. Failure  56. Diagnosis  57. Model
58. Pre-existing  59. Responsibility  60. Predicted

Note: Real control implies making Media+Matter Meaningful, i.e. Discerning/Producing/Realizing Factor X from the corresponding factors Y and Z in the 'Media' and 'Matter' dimensions, at the appropriate (all?) levels. Real Control implies minimizing the mismatch between the X, Y, and Z dimensions.
The Concepts ‘Media’, ‘Matter’ and ‘Meaning’

I have been using the words Media, Matter and Meaning as though their meaning were self-evident. Perhaps the list of aspects and relations of the three fundamental dimensions will have helped you to obtain some impression of the meaning I wished to convey. The three concepts are in fact rich in content, but the content is homogeneous rather than an aggregate of essentially differing elements. The splitting of a spectrum into elements is merely for convenience of testing the overall concept and to make its application easier.

‘Matter’ includes everything that can be apprehended with the normal senses of sight, hearing, smell, taste, touch, etc.; also everything, external or internal, which arranges itself into perceivable systems or forms of organization. Matter includes everything that can actually be observed, measured and tested with or without the equipment of a scientific laboratory.

‘Media’ relates to a realm that is invisible to the senses but readily accessible to a disciplined intuition and imagination. I believe that this realm is just as real as the realm of Matter and that it is the home and origin of the forces, movements, and complexes of needs, which ultimately decide the form Matter has to take. In the natural world I believe that Media interpenetrates and structures Matter and determines the course of the evolutionary processes. In the man-made world Media is an active component whose effects are apparent in proportion to the extent that man has learned to use his ‘inner’ senses along with his external ones. Let it be noted that it is possible to use these ‘inner’ sense at least as inefficiently as the external ones, hence concepts, visions and other imaginative constructs may or may not be an accurate portrayal of Media as it applies to a particular problem at a moment in time.

It is also important to note that the need for accuracy in detection of Media increases as problems go up in the scale of magnitude and complexity. The use of social surveys and large scale market and operational research is to no avail if all that such surveys detect and manipulate is Matter. The lone individual who is dedicated to his job, and who has been immersed in the total milieu appertaining to it over a long period, is much more likely to detect Media which has to be taken into account if the project is to be successful. Such a person will of course inevitably have made many human contacts and will take note of their comments and experiences. He is also likely to be well read and to have observed products and processes of many kinds; but he will use
such data only as a background to his thinking, and as a set of signs and symbols for detecting and interpreting Media.

The conditions under which Media can be detected accurately have an important place in the F.D.M. discipline and training. The ideal conditions, which would produce a continuous and clear picture of Media, are not often achieved but they can be readily defined and used as standards that test the quality of thinking. These ideal conditions require that the interests of the problem-solver are totally committed to solving the problem. He must be intent on recognizing all the factors and relationships involved, and hold back any tendency to jump to premature conclusions as to what is needed. He must, in fact, allow his entire attention to be focused on discerning the total need, however demanding such an experience on his intellect and nervous energies. He must become completely tuned to the demands of the total problem, including demands from areas which might at first seem insignificant. There has to be a continuing act of will that freely chooses to bear the strain that the process imposes—particularly the strain arising from uncertainties. This act of will must be selfless (using ‘self’ in the egocentric sense of the word), and must be intent on discovering what is really needed, as opposed to what one might wish to produce, or believe to be politically expedient. The act of will must be coupled with integrity of a high order and—if I may be pardoned for using the term—must represent what I can only describe as an act of love. Such conditions are undoubtedly met by the great creators in any field. They are a vital part of the real secret of their genius. In response to such a predisposition Media continuously reveals itself and interpenetrates the corresponding Matter components in a manner which is entirely natural. It is simply a way of life that is at once highly productive and highly satisfying.

In F.D.M. training special care is taken to detect whether or not the will is engaged in the problem, and to assess the object and quality of this act of willing. When the will is properly aligned—even if only for short intervals—there is never a lack of valuable concepts flowing from the Media dimension. Generally such occurrences tend to be intermittent, and are often separated by long spells of ineffective mental actions, annoyance, idleness or totally ‘Matter-oriented’ thought. Hence it is periodically necessary to make a definite act, not only to detect Media or to recognize Matter, but to use reason to make Media+Matter meaningful. In ideal conditions this is a natural operation; but more often than not it has to be applied deliberately. To return to the simple cybernetic element, the operation of consciously attempting to make Media+Matter meaningful becomes a major component of the control (C).
The meaning of Meaning can remain consistent irrespective of its special sphere of application at the particular moment. I am well aware that philosophers have argued about the meaning of Meaning down the ages, and that they have failed to reach agreement, but this should not be taken to prove that, for practical purposes at least, the concept cannot be an eminently useful one. To argue about a concept is entirely different from possessing and using it. Arguments and reflection are valuable for producing and perfecting a concept; but to decide whether it actually possesses substance, one has to harness it to a practical purpose. One is then soon left in little doubt.

Man’s creations cannot possess meaning if they contravene the laws of nature and, more particularly, if they disregard the needs of humanity. Creations which are not in the best interests of those whom they affect, lack some measure of meaning, and their forms are therefore not truly appropriate. To strive for fullness of meaning in every element of a system or product may seem to be asking too much. It is actually little more difficult a discipline than a Value Analyst’s conscientious striving to obtain ‘value’. But whereas the Value Analyst’s concept of ‘value’ is usually oriented only to making savings and reducing ‘waste’, the concept of meaning focuses attention on satisfying real needs and generating products of high intrinsic worth.

The Concepts of Situation, Self and System

At the mid-point of the selected aspects of the Media, Meaning and Matter spectrum I have identified three sub-concepts which are used extensively in the F.D.M. discipline and training. I have named these ‘Situation’, ‘Self’ and ‘System’. These three sub-concepts (which are always applied within the framework of the total concept), have proved to be very convenient, particularly in the tackling of problems of management and organization, and for special studies such as those concerned with planning standardization programmes and the more efficient deployment of resources of a department or a group.

In such studies part of the meaning of the term ‘System’ is probably obvious. It embraces all of the formal organization, policies, procedures, communication arrangements and other externally imposed constraints that have become the accepted practice for motivating, regulating and co-ordinating the activities of persons who are engaged in common or complementary pursuits. A less obvious part of the concept of System, as applied in this area, concerns the routines and everyday
practices with which the individual has identified strongly, and which may well have been largely of his own devising. These are called ‘System’ because of their predictable, and possibly stereotyped, nature. Like the externally imposed System they may well be doing more harm than good, particularly if they have not been subjected to careful scrutiny for a long time, or if circumstances have been changing rapidly.

The sub-concept ‘Situation’ is used for the total matrix of circumstances, its directions and its modes of change. As far as possible the Situation (which is ‘Media’ and therefore not directly accessible to perception) is separated from the surface details which belong to the ‘Matter’ dimension. This can be a difficult mental discipline to acquire, particularly when one is studying, say, one’s own department and has for a long time previously been deeply involved in its politics and practices. One has to learn how—in one sense—to take oneself and one’s own desires and prejudices out of the equation whilst, in quite a different sense, seeing through them to the needs which legitimately require attention.

The sub-concept ‘Self’, in such a context, serves to focus attention on those changes that would increase personal responsibility, and also the opportunities for intelligent and appropriate thought and action on the part of everyone involved in the activities. When working outwards from this sub-concept to make Media+Matter meaningful, the balance of existing Self-System components is likely to be changed—with most beneficial results.