FIG. 1

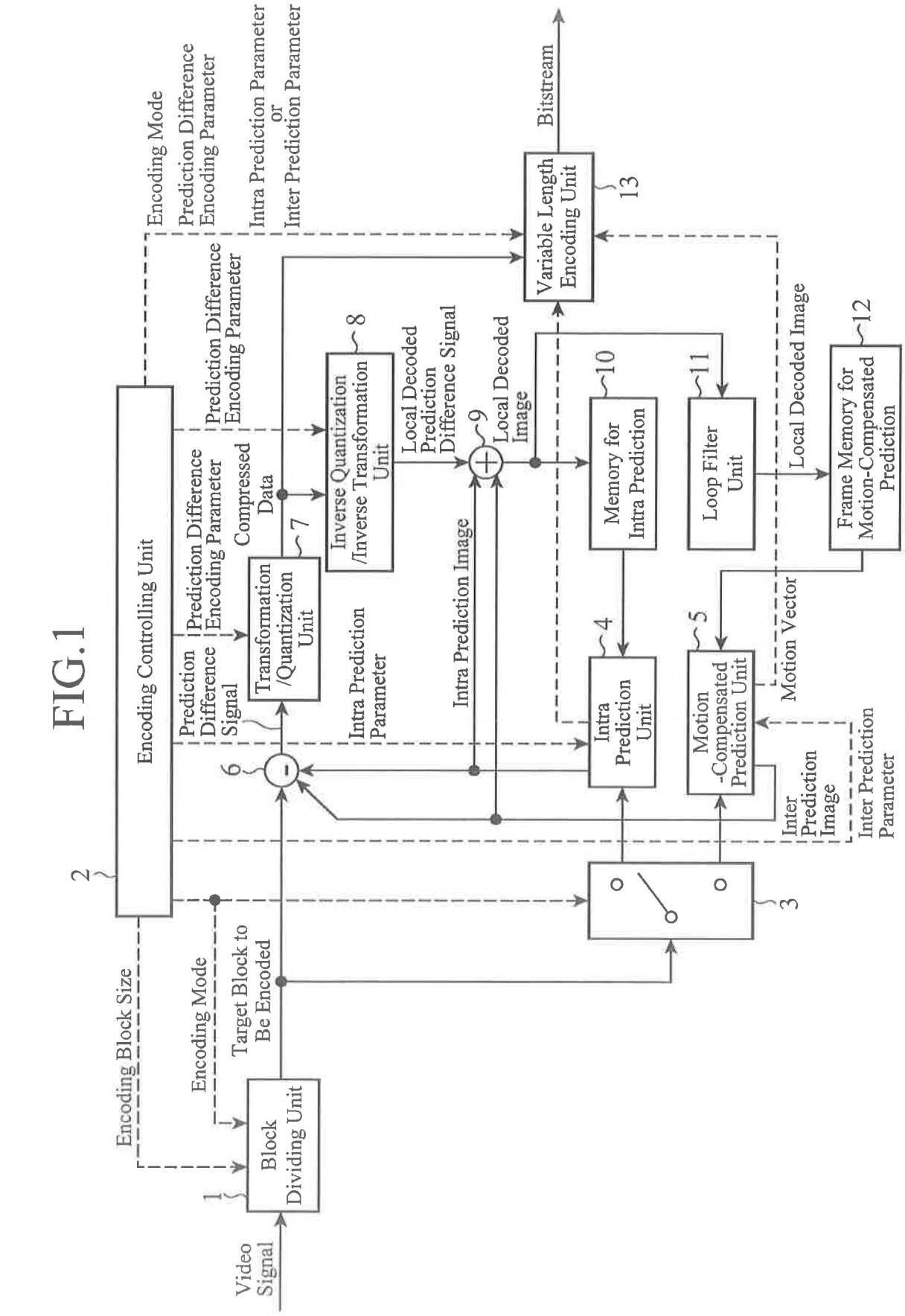

Video Signal
Block Dividing Unit
1
Encoding Block Size
Encoding Mode
Target Block to Be Encoded
2
Encoding Controlling Unit
Encoding Mode
Prediction Difference Encoding Parameter
Intra Prediction Parameter or Inter Prediction Parameter
Prediction Difference Encoding Parameter
Prediction Difference Encoding Parameter
Compressed Data
Transformation /Quantization Unit
7
Prediction Difference Signal
6
Intra Prediction Parameter
Inverse Quantization /Inverse Transformation Unit
8
Local Decoded Prediction Difference Signal
Intra Prediction Image
9
Local Decoded Image
Variable Length Encoding Unit
13
Bitstream
Memory for Intra Prediction
10
Loop Filter Unit
11
Local Decoded Image
Frame Memory for Motion-Compensated Prediction
12
Intra Prediction Unit
4
Motion -Compensated Prediction Unit
5
Motion Vector
3
Inter Prediction Image
Inter Prediction Parameter

FIG.2

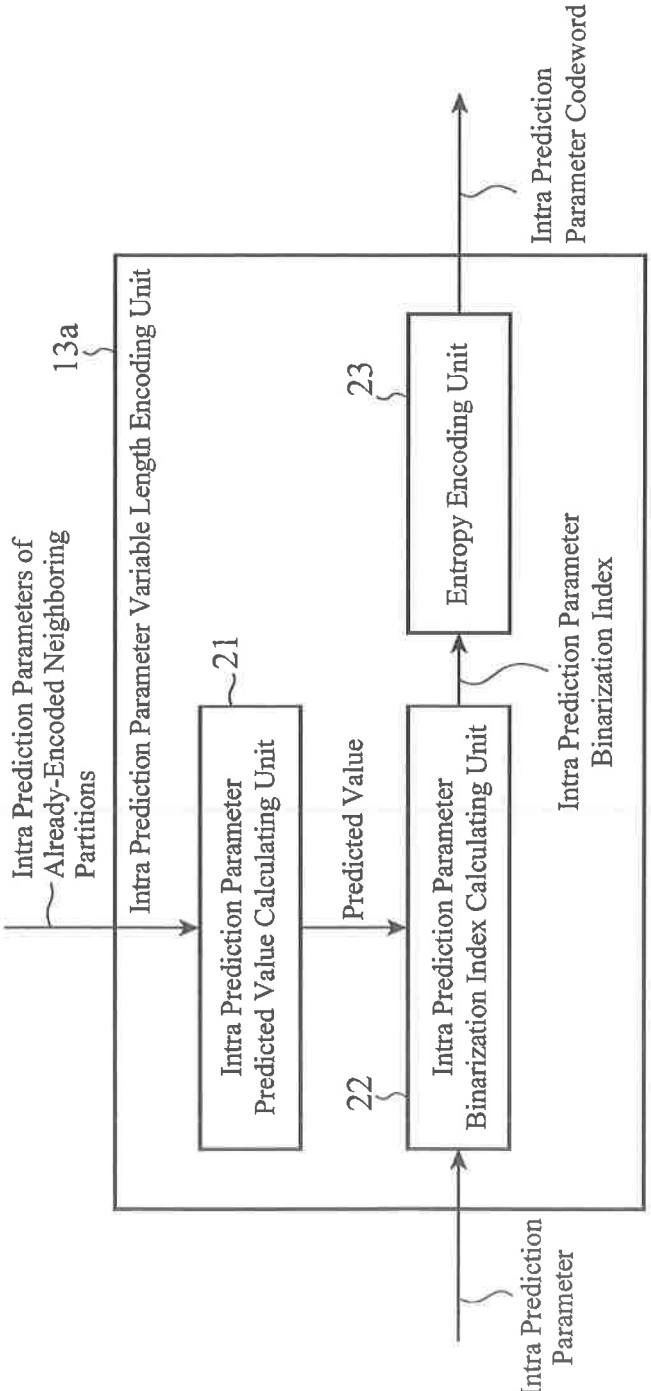

Intra Prediction Parameters of Already-Encoded Neighboring Partitions
13a
Intra Prediction Parameter Variable Length Encoding Unit
21
Intra Prediction Parameter Predicted Value Calculating Unit
Predicted Value
23
Entropy Encoding Unit
Intra Prediction Parameter Codeword
22
Intra Prediction Parameter Binarization Index Calculating Unit
Intra Prediction Parameter Binarization Index
Intra Prediction Parameter

FIG.3

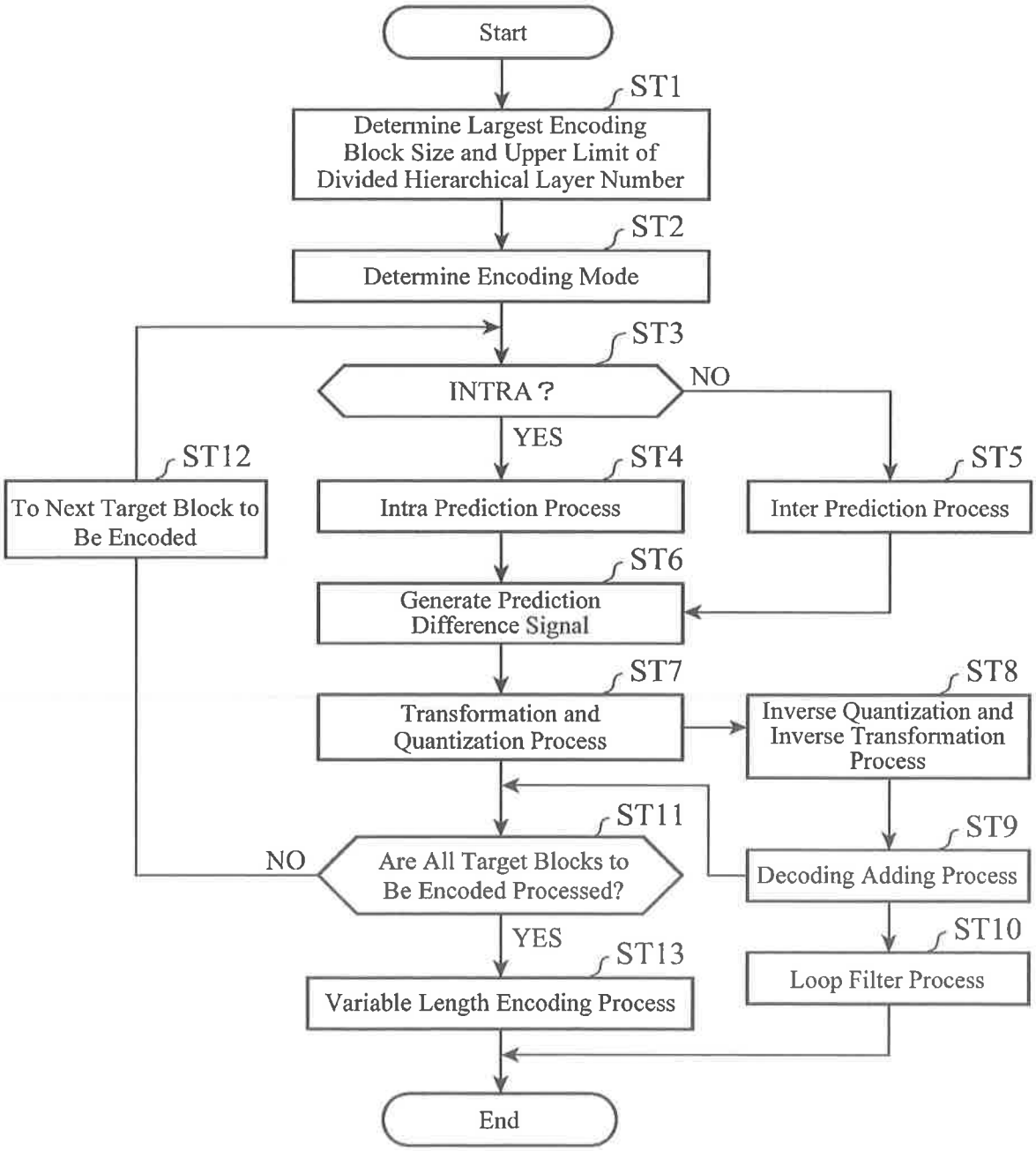

Start
ST1
Determine Largest Encoding Block Size and Upper Limit of Divided Hierarchical Layer Number
ST2
Determine Encoding Mode
ST3
INTRA ?
NO
YES
ST4
Intra Prediction Process
ST5
Inter Prediction Process
ST12
To Next Target Block to Be Encoded
ST6
Generate Prediction Difference Signal
ST7
Transformation and Quantization Process
ST8
Inverse Quantization and Inverse Transformation Process
ST11
NO
Are All Target Blocks to Be Encoded Processed?
ST9
Decoding Adding Process
YES
ST10
Loop Filter Process
ST13
Variable Length Encoding Process
End

FIG.4

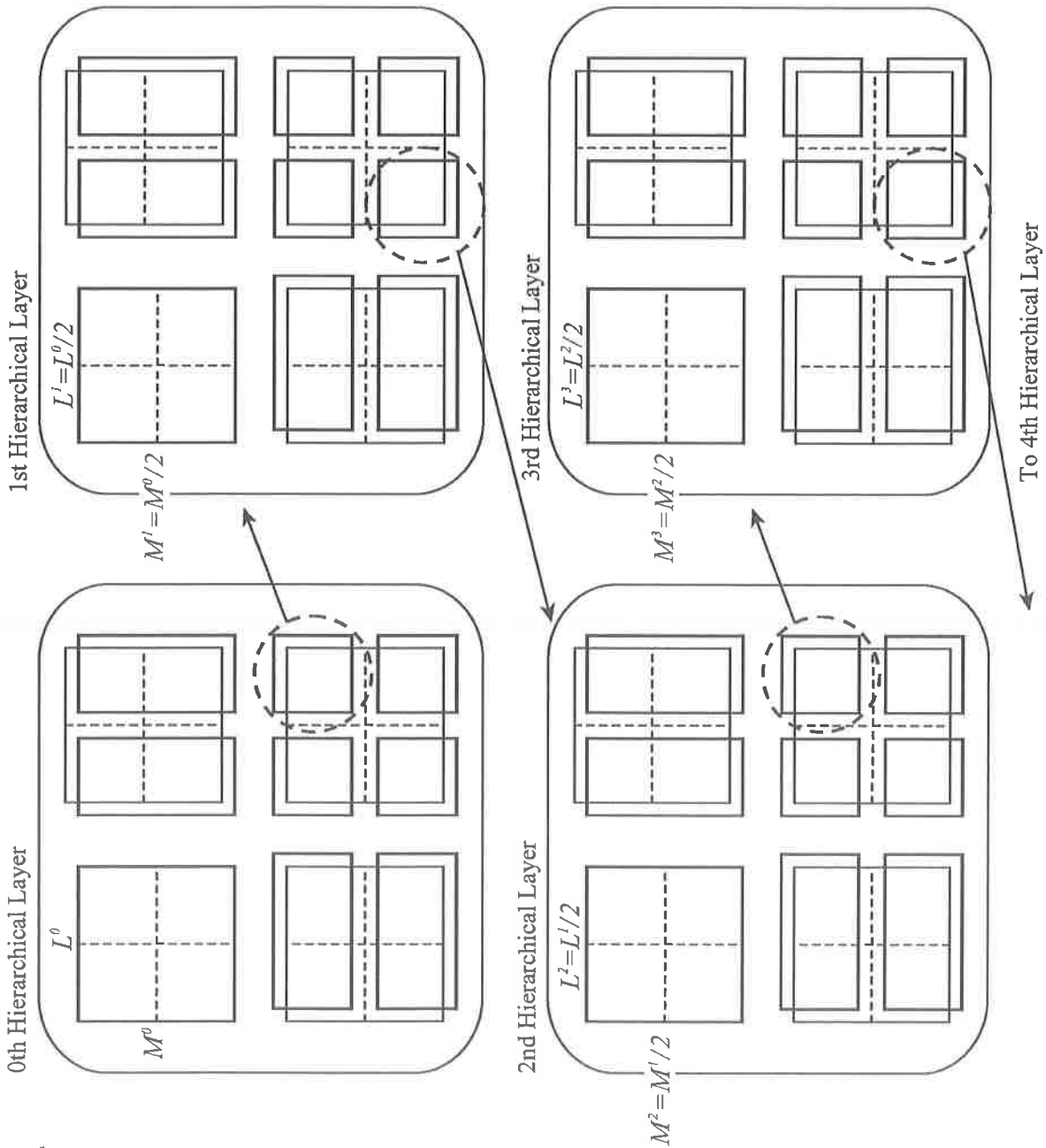

0th Hierarchical Layer
L^0
M^0
1st Hierarchical Layer
$L^1=L^0/2$
$M^1=M^0/2$
2nd Hierarchical Layer
$L^2=L^1/2$
$M^2=M^1/2$
3rd Hierarchical Layer
$L^3=L^2/2$
$M^3=M^2/2$
To 4th Hierarchical Layer

FIG.5

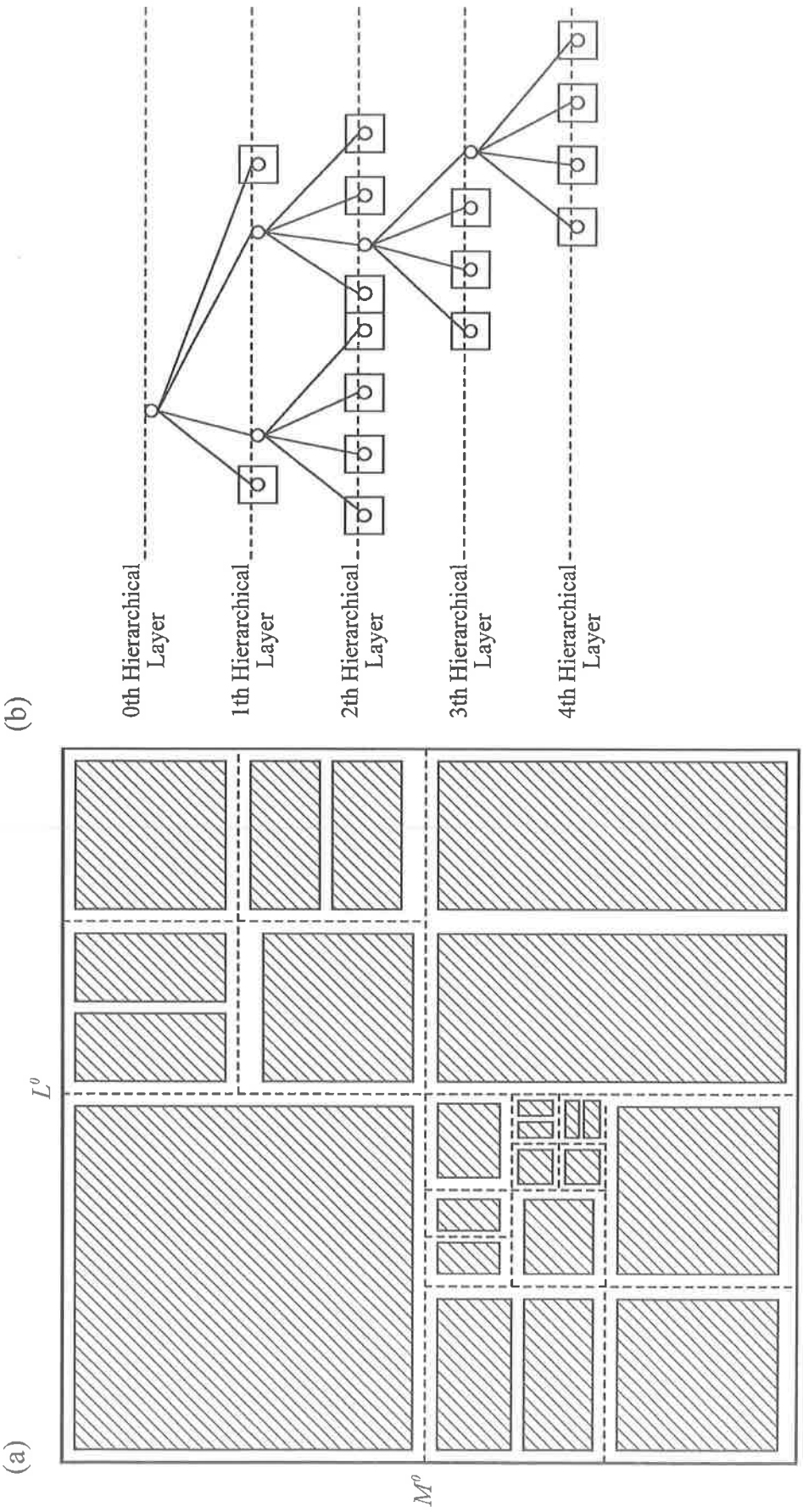
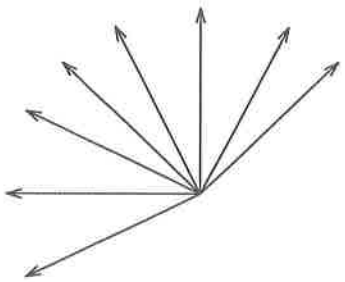

(a)
(b)
L^0
M^0
0th Hierarchical Layer
1th Hierarchical Layer
2th Hierarchical Layer
3th Hierarchical Layer
4th Hierarchical Layer

FIG.6

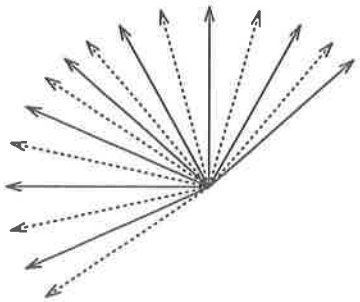
Intra Prediction Mode Index	Intra Prediction Mode
0	Vertical Prediction
1	Horizontal Prediction
2	Average Prediction
3～N-1	Diagonal Prediction

N: Number of Intra Prediction Modes

Directional Predictions in Case of N=9 (8 Modes)



Directional Predictions in Case of N=17 (16 Modes)



Directional Prediction in Case of N=33 (32 Modes)

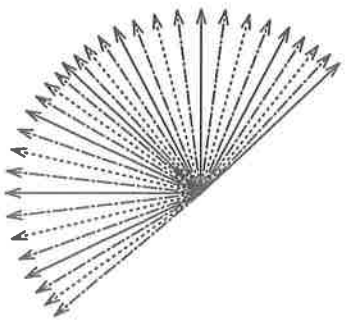


FIG.7

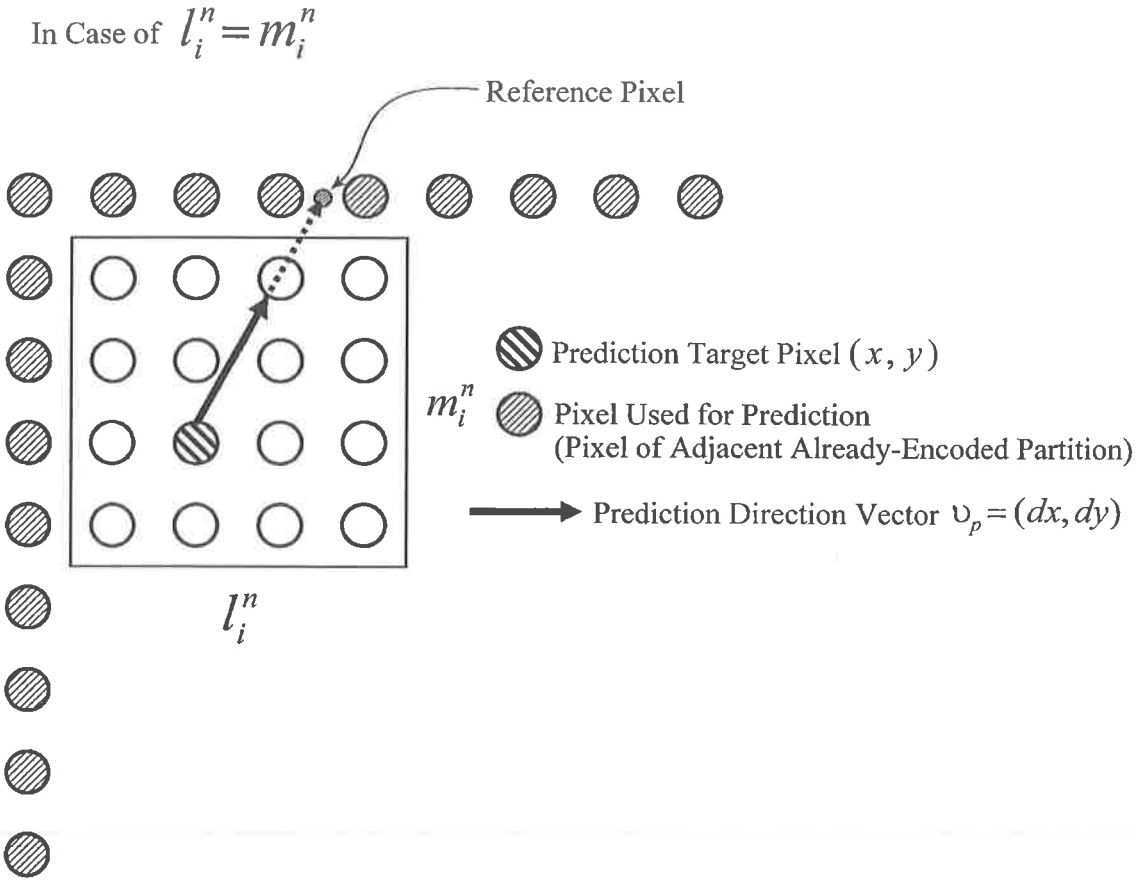

In Case of $l_i^n = m_i^n$
Reference Pixel
m_i^n
l_i^n
Prediction Target Pixel (x, y)
Pixel Used for Prediction
(Pixel of Adjacent Already-Encoded Partition)
Prediction Direction Vector $\upsilon_p = (dx, dy)$

FIG.8

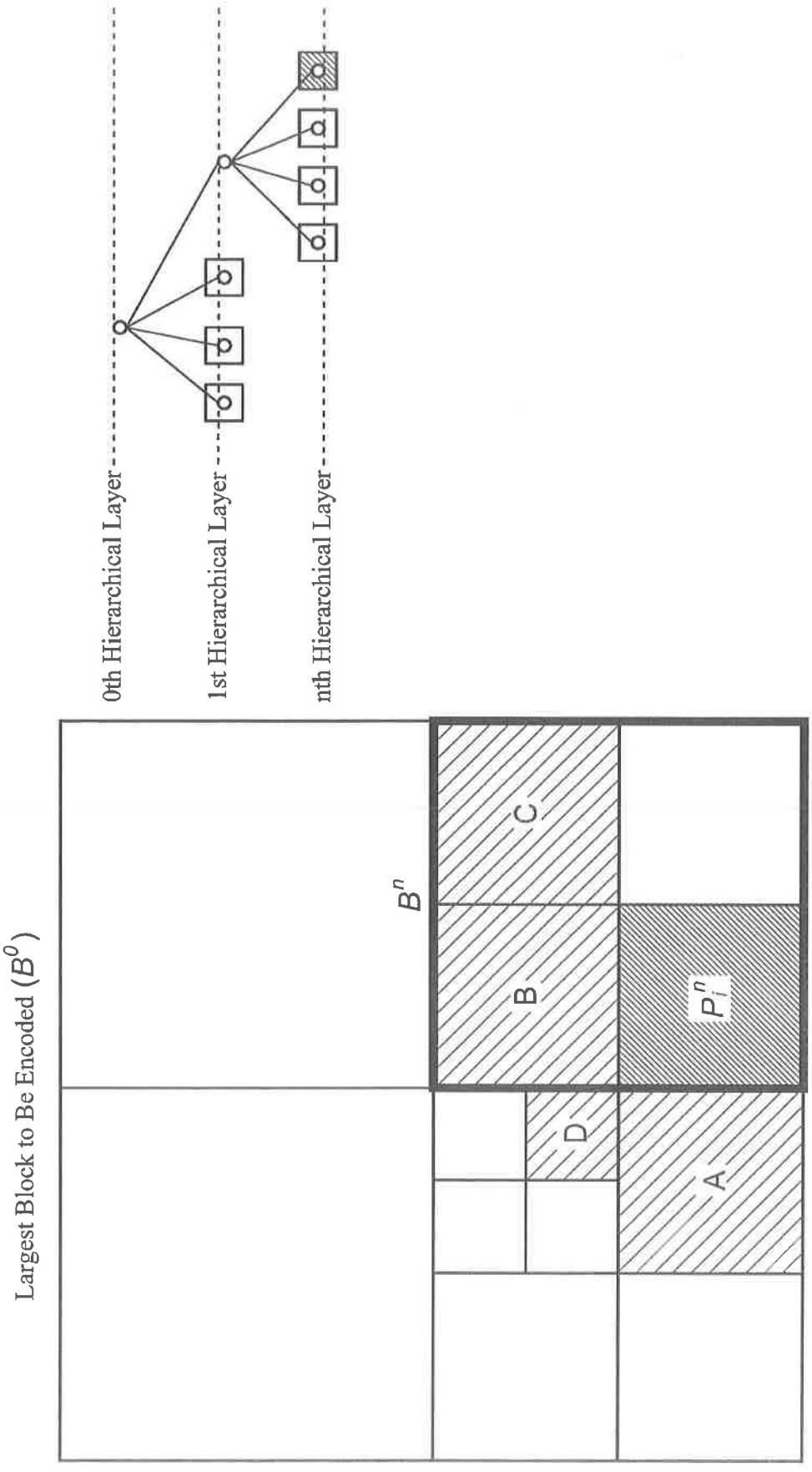

0th Hierarchical Layer
1st Hierarchical Layer
nth Hierarchical Layer
Largest Block to Be Encoded (B^0)
B^n
C
B
P_i^n
D
A

FIG.9

In Case of N=17

Intra Prediction Mode Index	Intra Prediction Mode	Prediction Direction Representative Index	Prediction Direction Differential Index	Intra Prediction Mode Index	Intra Prediction Mode	Prediction Direction Representative Index	Prediction Direction Differential Index
0	Vertical Prediction	0	0	9	Diagonal Prediction7	0	1
1	Horizontal Prediction	1	0	10	Diagonal Prediction8	1	1
2	Average Prediction	2	0	11	Diagonal Prediction 9	3	1
3	Diagonal Prediction 1	3	0	12	Diagonal Prediction 10	4	1
4	Diagonal Prediction 2	4	0	13	Diagonal Prediction 11	5	1
5	Diagonal Prediction 3	5	0	14	Diagonal Prediction 12	6	1
6	Diagonal Prediction 4	6	0	15	Diagonal Prediction 13	7	1
7	Diagonal Prediction 5	7	0	16	Diagonal Prediction 14	8	1
8	Diagonal Prediction 6	8	0				

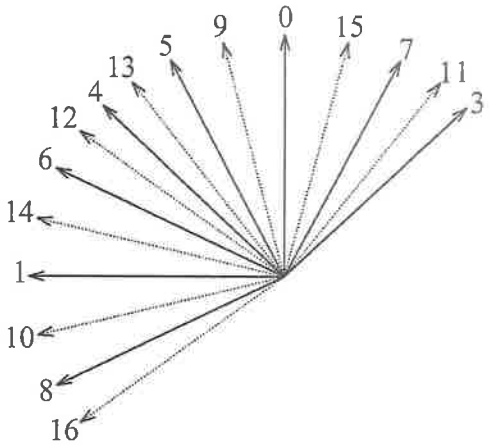


FIG.10

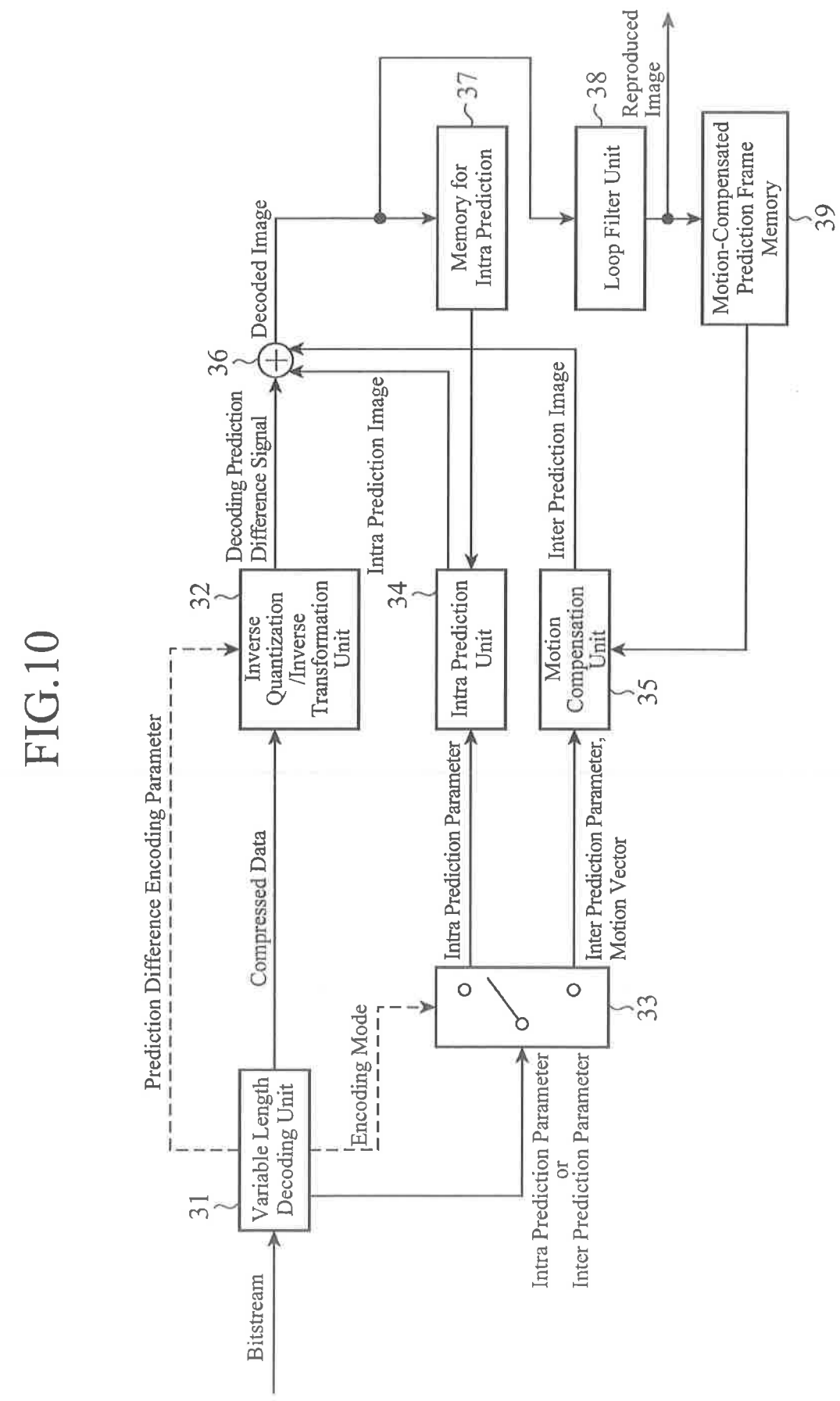

Bitstream
31
Variable Length Decoding Unit
Prediction Difference Encoding Parameter
Encoding Mode
Compressed Data
32
Inverse Quantization /Inverse Transformation Unit
Decoding Prediction Difference Signal
36
Decoded Image
Intra Prediction Parameter
Intra Prediction Parameter, Motion Vector
Intra Prediction Parameter or Inter Prediction Parameter
33
34
Intra Prediction Unit
Intra Prediction Image
35
Motion Compensation Unit
Inter Prediction Image
37
Memory for Intra Prediction
38
Loop Filter Unit
Reproduced Image
39
Motion-Compensated Prediction Frame Memory

FIG.11

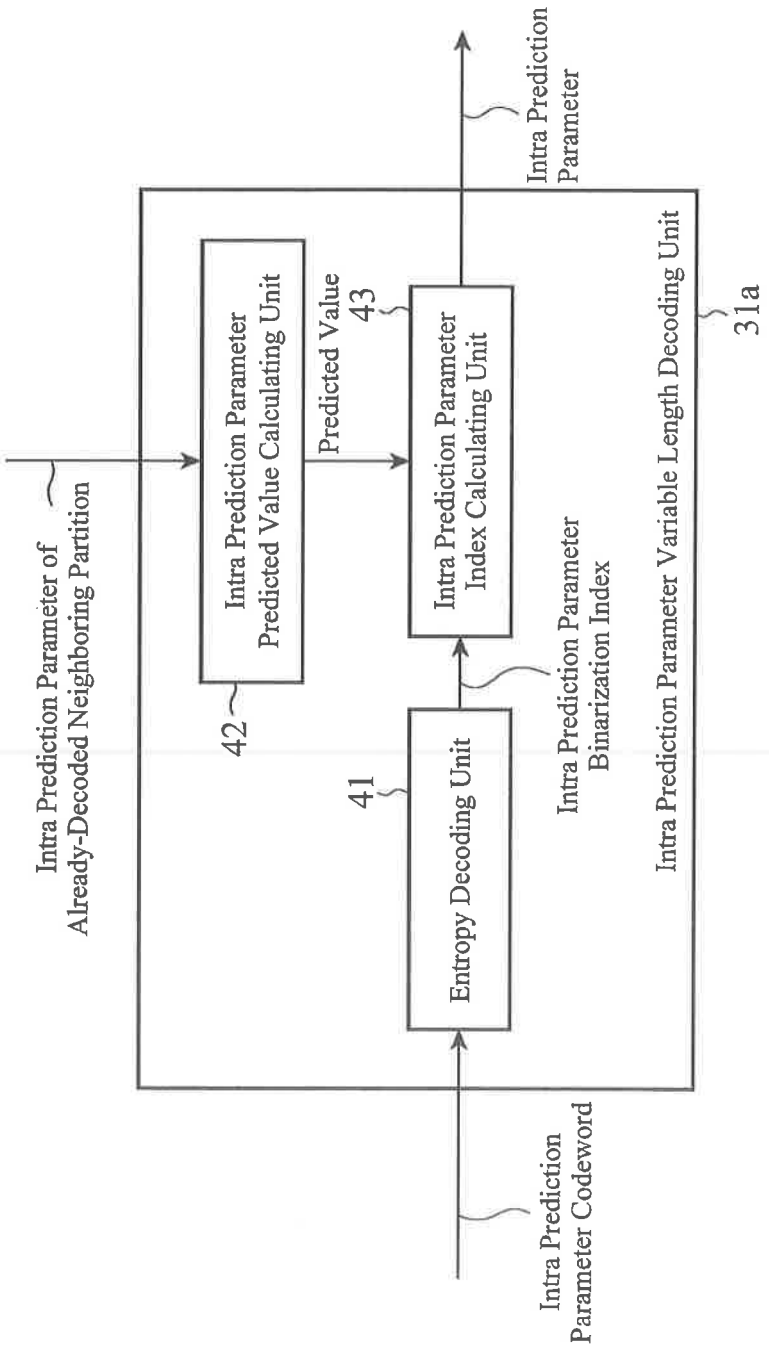

Intra Prediction Parameter of
Already-Decoded Neighboring Partition
Intra Prediction Parameter
Predicted Value Calculating Unit
42
Predicted Value
43
Intra Prediction Parameter
Index Calculating Unit
41
Entropy Decoding Unit
Intra Prediction Parameter
Binarization Index
Intra Prediction Parameter Variable Length Decoding Unit
31a
Intra Prediction
Parameter Codeword

FIG.12

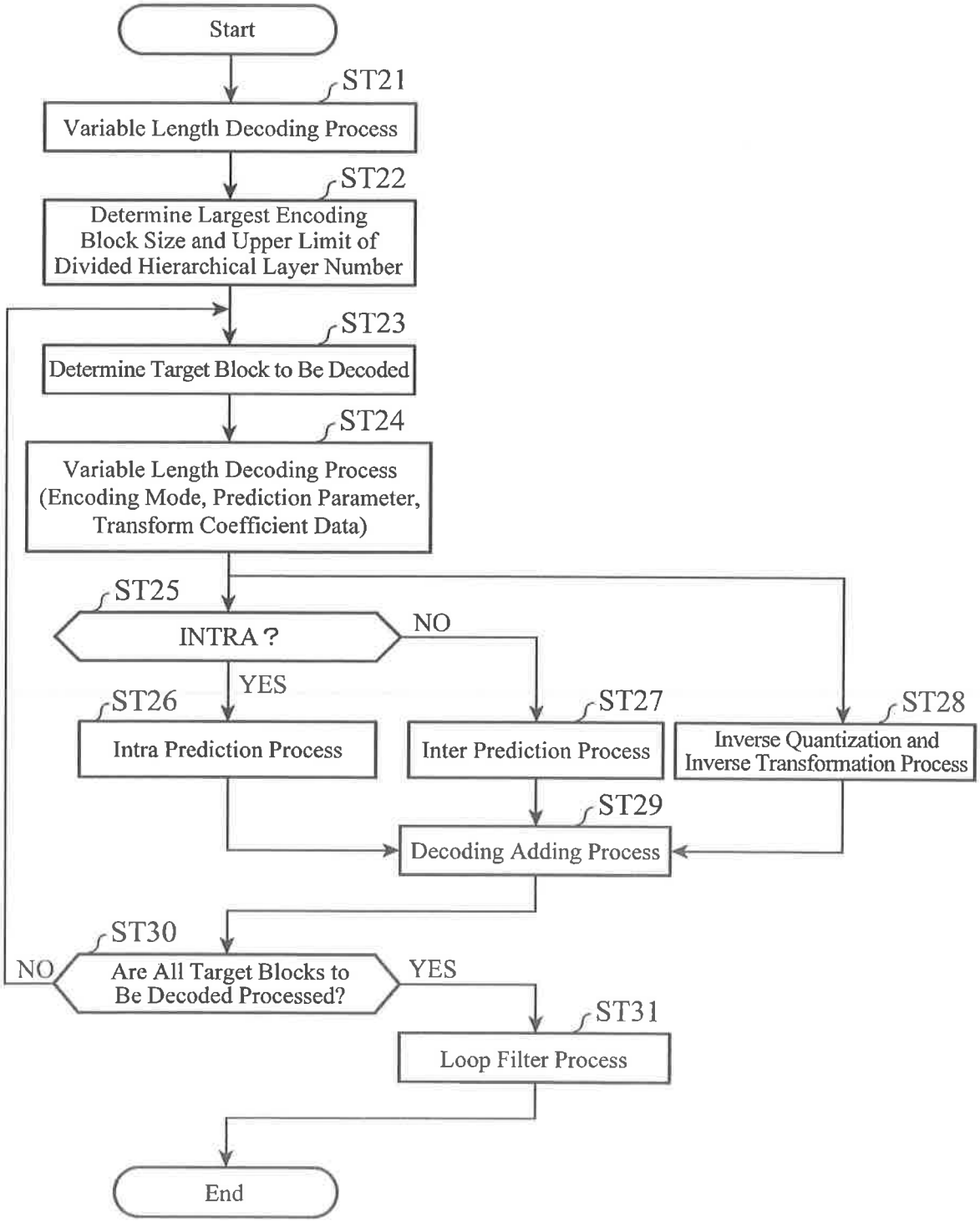
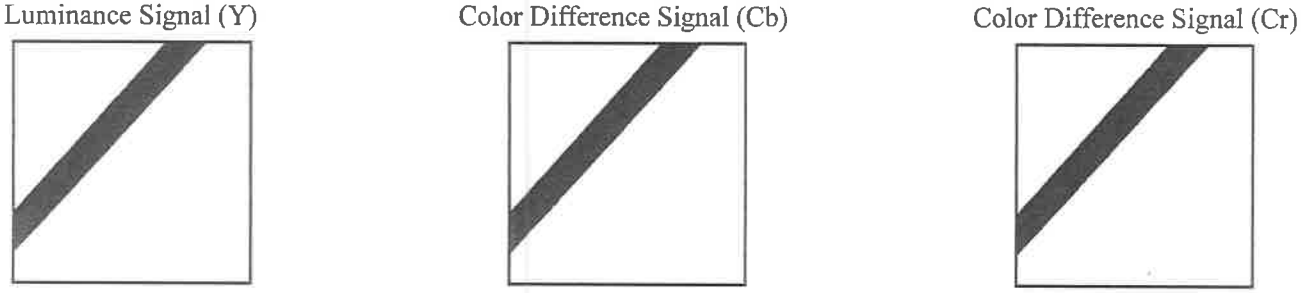
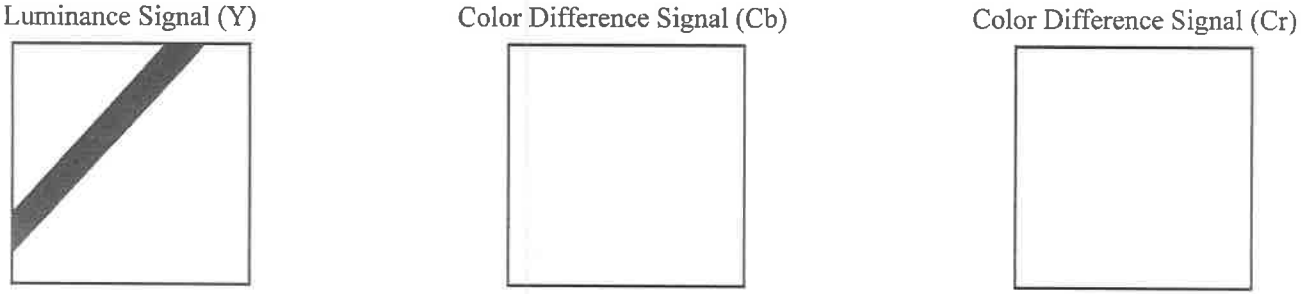

Start
ST21
Variable Length Decoding Process
ST22
Determine Largest Encoding Block Size and Upper Limit of Divided Hierarchical Layer Number
ST23
Determine Target Block to Be Decoded
ST24
Variable Length Decoding Process (Encoding Mode, Prediction Parameter, Transform Coefficient Data)
ST25
INTRA ?
NO
YES
ST26
Intra Prediction Process
ST27
Inter Prediction Process
ST28
Inverse Quantization and Inverse Transformation Process
ST29
Decoding Adding Process
ST30
NO
Are All Target Blocks to Be Decoded Processed?
YES
ST31
Loop Filter Process
End

FIG.13

(a)


Luminance Signal (Y)
Color Difference Signal (Cb)
Color Difference Signal (Cr)

(b)


Luminance Signal (Y)
Color Difference Signal (Cb)
Color Difference Signal (Cr)

(c)

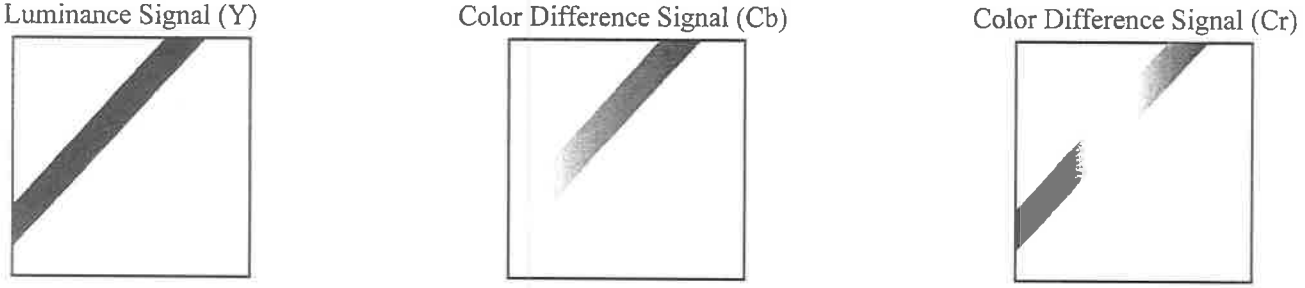

Luminance Signal (Y)
Color Difference Signal (Cb)
Color Difference Signal (Cr)

FIG.14

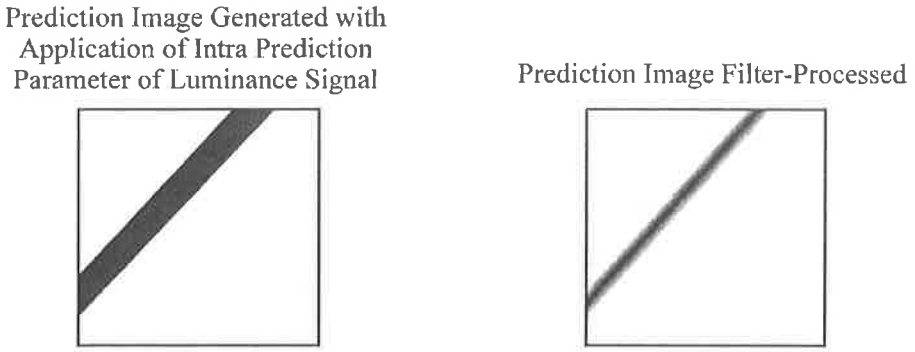
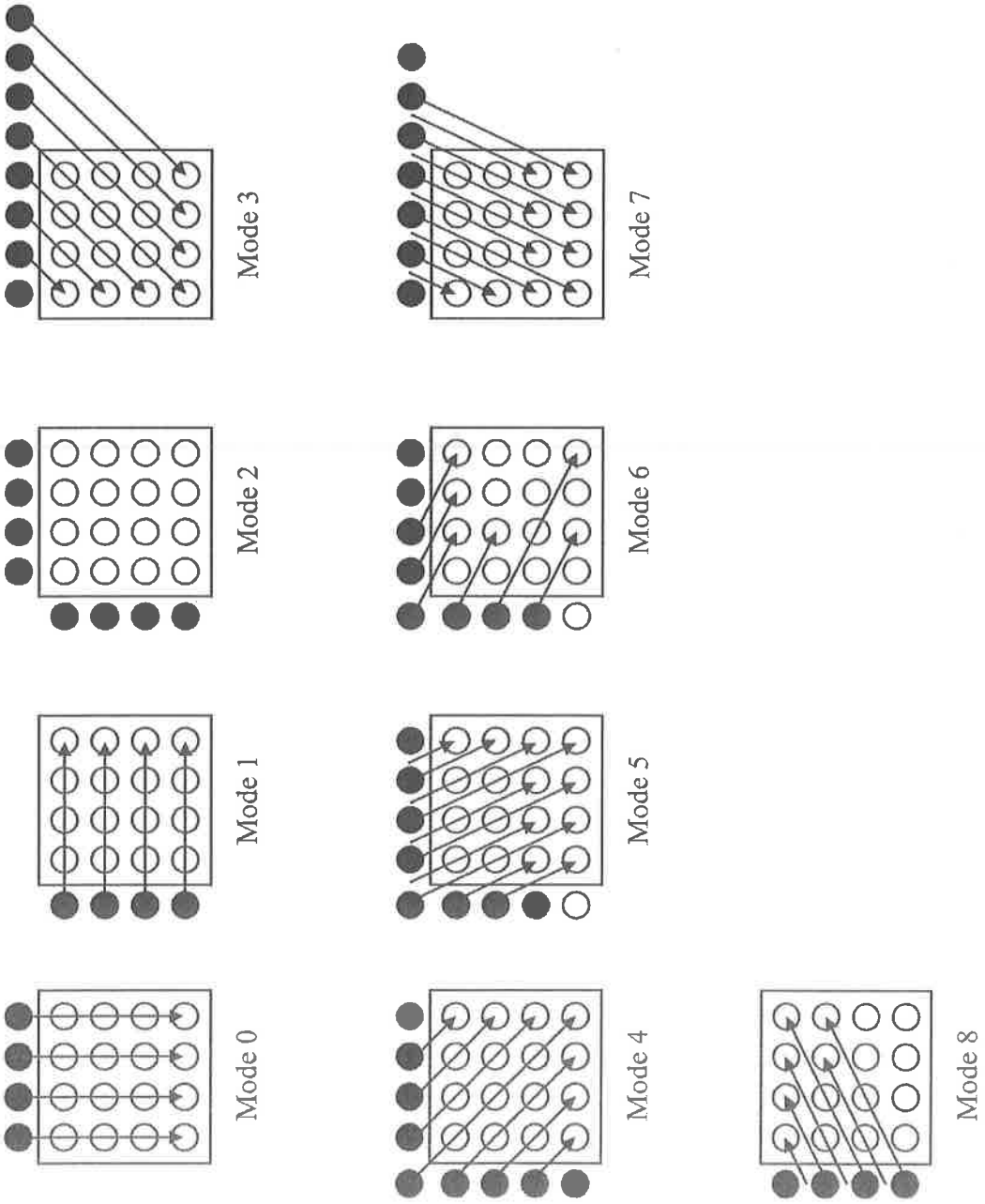

Prediction Image Generated with Application of Intra Prediction Parameter of Luminance Signal
Prediction Image Filter-Processed

FIG.15


Mode 3
Mode 7
Mode 2
Mode 6
Mode 1
Mode 5
Mode 0
Mode 4
Mode 8