WHAT IS CLAIMED IS:

~~1. A decoder, the decoder comprising circuitry configured to:~~
~~receive a bitstream including a current coded block;~~
~~determine a decoded current block;~~
~~determine that an unavailable reference block update mode is enabled in the bitstream for the current coded block; and~~
~~update an unavailable reference frame using the decoded current block.~~

~~2. The decoder of claim 1, wherein the unavailable reference block update mode is included in a header of the bitstream.~~

~~3. The decoder of claim 2, wherein the unavailable reference block update mode is included in a picture parameter set (PPS) or a sequence parameter set (SPS) contained within the bitstream.~~

~~4. The decoder of claim 1, wherein the bitstream includes a second current coded block and the decoder is further configured to determine that a mode of the second current coded block includes intra prediction, and skip updating the unavailable reference frame, wherein the current coded block and the second current coded block are within different frames.~~

~~5. The decoder of claim 1, wherein the current block includes a coding tree unit, a coding unit, or a prediction unit.~~

~~6. The decoder of claim 1, wherein updating the unavailable reference frame includes replacing luma values of the unavailable reference frame with co-located luma values of the decoded current block.~~

~~7. The decoder of claim 1, further comprising:~~
~~an entropy decoder processor configured to receive the bit stream and decode the bitstream into quantized coefficients;~~
~~an inverse quantization and inverse transformation processor configured to process the quantized coefficients including performing an inverse discrete cosine;~~
~~a deblocking filter; a~~
~~frame buffer; and~~
~~an intra prediction processor.~~

8. The decoder of claim 1 further configured to:

receive a second coded block;

determine that an inter prediction mode is enabled for the second coded block; and

determine a second decoded block using the updated unavailable reference frame as a reference frame and according to the inter prediction mode.

9. The decoder of claim 1, wherein the current decoded block forms part of a quadtree plus binary decision tree.

10. The decoder of claim 1, wherein the current decoded block is a non-leaf node of the quadtree plus binary decision tree.

11. A method comprising:

receiving, by a decoder, a bitstream including a current coded block;

determining a decoded current block;

determining that an unavailable reference block update mode is enabled in the bitstream for the current coded block; and

updating an unavailable reference frame using the decoded current block.

12. The method of claim 11, wherein the unavailable reference block update mode is included in a header of the bitstream.

13. The method of claim 12, wherein the unavailable reference block update mode is included in a picture parameter set (PPS) or a sequence parameter set (SPS) contained within the bitstream.

14. The method of claim 11, wherein the bitstream includes a second current coded block, the method further comprising:

determining that a mode of the second current coded block includes intra prediction; and

skipping updating the unavailable reference frame, wherein the current coded block and the second current coded block are within different frames.

15. The method of claim 11, wherein the current block includes a coding tree unit, a coding unit, or a prediction unit.

16. The method of claim 11, wherein updating the unavailable reference frame includes

replacing luma values of the unavailable reference frame with co-located luma values of the decoded current block.

17. The method of claim 11, the decoder further comprising:

an entropy decoder processor configured to receive the bit stream and decode the bitstream into quantized coefficients;

an inverse quantization and inverse transformation processor configured to process the quantized coefficients including performing an inverse discrete cosine;

a deblocking filter; a

frame buffer; and

an intra prediction processor.

18. The method of claim 11 further comprising:

receiving a second coded block;

determining that an inter prediction mode is enabled for the second coded block;

determining a second decoded block using the updated unavailable reference frame as a reference frame and according to the inter prediction mode.

19. The method of claim 11, wherein the current decoded block forms part of a quadtree plus binary decision tree.

20. The method of claim 11, wherein the current decoded block is a non-leaf node of the quadtree plus binary decision tree.

21. A decoder, the decoder comprising circuitry configured to:

receive a current block;

mark the current block for updating an unavailable reference frame based on the current block; and

update the unavailable reference frame using the current block.

22. The decoder of claim 23, wherein an unavailable reference block update mode is not explicitly signaled in a bitstream for the current block.

23. The decoder of claim 23 further configured to determine that an unavailable reference block update mode is not explicitly signaled in a bitstream for the current block.

24. The decoder of claim 23 further configured to determine that a field in a header of a bitstream indicates that an unavailable reference frame update mode is false or not present.

~~25. The decoder of claim 23 further configured to determine that the current block uses the unavailable reference frame as a reference for inter prediction and applies illumination compensation, wherein the marking is in response to or based on the determining.~~

~~26. The decoder of claim 23, further configured to determine that two or more neighboring blocks to the current block use an unavailable reference motion vector for inter prediction, wherein the marking is in response to or based on the determining.~~

~~27. The decoder of claim 23, further configured to determine block update candidates after a frame of the current block has been decoded.~~

~~28. The decoder of claim 29, further configured to determine:~~

~~that the current block is intra coded;~~

~~that a plurality of neighboring blocks use the unavailable reference frame as a reference for inter prediction; and~~

~~that the plurality of neighboring blocks include a zero motion vector, wherein the marking is in response to or based on the determining.~~

~~29. The decoder of claim 29, further configured to determine:~~

~~that the current block is intra coded;~~

~~that a plurality of neighboring blocks use the unavailable reference frame as a reference for inter prediction; and~~

~~that the plurality of neighboring blocks include a respective motion vector that is the same or differ by less than a predetermined amount;~~

~~wherein the marking is in response to or based on the determining.~~

~~30. The decoder of claim 23, further configured to determine:~~

~~that neighboring blocks on at least three sides of the current block use the unavailable reference frame as a reference for inter prediction;~~

~~wherein the marking is in response to or based on the determining and the current block is a coding unit and all blocks of the coding unit are marked for update.~~

~~31. The decoder of claim 23, further configured to determine:~~

~~that neighboring blocks on at least three sides of the current block use the unavailable reference frame as a reference for inter prediction, and wherein:~~

~~the marking is in response to or based on the determining; and~~

the current block is a coding tree unit and all blocks of the coding tree unit that do not use the unavailable reference frame as a reference for inter prediction are marked for update.

32. The decoder of claim 23, further comprising:

an entropy decoder processor configured to receive the bit stream and decode the bitstream into quantized coefficients;

an inverse quantization and inverse transformation processor configured to process the quantized coefficients including performing an inverse discrete cosine;

a deblocking filter;

a frame buffer; and

an intra prediction processor.

33. A method comprising:

receiving, by a decoder, a current block;

marking the current block for updating an unavailable reference frame based on the current block; and

updating the unavailable reference frame using the current block.

34. The method of claim 35, wherein an unavailable reference block update mode is not explicitly signaled in a bitstream for the current block.

35. The method of claim 35, further comprising determining that an unavailable reference block update mode is not explicitly signaled in a bitstream for the current block.

36. The method of claim 35, further comprising determining that a field in a header of a bitstream indicates that an unavailable reference frame update mode is false or not present.

37. The method of claim 35, further comprising determining that the current block uses the unavailable reference frame as a reference for inter prediction and applies illumination compensation, wherein the marking is in response to or based on the determining.

38. The method of claim 35, further comprising determining that two or more neighboring blocks to the current block use an unavailable reference motion vector for inter prediction, wherein the marking is in response to or based on the determining.

39. The method of claim 35, further comprising determining block update candidates after a frame of the current block has been decoded.

~~40. The method of claim 20, further comprising determining:~~

~~that the current block is intra coded;~~

~~that a plurality of neighboring blocks use the unavailable reference frame as a reference for inter prediction; and~~

~~that the plurality of neighboring blocks include a zero motion vector, wherein the marking is in response to or based on the determining.~~

~~41. The method of claim 20, further comprising determining:~~

~~that the current block is intra coded;~~

~~that a plurality of neighboring blocks use the unavailable reference frame as a reference for inter prediction; and~~

~~that the plurality of neighboring blocks include a respective motion vector that is the same or differ by less than a predetermined amount; wherein the marking is in response to or based on the determining.~~

~~42. The method of claim 35, further comprising determining that neighboring blocks on at least three sides of the current block use the unavailable reference frame as a reference for inter prediction, wherein:~~

~~the marking is in response to or based on the determining; and~~

~~the current block is a coding unit and all blocks of the coding unit are marked for update.~~

~~43. The method of claim 35, further comprising determining that neighboring blocks on at least three sides of the current block use the unavailable reference frame as a reference for inter prediction, wherein:~~

~~the marking is in response to or based on the determining; and~~

~~the current block is a coding tree unit and all blocks of the coding tree unit that do not use the unavailable reference frame as a reference for inter prediction are marked for update.~~

~~44. The method of claim 35, the decoder further comprising:~~

~~an entropy decoder processor configured to receive the bit stream and decode the bitstream into quantized coefficients;~~

~~an inverse quantization and inverse transformation processor configured to process the quantized coefficients including performing an inverse discrete cosine;~~

~~a deblocking filter;~~

~~a frame buffer; and~~

~~an intra prediction processor.~~

1. A decoder configured to:

receive a bitstream generated by an encoder and comprising signaling information and a first coded picture to be used as a reference picture and a second coded picture, the second coded picture comprising a first block and a second block, the signaling information including a sequence parameter set (SPS) indicating that a mode is enabled in which a portion of a reference picture can be modified;

decode and store the first picture as a reference picture;

using the mode, modify a portion of the reference picture solely in response to information generated by the encoder and included in the bitstream;

utilize the modified portion of the reference picture as a predictor for the first block of the second picture;

decode the first block by adding residual pixels to the predictor; and

decode the second block of the second picture without using a modified portion of any reference picture.

2. The decoder of claim 1 wherein the first block and the second block are NxN coding units.

3. The decoder of claim 1 wherein the second block of the second picture is an intra-coded block.