PAPER A

NOTATIONAL PLANE : INTER-POLATION AND EXTRA-POLATION

(DEPTH CLASSIFICATION 42)

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Nine levels of Semantic Richness are established for the digits used in CC. In addition to the already existing concept of Empty Digit, two others, viz Binding Digit and Emptying Digit, are introduced. Thereby, the Notational Plane gains capacity to interpolate any number of digits between any two consecutive digits. This allows the Inter-polation of any number of (MC) in the array of (MC) and of any number of isolates in any array so as to implement the demands of the Idea Plane. Subject to the boundary condition of three digits for an isolate number, the CC notation is shown to have 40 sectors distributed, over its four zones. This provides for hundreds of Inter-polations and Extra-polations in any array. It also provides, theoretically, for telescoping 40 facets in a round of any (FC) within a round. This also implies a measure of the capacity to interpolate future facets.

CONTRACTIONS

CC = Colon Classification
(MC) = Main Class
(AI) = Array Isolate
(FC) = Fundamental Category
(CS) = Connecting Symbols
(BC) = Basic Class
(IN) = Isolate Number
(SD) = Subject Device
(II) = Isolate Idea
(AIN) = Array Isolate Number
(CD) = Chronological Device
DRTC = Documentation Research and Training Centre, Bangalore.
(SM) = Roman Small letter
(Cap) = Roman Capital letter
(IAN) = Indo Arabic Numeral.
(MCN) = Main Class Number
(CI) = Common Isolate

1 LIBRARY CLASSIFICATION

Library classification is concerned with the arrangement of books on the shelves of a library in a preferred helpful sequence. It has also to denote each book by a distinctive ordinal number and mark it with that number. The use of ordinal numbers for the marking of books is not merely a convenience; but it becomes a necessity as the number of books goes beyond a certain limit. To satisfy the Laws of Library Science, the preferred sequence of books is to be determined by the helpfulness of the sequence of the classes of knowledge embodied in the books. In addition, a helpful sequence has also to be maintained among the books embodying one and the same class of knowledge. This has to be done also in the case of the main entry cards in a classified catalogue of a library. Thus library classification falls into two parts — knowledge classification and book classifica-

tion. Knowledge classification is concerned with the arrangement of all possible classes of knowledge of all degrees of extension and intension and of all times – that is, the past, the present, and the future. The ordinal number used to represent a class is called a class number. Book classification is concerned with the arrangement of all the books in one and the same class of knowledge. Of these two parts of library classification, book classification is comparatively simple. Some schemes of classification do not pay any special attention to it. CC, however, provides for an elaborate scheme of book classification designed in integral relation with its scheme of classification [R2].

10 Knowledge Classification

Knowledge classification, on the other hand, is a more exacting and involved discipline.

11 Infinite Universe

This is due, in the first place, to the Universe of Knowledge being infinite. By this is meant that the number of classes of knowledge is very large and indeed tends to infinity. Further, all future classes are not knowable at any time. At any moment we do not know what class of knowledge is coming round the corner, as it were, claiming its helpful place among the already existing classes.

12 Multi-dimensional Universe

Secondly, the universe of knowledge is multi-dimensional. By a dimension is meant a characteristic distinguishing the different classes of knowledge according to the measure, intensity, extent, or any other attribute in which the characteristic is incident on a class. [R9]. It is a matter of experience that the number of characteristics available for distinguishing different classes of knowledge is many. Indeed it tends to infinity. Therefore, we say that the universe of knowledge is multi-dimensional and that the number of its dimensions tends to infinity.

13 Continuum

Thirdly, the universe of knowledge is a continuum. A universe is said to be a continuum if an entity of the universe exists between any two given entities, however close these may be. This is true of the universe of knowledge. If we distinguish two classes on the basis of one characteristic, however close these two classes may be, another class exists between them. Thus the universe of knowledge is a continuum along each of its many dimensions. If we take into consideration the infinite nature of the universe of knowledge and of the fact of its being a continuum, it follows, that whatever class of knowledge we think of on the basis of any one characteristic, there will be a class whose class number is later in ordinal value than that of the one we originally thought of.

14 Inter-polation and Extra-polation

The findings of Sec 13 can be stated as follows:

1 The inter-polation of a class between any two classes however close they may be, should be possible; and

2 So also extrapolation beyond what has been recognised at the moment as the last class should be possible. These two statements should be true in each dimension of the universe of knowledge.

15 Array

It is convenient at this stage to change over to the terminology developed in CC and in the Prolegomena. Each characteristic gives rise to an Array of ranked divisions. Except in the case of the array of (MC) or an array of a Canonical Class, each ranked division in an array is called an Array-Isolate (AI) in that array. With this terminology the findings of Sec 14 may be stated as follows:

1 Interpolation of an (AI) between any two (AI) however close they may be should be possible; and

2 So also extrapolation beyond what has been recognised as the last (AI) should be possible.

These two statements should be true in each array.

16 Faceted Classification

In a faceted classification, such as the CC, the characteristics are grouped into several trains of characteristics. Each train is taken to contain a few characteristics homogenous in some sense or other. A ranked division derived on the basis of a train of characteristics is called an Isolate. [R6]. The totality of isolates corresponding to a single train of characteristics is called a Facet. The term Facet is also used in another sense. A class may present different isolates. Each such isolate is called a Facet of the class. Facet is thus used in two senses [R3]. Using Facet in a second sense, a class may be multi-faceted. The universe of knowledge is then made of multi-faceted classes. In knowledge classification, it is a facet, corresponding to a train of characteristics, that is spoken of as a Dimension. Using the term Dimension in this sense, a class of knowledge may be multi-dimensional; and so the universe of knowledge is multi-dimensional. Inter-polation or extra-polation of classes can also be got by inter-polation or extra-polation of facets.

17 Postulational Approach

The postulational approach to classification [R7] has provided for an isolate to be a manifestation of one and only one of any one of the five (FC), Personality, Matter, Energy, Space and Time (PMEST), for any number of rounds of their manifestation, and for any number of levels of them in each round. This takes care of inter-polation and extra-polation of facets. The Five Principles for Facet Sequence take care of the exact place for the inter-polation of a new facet among the existing facets or for its extra-polation as the case may be.

18 Connecting Symbols

The prescription of different (CS) for the isolates which are manifestations of different (FC) implements, in the Notational Plane, the findings of the Idea Plane in respect of the interpolation and extra-polation of facets.

19 Restricted Field

This paper is therefore restricted to a discussion of the implementation, in the Notational Plane, of the findings of the Idea Plane in respect of inter-polation and extra-polation in one array only. An array may belong to any one of the facets, using the term Facet in sense 1 – that is, the totality of the isolates based upon a single train of characteristics. An array may also consist of the (MC) of the universe of knowledge – that is, its classes of order 1. Again, an array may also consist of the canonical divisions of any one order derived from any (MC). Therefore, we shall develop the subject in the following sequence:

1 Inter-polation in the array of (MC);
2 Inter-polation in any other array;
3 Extra-polation in the array of (MC); and
4 Extra-polation in any other array.

While the findings in the Idea Plane are common to all schemes of classification, their implementation in the Notational Plane will have to vary from scheme to scheme. For, it is possible to implement, in the Notational Plane, the findings of the Idea Plane in diverse ways depending upon the character of the notational system used. Therefore, it is not possible to discuss the implementation in the Notational Plane in a way that will be common to all schemes of classification. We can only discuss the problems in respect of any one scheme of classification. The scheme of classification chosen for the purpose in this paper is CC. The reason for its being chosen is that its notational system shows a greater versatility than that of any other scheme, not only in implementing the findings of the Idea Plane in respect of inter-polation and extra-polation of facets in a class number, but also in respect of inter-polation and extra-polation of (AI) in an array.

2 NEW TERMINOLOGY FOR NOTATIONAL PLANE

It is helpful to introduce some new terminology for the notational plane, as a preliminary step. It is made necessary by a deeper analysis of the semantic content given to the different kinds of digits used in CC class number. Till now we had only been saying that semantic content is given to the diverse digits. This simple statement does not give us an insight into the potentiality of the notational system of CC. In fact, terms such as Connecting Symbol, Octavising Digit or Sectorising Digit and Significant Digit are not able to disclose that potentiality. To begin with, there is no reason why the punctuation marks should not be called connecting Digits instead of Connecting Symbols. This is only a trivial change to have uniformity in nomenclature.

21 Empty Digit

While re-thinking the whole subject, it occurred that it is semantically more significant to call an Octavising Digit or a Sectorising Digit, an "Empty Digit". The empty digits normally in use are z, 9, and Z. Each of them is Empty in the sense that it does not represent any specific focal idea — that is, any specific (BC) or (II). It has only ordinal value. In other words, its ordinal value is its only semantic content.

22 Emptying Digit

Considerations of symmetry lead to the idea that to balance the concept "Empty Digit ", we can also have the concept "Emptying Digit". This means a digit with its usual ordinal value and also the power to deprive the preceding digit of the power of representing a focal idea. It is found convenient to invest, for the time being, the digits T U V W X Y and Z with "Emptying Value ". During the pursuit of the idea, it was found necessary to withdraw these digits from the Time Schedule. They are being so withdrawn in the Ed 7 of CC to be published hereafter. The users of CC may note this. This withdrawal will not only imply any change in existing (IN) of [T]. For, these digits will come into use in [T] only from the twentyfourth century !

23 Casual Empty Digit

In its turn, this idea led to the necessity to make S an Empty Digit in the Time Schedule. Then only, it will be possible to provide infinite hospitality in the array of order 1 in the Time Schedule, on and after the twenty-fourth century. This concept of "Casual Empty Digit " adds to the versatility of the Colon Notation. It has given us the idea that a digit other than the last one of a species of digits can be made an Empty Digit in any particular context, calling for it. In fact it is discovered that we had already done so unconsciously in some cases. For example, the digit 8 in [1P1] of the (BC) X Economics has been made an Empty Digit in Ed 6 of CC. This is brought out in Sec 7 of the Paper in this very Number of the An lib sc.

24 Empty and Emptying Digits

Considerations of symmetry lead to the further idea that we can also conceive of a digit which is at once Empty and Emptying. This idea has become very productive. It has been found convenient to invest for the time being, the digits U W Y and Z with both Empty and Emptying Values.

241 Merely Emptying Digit

Thus we have normally only three digits which have merely Emptying Value. These are T V X. This triad balances, as it were, the triad of merely Empty Digits z 9 Z.

25 Binding Digit

The Circular Bracket-Pair has been used since 1954 to packet a class number in order to treat it as if it were a single digit. This is necessary to facilitate the application of (SD) without the creation of homonyms. Each number of the Circular Bracket-Pair has an ordinal value of its own. In fact,

the ordinal value of the Starter Bracket is greater than that of any other digit-- that is, greater than that of Z. And that of the Arrester Bracket is smaller than that of any other digit-- that is, smaller than that of 0 (zero). Now comes the consideration of symmetry. We have the digit, z 9 Z with ordinal value alone. We have the Circular Bracket-Pair with binding as well as ordinal value. To balance these, we may also have a digit with binding value alone. Will there be any use for it? While thinking about this, a problem turned up in the designing of the schedules for the Depth Classification of Bibliography. It requires for its solution the use of a symbol or a digit which will have binding value alone and no ordinal value. This problem will be discussed in a paper on the Depth Classification of Bibliography to be published in the forthcoming June Number of the An lib sc. We decided to use vinculum as the digit with binding value alone. An ensemble of digits which needs so as to make it to be used as if it were a single digit will have the vinculum — that is the bar — inserted on its top.

26 Rich Digit

In contra-distinction to the kinds of digits singled out so far, the digits a... y 1... 8 A... Y may be called Rich Digits. By this is meant that these digits have semantic contents of a higher order than the other digits. Each of the Rich Digits represents a specific focal idea — (BC) or (II). This is its semantic content of higher order.

261 Extra-Rich or Systematic Digit

Abdul Rahman and T Ranganathan [A1] have examined the investing of the digits 1... 8 A... Y with a still higher order of semantic contents--viz Systematic Semantic Value — in certain subject contexts. When these digits are so used, we may call them Extra-rich or Systematic Rich Digits.

262 Super-Rich or Seminal Rich Digit

The digits 1... 8 have been given in CC a Seminal Value, of still higher richness in certain subject-contexts [A2]. When these digits are so used, they may be called Super-rich Seminal Rich Digits. I have pointed out [R8] the need for finding some way of making A... Y also Seminal Rich Digits. I have heard that the Indian tradition has a scheme for making the letters of the alphabet Seminal-Rich digits. But I have not yet been able to capture that tradition.

27 Levels and Orders of Semantic Richness

TABLE 1

Level of semantic richness	Kind of Semantic Value	Digit (Normally used)	Descriptive Name of Digit
1	Binding alone	Vinculum	Binding
2	Binding and ordinal	( )	Packeting
3	Ordinal alone	z 9 Z	Empty
4	Ordinal alone, and also Depriving the Preceding Digit of its Focal Idea	U W Y Z	Empty and Emptying
5	Ordinal and specific Focal Idea and also Depriving the Preceding Digit of Focal Idea	T U V W X Y Z	Emptying
6	Ordinal and Sign Post	0 ' . : ; , -	Connecting
7	Ordinal and specific Focal Idea	a ... y 1 ... 8 A... Y	Rich
8	Ordinal and systematic Focal Idea	1 ... 8 A... Y	Extra-Rich Systematic Rich
91	Ordinal and Seminal Focal Idea	1 ... 8	Super-Rich Seminal Rich

28 Parallel Movement

It is easily seen from Table 1 that Semantic Value or Content of a digit increases with the Level.

3 INTER-POLATION IN ARRAY OF (MC)

In Ed 1 (1933), CC did not develop the capacity of its Notational Plane to inter-polate in the array of (MC). Indeed that array was rigidly fixed. This continued to be so in Ed 2 (1939) and in Ed 3 (1950). However, in Ed 4 (1952) the notational system was hard pressed by the Idea Plane to inter-polate at least a few partial comprehensions of some (MC) in their appropriate places. To meet the situation, in despair as it were, Greek letters were introduced to represent partial comprehensions. It was known that the typewriter did not ordinarily have keys for Greek letters and that most of our printing presses did not ordinarily have Greek types. Inspite of this, CC introduced Greek letters to implement the findings of the Idea Plane somehow or other and waited for the introduction of a more convenient device in future. In other words, it chose to respect the call of the Idea Plane even at the risk of inconvenient notation. We are now in a position to make the notational system make any number of inter-polations in the array of (MC) with the aid merely of Roman small letters, Indo-Arabic numerals, and Roman Capitals. Inter-polation in the array of (MC) may be necessary to represent either Partial Comprehensions of some (MC) or new (MC).

31 Partial Comprehension

Literary warrant has been existing for long for certain partial comprehensions of some (MC). The Class A Science (General) is a partial comprehension of all the classes from B Mathematics to M Useful Arts. The Transactions and the Proceedings of the Royal Society of London were partial comprehensions of this kind, in their earlier volumes. It is the existence of such literary warrant that made CC provide a place for A Science (General) along with the (MC) of the Universe of Knowledge even from the beginning. The above periodicals of the Royal Society of London eventually split into two different periodicals the Transactions in 1887 and the Proceedings in 1905. One of them was devoted to (MC) B Mathematics to F Technology. The second was devoted to G Biology to L Medicine. CC looked upon G Biology as a comprehension of the (MC) H Geology to L Medicine. Thus there was no difficulty in fixing the (MC) of each of the second periodicals as G Biology. However, CC did not have at that time any notation to represent the partial comprehension of the (MC) B Mathematics to F Technology, covered by the first parts of each of the periodicals. Therefore, for a long time it had merely put them in the (MC) A Science (General). CC was conscious that this was not coextensive or individualising (MC) for those parts. Again, there are periodicals such as Arch fur math und phys. This obviously is a partial comprehension of the (MC) B Mathematics and C Physics. In the earlier years, CC could not provide a notation for an (MC) forming this partial comprehension. Therefore, it used to put such a periodical in the (MC) A. This practice made the (MC) number even further remote from being coextensive or individualising. There were also other partial comprehensions. This will be seen in Sec 34.

32 Search for Digit to Denote Partial Comprehension

The desperate remedy for using Greek letters to represent such partial comprehensions has been already mentioned in Sec 3. Ed 6 of CC recognised the need to implement, in the notational plane, the call of the Idea Plane to provide for the partial comprehension of the (MC) O Literature and P Linguistics, in order to accommodate books and periodicals embodying both of these two (MC). According to the earlier editions such periodicals had to be put either in the (MC) O Literature or in the (MC) P Linguistics, neither of which was coextensive with or individualising the partial comprehension. The Idea Plane wanted a

place for this partial comprehension between the (MC) N Fine Arts and the (MC) O Literature. The letter of the Greek Alphabet phonetically equivalent to N had already been used for a larger comprehension, viz--Humanities. The letter of the Greek Alphabet phonetically equivalent to O Literature did not look different from O of Roman Alphabet. Thus no Greek letter could be found to represent the partial comprehension (MC) Literature and Language. In this predicament, Ed 6 used NZ to represent the partial comprehension (MC) Literature and Language. When viewed from the Notational Plane, the (MC) NZ Literature and Language appears as if it were a sub-division of the (MC) Fine Arts. Ed 6 had to behave like the proverbial ostrich and decline to face it at all.

33 Making Z an Emptying Digit

The ostrich pulled out its head from the sands and looked around sometime last year. To change the figure, CC found itself in the same predicament as the poet Valmiki who had involuntarily uttered some words, which looked like a perfect verse. According to the Ramayana, the poet sat for sometime quite dazed by a verse coming out of him. The story goes that Brahma the Creator himself appeared before him after a short while and said, "Don't feel dazed. It is truly a perfect verse. Nay, it is indeed a line of exquisite poetry ! Start writing a poem on Rama. " So also a sudden idea occurred. It said, "It is quite right to represent the (MC) Literature and Language by NZ. Don't feel dazed by its looking like a sub-division of N. You have done the right thing. Invest the digit Z with the power of emptying the preceding digit. Then the (MC) NZ Literature and Language is not a subclass of the (MC) N Fine Arts. For, N in NZ does not represent Fine Arts at all. It has lost its semantic value as a result of the Emptying Digit Z succeeding it. It is no longer a Rich Digit of the seventh level of semantic richness. It has become an empty digit with no more semantic value than ordinal value. It has been demoted from level 7 to level 3 of semantic richness. On the other hand, the Emptying Digit Z has been promoted from level 3 to level 7 of semantic richness, as a reward for its solving the problem of Partial Comprehension. "

34 Happy Solution

This has turned out to be a happy solution for Inter-polating partially comprehensive (MC) between any two (MC). Applying this happy solution we get the following table:

TABLE 2

New CC	Partially Comprehensive (MC)	Old CC (Greek letters)
AZ	Mathematical Sciences	Beta
BZ	Physical Sciences	Gamma
HXZ	Mining and metallurgy	
MZ	Humanities and Social Sciences	Mew
MZA	Humanities	Nu
NZ	Literature and Language	
RZ	Psychology and Education	
SZ	Social Sciences	Sigma

Note 1: Mining and Metallurgy is a Partial Comprehension which has periodicals on it. The two classes comprehended are not however, consecutive in the array. Therefore, the use of Z for Partial Comprehension is rather forced in this case.

2: Between (MC) M Useful Arts and the (MC) Mysticism and Spiritual Experiences, two partially comprehensive (MC) have been interpolated. This is a necessity since Humanities is obviously a sub-division of Humanities and Social Sciences. The Number MZA has been used to represent Humanities.

341 Extension of Z Use of Z

The use of Z to represent Partial Comprehension need not be confined to Zone 3 of the array of (MC). It can also be used in Zone 2. For example, we have the following schedule of (MC) in Zone 2:

1 Universe of knowledge;
2 Library science;
3 Book science;
4 Journalism;
5 Standardization;
6 Specification; and
7 Modelisation.

The last 3 (MC) are taken from the press copy of Ed 7 of CC to be published later. Here, the following partially comprehensive (MC) are possible:

2Z Book Science and Journalism; and
4Z Standardization, Specification and Modelisation.

4 ZONE AND SECTORS IN NOTATIONAL PLANE

It is helpful to introduce at this stage, the table of Zones and Sectors in an array of the Notational Plane. The table is constructed subject to the condition that the number of digits in an (AIN) should not exceed 3. The concept, Zones and Sectors originated some years ago [R5]. Naturally it was then in an incipient state. The concept of Zones really arose in the Idea Plane. Therefore, at that time the mind was rather inhibited and prevented from pursuing in the Notational Plane quite independent of their being anything corresponding in the Idea Plane. In the summer months of 1960 the fetters imposed by using the same (CD)—a fullstop—both for [S] and [T] were broken. The fullstop was retained as a (CD) for [S] alone. The single inverted comma was devised as the (CD) for [T] [R4]. The freedom thus got led to a re-examination of the schedules of the Telescoped Facets of the different levels of Space and Time respectively. In the summer of 1961, this freedom was sought to be exercised as much as possible. It is this which led to a thorough search for all possible Sectors and Zones. The search was not however complete at that time. A further search was made while developing the s subject in the classes in DRTC. The following table is the result:

41 Zones, Sectors, and (AIN)
TABLE 3

Notes 1 : Boundary Condition : (AIN) is not to have more than three digits.
2 : Digits not put to use : (Sm) i, 1. 0; (Cap) I, O.

Zone	Sector	Sectorizing digit		First significant digit	Actual (AIN)	No of (AIN)
		First	Second			
1	1			(Sm)	a, b . . . , x, y	22
	2	z		(Sm)	za, zb . . . , zx, zy	22
	3	z	z	(Sm)	zza, zzb, . . . zzx, zzy	22
	4	z	z	(IAN)	zz1, zz2, . . . , zz7, zz8	8
	5	z	z	(Cap)	zzA, zzB, . . . zzX, zzY	23
	6	z		(IAN)	z1, z2, . . . , z7, z8	8
	7	z	9	(Sm)	z9a, z9b, . . . z9x, z9y	22
	8	z	9	(IAN)	z91, z92, . . . , z97, z98	8
	9	z	9	(Cap)	z9A, z9B, . . . , z9X, Z9Y	23
	10	z		(Cap)	zA, zB, . . . , zX, zY	23
	11	z	Z	(Sm)	zZa, zZb, . . . , zZx, zZy	22
	12	z	Z	(IAN)	zZ1, zZ2, . . . , zZ7, zZ8	8
	13	z	Z	(Cap)	zZA, zZB, . . . , zZX, zZY	23
					Total	234

Zone	Sector	Sectorizing digit First	Sectorizing digit Second	First significant digit	Actual (AIN)	No of (AIN)
2	1			(IAN)	1, 2, . . . 7, 8	8
	2	9		(Sm)	9a, 9b, . . . 9Y	22
	3	9	z	(Sm)	9za, 9zb. . . 9zy	22
	4	9	z	(IAN)	9z1, 9z2, . . . , 9z8	8
	5	9	z	(Cap)	9zA, 9zB, . . . 9zY	23
	6	9		(IAN)	91, 92, . . . , 98	8
	7	9	9	(IAN)	991, 992, . . . , 998	8
					Total	99
3	1	9	9	(Cap)	99A, 99B, . . . 99Y	23
	2	9		(Cap)	9A 9B, . . . , 9Y	23
	3	9	Z	(Sm)	9Za, 9Zb, . . . , 9ZY	22
	4	9	Z	(IAN)	9Z1, 9Z2, . . . , 9Z8	8
	5	9	Z	(Cap)	9ZA, 9ZB, . . . , 9ZY	23
	6			(Cap)	A, B, . . . , Y	23
	7	Z		(Sm)	Za, Zb, . . . Zy	22
	8	Z	z	(IAN)	Zz1, Zz2, . . . Zz8	8
	9	Z	z	(Cap)	ZzA, ZzB, . . . , ZzY	23
	10	Z		(IAN)	Z1, Z2, . . . , Z8	8
	11	Z	9	(Sm)	Z9a, Z9b, . . . , Z9z	22
	12	Z	9	(IAN)	Z91, Z92, . . . , Z98	8
	13	Z	9	(Cap)	Z9A, Z9B, . . . Z9Y	23
	14	Z		(Cap)	ZA, ZB, . . . , ZY	23
	15	Z	Z	(Sm)	ZZa, ZZb, . . . , ZZy	22
	16	Z	Z	(IAN)	ZZ1mZZ2m. . . , ZZ8	8
	17	Z	Z	(Cap)	ZZA, ZZB, . . . , ZZY	23
					Total	312
4	1			(Sm)	(a), (b), . . . (y)	22
	2			(IAN)	(1), (2), . . . (8)	8
	3			(Cap)	(A), (B), . . . (Y)	23
					Total	53

42 Verbal Definition of Zone

Zone 1 in the Notational Plane may be defined as the totality of (AIN) whose first digit is z. Zone 4 in the Notational Plane may be defined as the totality of (AIN) beginning with a starter bracket. Definitions of Zones 2 and 3 are not equally simple. Zone 2 is the totality of (AIN) whose first digit is an (IAN) and whose second digit is either a Roman small or an (IAN). The definition of Zone 3 is even more involved. It is much more convenient to use the enumerative definition implied in Table 3.

43 Verbal Definition of Sector

The verbal definition of each of the sectors will be even more complicated than that of Zone 3. Here again it is convenient to depend upon definition by enumeration as given in Table 3.

44 Summary

It is convenient at this stage to have a summary of the total number of Zones, Sectors, and (AIN).

TABLE 4
Summary of Total N of Zones, Sectors, and (AIN)

	Zone	Sector	N of (AIN)
	1	13	234
	2	7	99
	3	17	312
	4	3	53
Total	4	40	698

5 INTER-POLATION of NEW (MC)

At the end of Sec 3 it was mentioned that inter-polation in the array of (MC) may be necessary to represent either Partial Comprehension of some (MC) or new (MC). We have dealt with the former in Sec 31 to 341. We shall now take up the inter-polation of new (MC).

51 Inter-polation Between (MCN) 8 and (MCN) A

Let us look at table 3. We have not occupied any of the sectors from 2. 2 to 2. 7 and from 3. 1 to 3. 5. These 11 sectors have 190 unused (AIN). These can be used as (MCN) to accommodate (MC) claiming their filiatory position between the (MC) represented by 8 and the (MC) represented by A.

52 Inter-polation Amidst Existing (MCN)

The next problem is the consideration of methods to interpolate new (MCN) between any two existing (MCN) in sectors 1. 1 and 3. 6. Here, the help of the Emptying Digits, incorporated in level 5 of table 1 in sec 27, can be taken. These are the 7 digits T U V W X Y and Z. Table 5 gives the interpolation already made with the CC Number as given in Ed 6 and as proposed for Ed 7.

TABLE 5

New CC	New (MC)	Old CC
HX	Mining	HZ
JX	Forestry	JB
KX	Animal Husbandry	KZ
LX	Pharmocognosy	LZ
XX	Management	(X)
YX	Social Work	YZ

53 Observations in Table 5

531 Change of Z into X

When Ed 6 of CC was being prepared, the concept of Emptying Digit and the need for setting apart Z as Partial-Comprehension-Digit had not taken shape. They have now taken shape. Replacement of Z by X in the numbers for Mining, Animal Husbandry, Pharmocognosy, and Social work has been the result.

532 Forestry

The position of Forestry has been anamolous all along. In a very forced way, Forestry was taken as the equivalent of primitive Agriculture – that is, the earliest System of Agriculture. It was therefore represented by JB. But the concept of Emptying Digit has enabled us to remove this anomaly. It is in the fitness of things that Forestry should be treated as much an (MC) as Botany itself.

533 Management

There is a similar explanation in respect of the (MC) Management. Recognition of Management – that is, Pure Management– as an (MC) came into being only in 1956 [R1]. At that time it was realised in the Idea Plane that a helpful filiatory sequence for it would be next to X Economics. But the Notational Plane was not able to implement it. Therefore, instead of the (MC) Management being inter-polated in Zone 3 immediately after the (MC) Economics, it was extrapolated and represented by the number (X) in Zone 4. Here again the concept of Emptying Digit has enabled the Notational

Plane to implement requirement of the Idea Plane.

54 Further Inter-polation

For the next two inter-polations likely to arise in future, we may use T and V as the Emptying Digits. Further, the digits U, W and Y are intended to be both Sectorising and Emptying Digits. Therefore, each of these three digits can take care of a very large number of inter-polations. In fact it can be seen from Table 3 that as many as 795 inter-polations can be taken care of by each of these three digits.

6 EXTRA-POLATION IN ARRAY OF (MC)

In Ed 1 (1933), CC did not develop the capacity of its Notational Plane to extra-polate in the array of (MC). Indeed that array was rigid both at the beginning and at the end. In other words, it was not possible to extra-polate in (MC) either earlier than 1 or later than Z. Before Ed 5 (1957) was produced, the device of Packeted Notation had been hit upon as a method for extra-polating new (MC) calling for extra-polation [P]. However, no extra-polated (MC) was given in Ed 5. This was because a new policy was decided upon. According to it, CC was to consist of volume 1 and several fascicules of volume 2. Volume 1 was to give only the schedules necessary for the classification of macro-thought--that is, books ordinarily found in libraries--particularly in libraries for Generalist Readers. The fascicules of volume 2 were to give very detailed schedules for the Depth Classification of micro-documents--that is, articles in periodicals and so on—indeed for the provision of documentation work and service for Specialist Readers. Each fascicule was to be devoted to an (MC) or even to a single subject belonging to an (MC). It was felt that hardly any new extra-polated (MC) had then macro-documents on it, though there were micro-documents.

We are now in a position to make the notational system make any number of extra-polations in the array of (MC) with the aid of the existing species of digits.

61 Extra-polation in Zone 4

We shall use the following kind of notation:

Sector 1, 1 = Sector 1 of Zone 1
Sector 1, 2 = Sector 1 of Zone 2
Sector 2, 4 = Sector 4 of Zone 2
Sector 2, 5 = Sector 5 of Zone 2
Sector 3, 15=Sector 15 of Zone 3

The sectors 1, 1, 1, 2 and 1, 3 are to be reserved for (CI). We were not till now aware of the existence of 1, 4 to 1, 13. The capacity of these 10 sectors is 168 (AIN). This means that we can inter-polate 168 (MC)--viz 1 Universe of knowledge.

62 Extra-polation in Zone 4

A new (MC) can be accommodated in each of the sectors 4, 1, 4, 2, and 4, 3 of Zone 4. The capacity of these three sectors is 53. Already some experiments are being made to increase the capacity of Sector 1 purposefully. In this, we have to allow more than one digit within the brackets. In a sense, this may be done, as a packeted number is a quasi-digit, that is, it has to be treated as if it were a single digit. The capacity is sought to be increased by prefixing to the lower case letters within the brackets the connecting symbol Comma or Colon. For example, (,f2) will represent "Experimenting Institution". This will take any general book on laboratories irrespective of the subject investigated in the laboratory. Similarly, (:g) will represent "Evaluation". This will take any general book on the methodology of evaluation or criticism. It is in this sense that the capacity of Sector 4, 1 is sought to be enriched purposefully.

7 INTERPOLATION IN AN ARRAY OF A FACET

To interpolate in any array of any facet, the help of each of the seven emptying digits listed in Level 5 of Table 1 in Sec 27 can be taken. Of these, T, V, and X are semantically rich digits. These may be used for the first three interpolations to

be made. The digits U, W, and Y are themselves empty. Thus, several co-ordinate isolates can be interpolated with these digits as the first digits. Lastly, the digit Z can be used for the interpolation of an isolate partially comprehensive of any desired but specified number of consecutive succeeding isolates. In [E] of the (MC) L Medicine, for example, 1Z may be taken to represent Anatomy and Physiology.

8 EXTRA-POLATION IN AN ARRAY OF A FACET

81 At the Beginning of the Array

The sectors 1.1, 1.2, and 1.3 are to be reserved for (CI). The sectors 1.3 to 1.13 are available for extra-polation before the (IN) 1. The capacity of these ten sectors is 168 (AIN). Moreover, the (AIN) z can be reserved for representing a disjunctive treatment of the (AI) in the array. This indeed corresponds to any partial comprehension whatever of the (AI) in the Array.

82 AT THE END OF THE ARRAY

The sector 4.1 can be used for extra-polation by enumeration. The Sectors 3.1 to 3.17 also can be used for extra-polation. Normally, however, the array isolates to be got by (CD) and by (AD) have the first claim over sectors 3.2 and 3.6. When these devices are not available, these two sectors can be thrown open for enumeration as any other sector of Zone 3. Similarly, the sectors 4.2 and 4.3 can be used for extra-polation by (SD) whenever it is applicable and otherwise by enumeration.

9 INTERPOLATION OF FACETS

We have seen that the existence of 40 sectors in an array, admits of a considerable extra-polation in an array at both of its ends. This sector-analysis provides also for the telescoping of 40 different facets, as viewed from the Idea Plane, into a single facet as viewed from the Notational Plane. This is a theoretical possibility. But in actual practice, we seldom reach even 5 levels. But as future research atomises the universe of knowledge further, there are bound to be subjects with more levels of facets. The principles for facet sequence would demand a particular sequence of all the levels, taking the new ones and the old ones together. This would imply a new level of facet calling for its being interpolated or extra-polated at a specific point among the existing levels of facets. What is more important, future subjects may not always present all the levels of facets including the new ones. Some may present any one of them, others any two of them, still others any three of them, and so on, and few all the levels of facets. It is here that the sector-notation gives help. As the first semantically rich digits or digit-groups in the seccessive sectors are in an increasing sequence of ordinal value, we can derive all the benefits of a telescoped facet in respect of all the 40 possible levels of facets. In particular, the cluttering together of (CS) will be avoided. This is a measure of the extent of inter-polation and extra-polation of levels of facets, which the sector notation allows.

91 Change of Boundary Condition

By making the boundary condition admit of 4 digits in an (IN), it can be easily calculated that the number of sectors in an array will increase and the measure of interpolation and extra-polation of facets will also increase correspondigly.

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