includes (i) fifth information indicating whether the offset value is positive or negative and (ii) sixth information indicating a scope of application of the offset value.

[0022]

With this, a further variety of information items are coded by the bypass arithmetic coding according to the state, after the context arithmetic coding. Thus, the processing efficiency improves.

[0023]

In addition, for example, in the performing of context arithmetic coding, the second information may be coded which includes at least one of (i) information indicating whether or not information on SAO processing for a ~~right~~left region is used in the SAO processing for the first region and (ii) information indicating whether or not information on SAO processing for an upper region is used in the SAO processing for the first region, the ~~right~~left region being adjacent to the first region and being to the ~~right~~left of the first region, the upper region being adjacent to the first region and being on top of the first region.

[0024]

With this, in the context arithmetic coding that is consecutively performed, information indicating the reuse from above or left is properly coded.

[0025]

In addition, an image decoding method according to an aspect of the present invention may be an image decoding method including: performing context arithmetic decoding to consecutively decode (i) first information indicating whether or not to perform sample adaptive offset (SAO) processing for a first region of an image and (ii) second information indicating whether or not to use, in the SAO processing for the first region, information on SAO processing for a region other than the first region, the context arithmetic decoding being arithmetic decoding using a variable probability, the SAO processing being offset processing on a pixel value; and performing bypass arithmetic decoding to decode other information which is information on the SAO processing for the first

[0029]

In addition, for example, in the performing of bypass arithmetic decoding, the other information may be decoded which includes fourth information indicating an absolute value of an offset value.

[0030]

With this, a variety of information items are decoded by the bypass arithmetic decoding after the context arithmetic decoding. In sum, processes of the same type are collectively performed. Thus, the processing efficiency improves.

[0031]

In addition, for example, in the performing of bypass arithmetic decoding, when the SAO processing for the first region is the band offset processing, the other information may be decoded which includes (i) fifth information indicating whether the offset value is positive or negative and (ii) sixth information indicating a scope of application of the offset value.

[0032]

With this, a further variety of information items are decoded by the bypass arithmetic decoding according to the state after the context arithmetic decoding. Thus, the processing efficiency improves.

[0033]

In addition, for example, in the performing of context arithmetic decoding, the second information may be decoded which includes at least one of (i) information indicating whether or not information on SAO processing for a ~~right~~left region is used in the SAO processing for the first region and (ii) information indicating whether or not information on SAO processing for an upper region is used in the SAO processing for the first region, the ~~right~~left region being adjacent to the first region and being to the ~~right~~left of the first region, the upper region being adjacent to the first region and being on top of the first region.

[0034]

With this, in the context arithmetic decoding that is

The image coding method according to Claim 1 or Claim 2,

wherein in the performing of bypass arithmetic coding, the other information is coded which includes fourth information indicating an absolute value of an offset value.

[Claim 4]

The image coding method according to Claim 3,

wherein in the performing of bypass arithmetic coding, when the SAO processing for the first region is the band offset processing, the other information is coded which includes (i) fifth information indicating whether the offset value is positive or negative and (ii) sixth information indicating a scope of application of the offset value.

[Claim 5]

The image coding method according to any one of Claims 1 to 4,

wherein in the performing of context arithmetic coding, the second information is coded which includes at least one of (i) information indicating whether or not information on SAO processing for a ~~right~~left region is used in the SAO processing for the first region and (ii) information indicating whether or not information on SAO processing for an upper region is used in the SAO processing for the first region, the ~~right~~left region being adjacent to the first region and being to the ~~right~~left of the first region, the upper region being adjacent to the first region and being on top of the first region.

[Claim 6]

An image decoding method comprising:

performing context arithmetic decoding to consecutively decode (i) first information indicating whether or not to perform sample adaptive offset (SAO) processing for a first region of an image and (ii) second information indicating whether or not to use, in the SAO processing for the first region, information on SAO processing for a region other than the first region, the context arithmetic decoding being arithmetic decoding using a variable

processing, the other information is decoded which includes (i) fifth information indicating whether the offset value is positive or negative and (ii) sixth information indicating a scope of application of the offset value.

[Claim 10]

The image decoding method according to any one of Claims 6 to 9,

wherein in the performing of context arithmetic decoding, the second information is decoded which includes at least one of (i) information indicating whether or not information on SAO processing for a ~~right~~left region is used in the SAO processing for the first region and (ii) information indicating whether or not information on SAO processing for an upper region is used in the SAO processing for the first region, the ~~right~~left region being adjacent to the first region and being to the ~~right~~left of the first region, the upper region being adjacent to the first region and being on top of the first region.

[Claim 11]

An image coding apparatus comprising:

control circuitry; and

storage accessible from the control circuitry,

wherein the control circuitry performs context arithmetic coding to consecutively code (i) first information indicating whether or not to perform sample adaptive offset (SAO) processing for a first region of an image and (ii) second information indicating whether or not to use, in the SAO processing for the first region, information on SAO processing for a region other than the first region, the context arithmetic coding being arithmetic coding using a variable probability, the SAO processing being offset processing on a pixel value; and

performs bypass arithmetic coding to code other information which is information on the SAO processing for the first region and different from the first information or the second information, after the first information and the second information are coded, the bypass arithmetic coding being arithmetic coding using a fixed