

Twin Block

Idea: keep two versions for **each** block:

- | old, consistent version
- | new, (possibly) inconsistent version

atomic switch to indicate consistent versions

Example: Modifying Transaction T1

T1

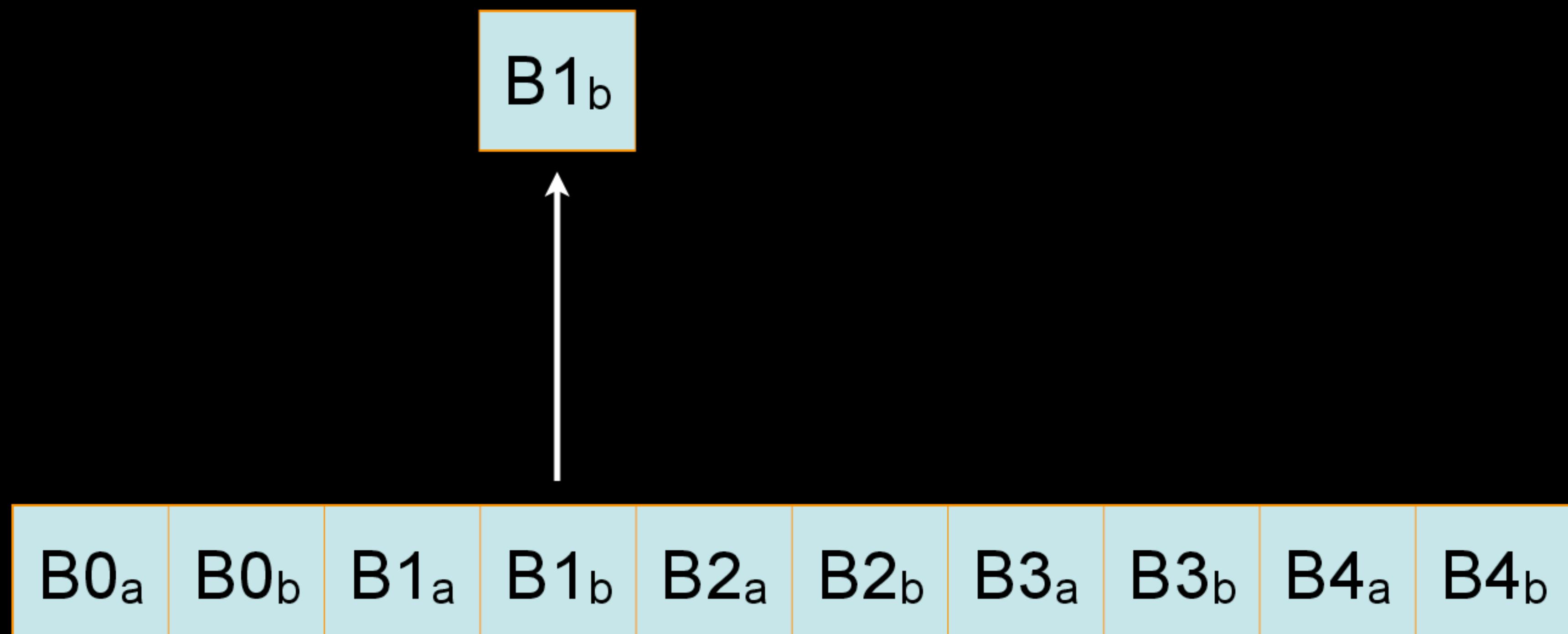
B0 _a	B0 _b	B1 _a	B1 _b	B2 _a	B2 _b	B3 _a	B3 _b	B4 _a	B4 _b
-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------

a

pointer to
consistent version

Read B1

T1

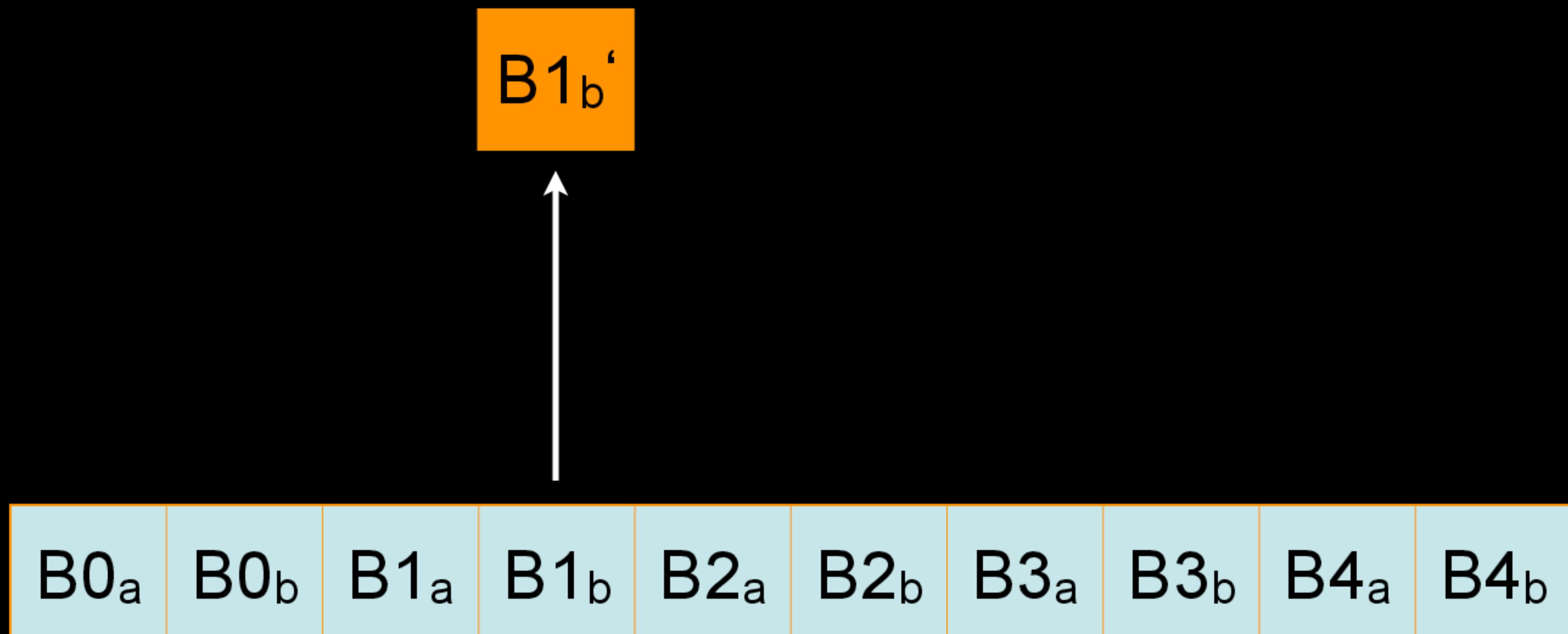


a

pointer to
consistent version

Modify B1

T1

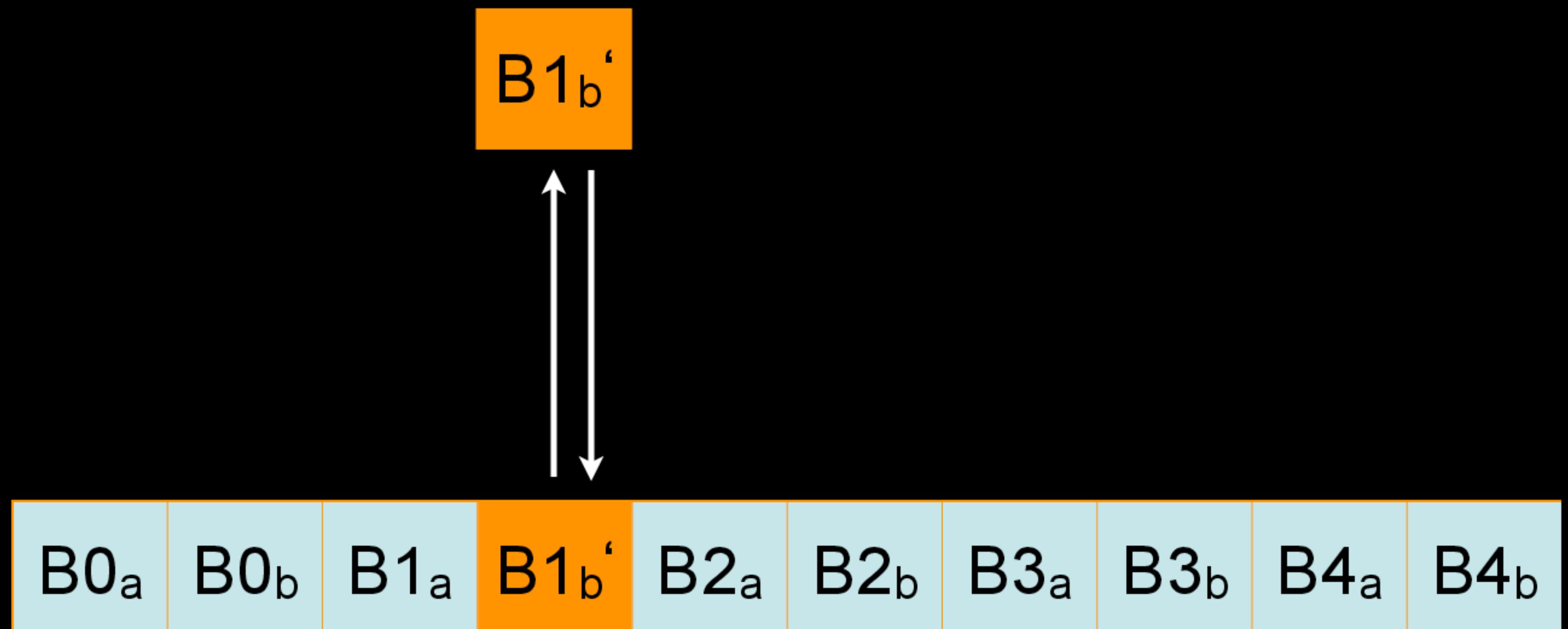


a

pointer to
consistent version

Write Back B1

T1

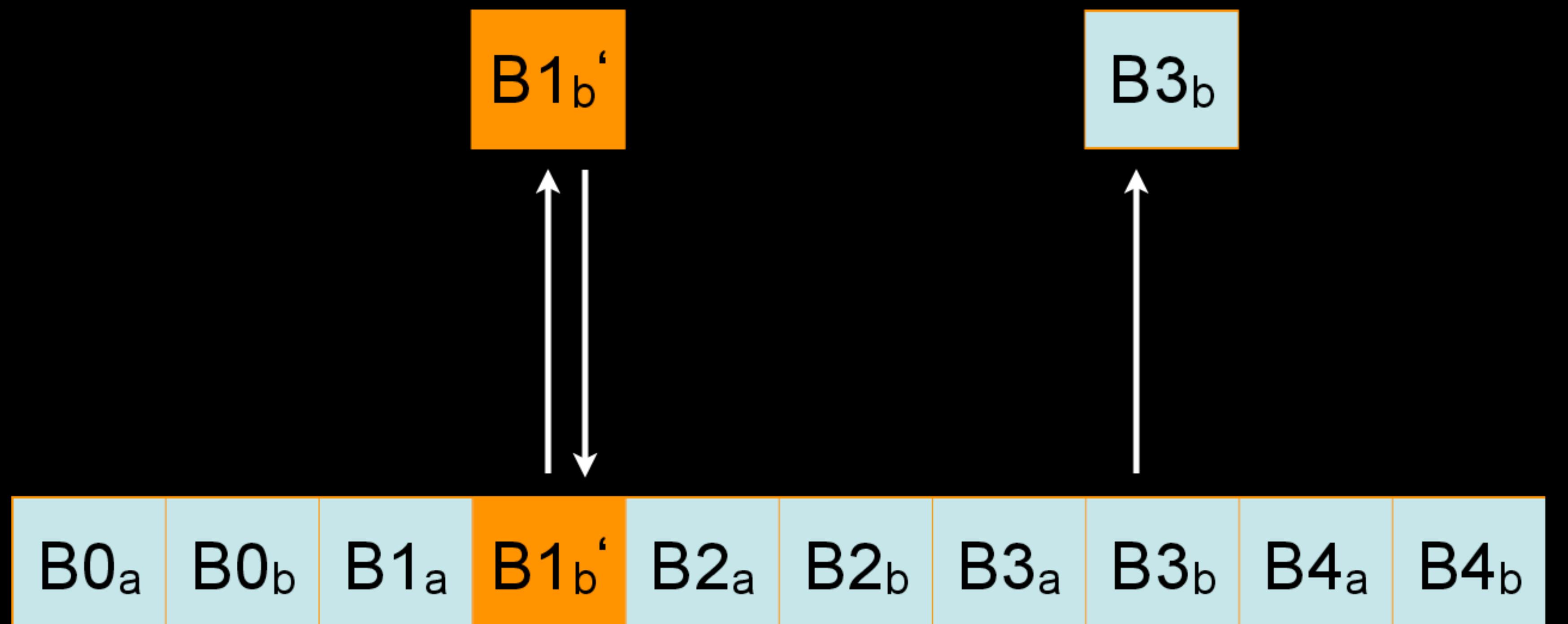


a

pointer to
consistent version

Read B3

T1

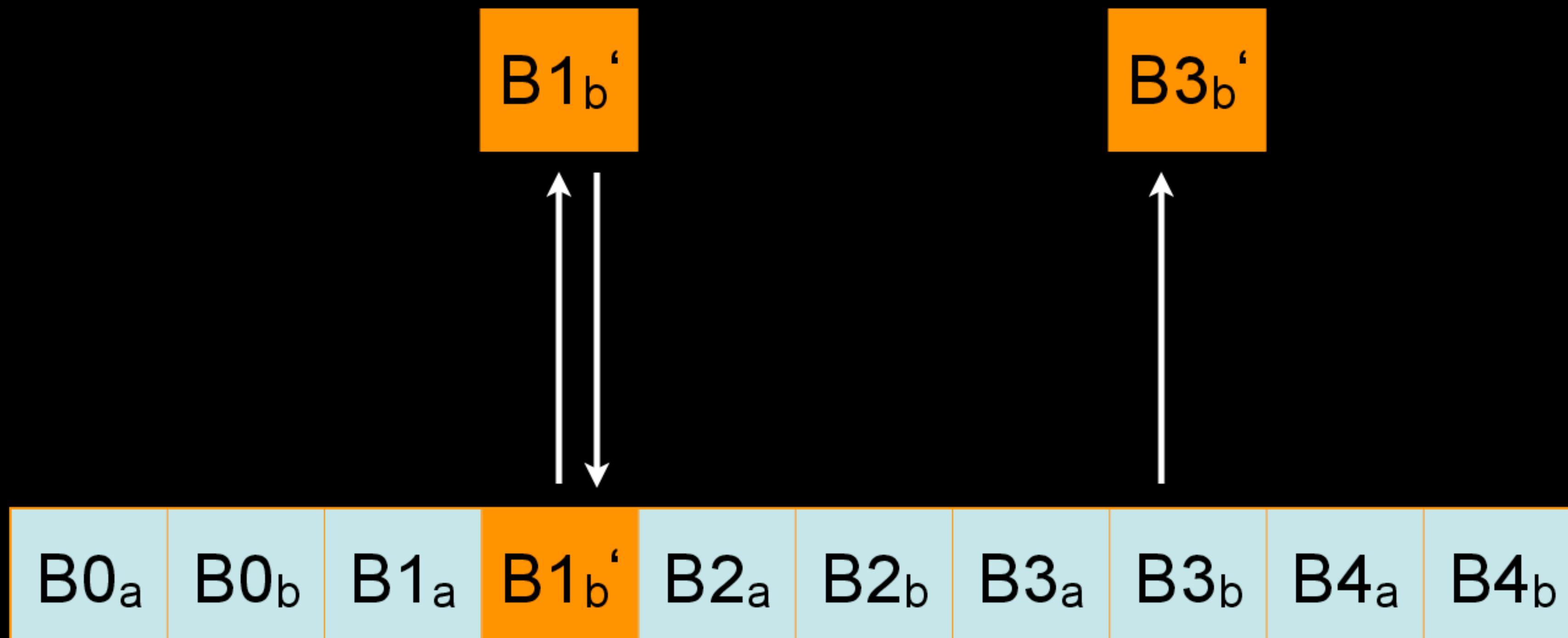


a

pointer to
consistent version

Modify B3

T1

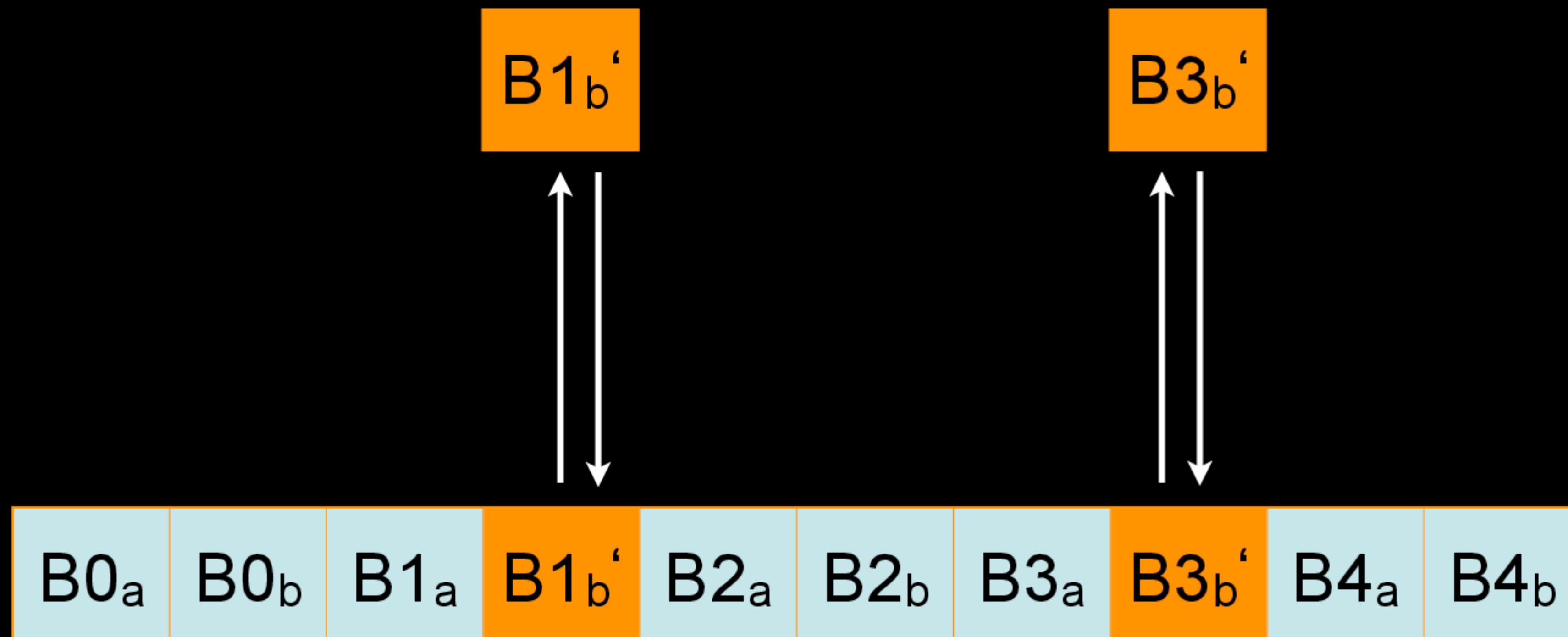


a

pointer to
consistent version

Write Back B3

T1

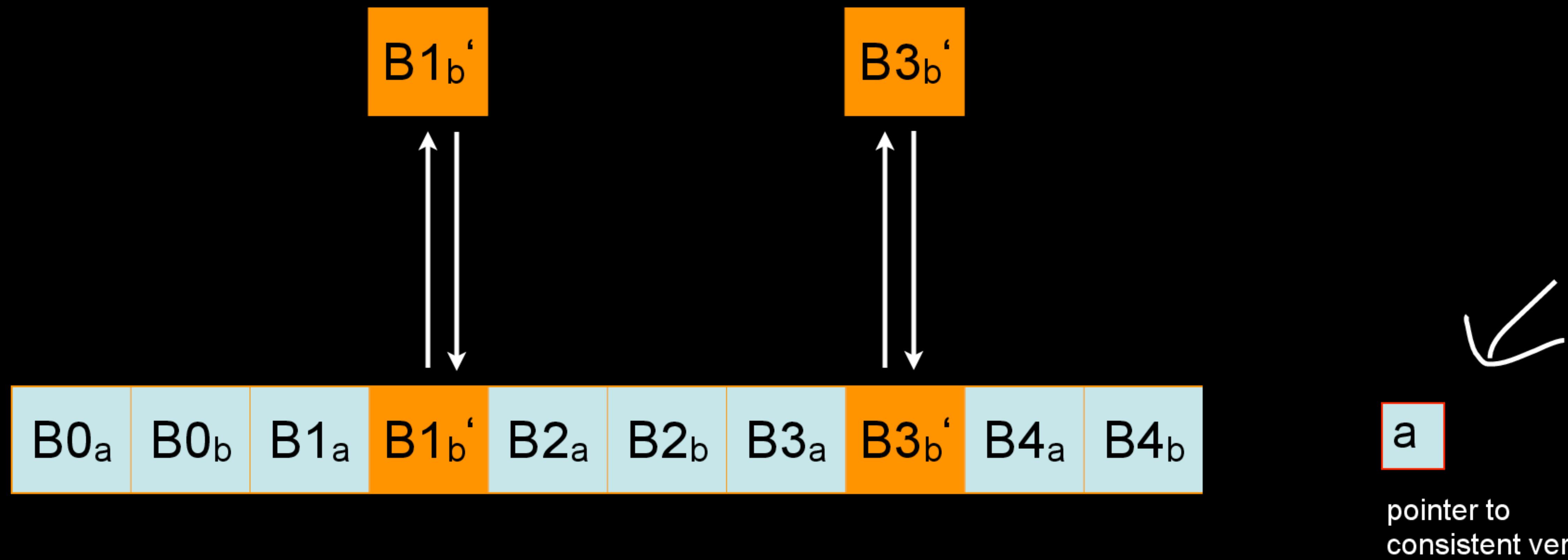


a

pointer to
consistent version

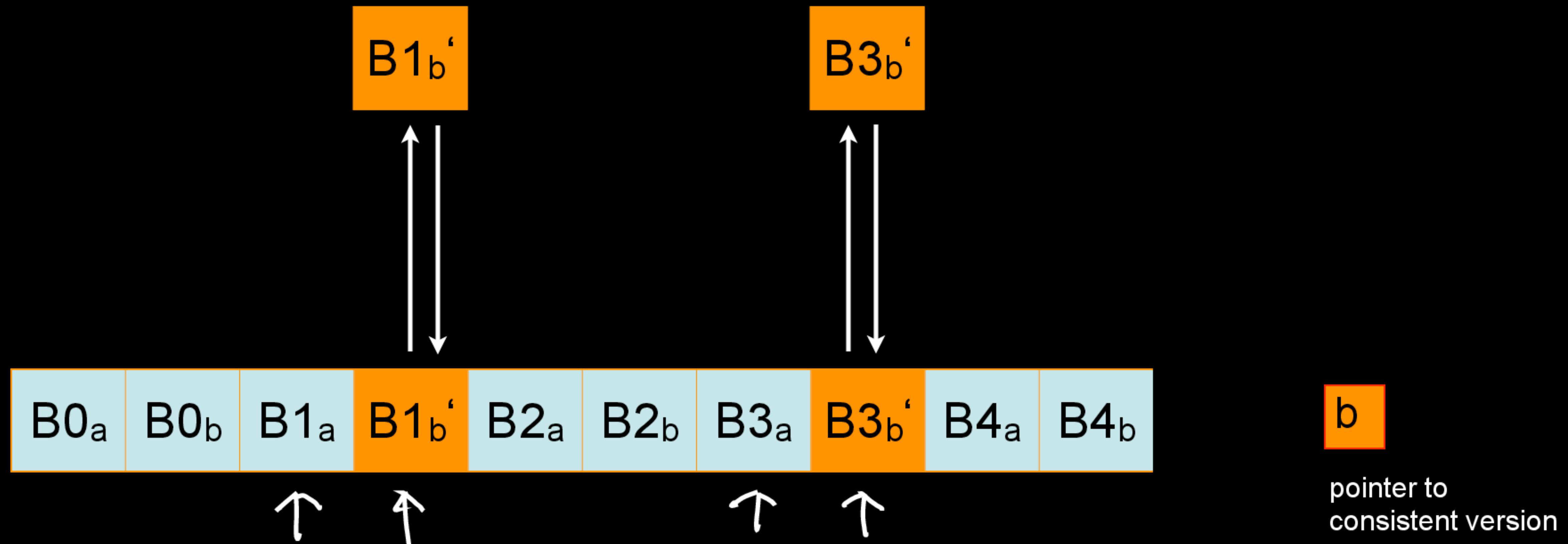
Committing T1?

T1



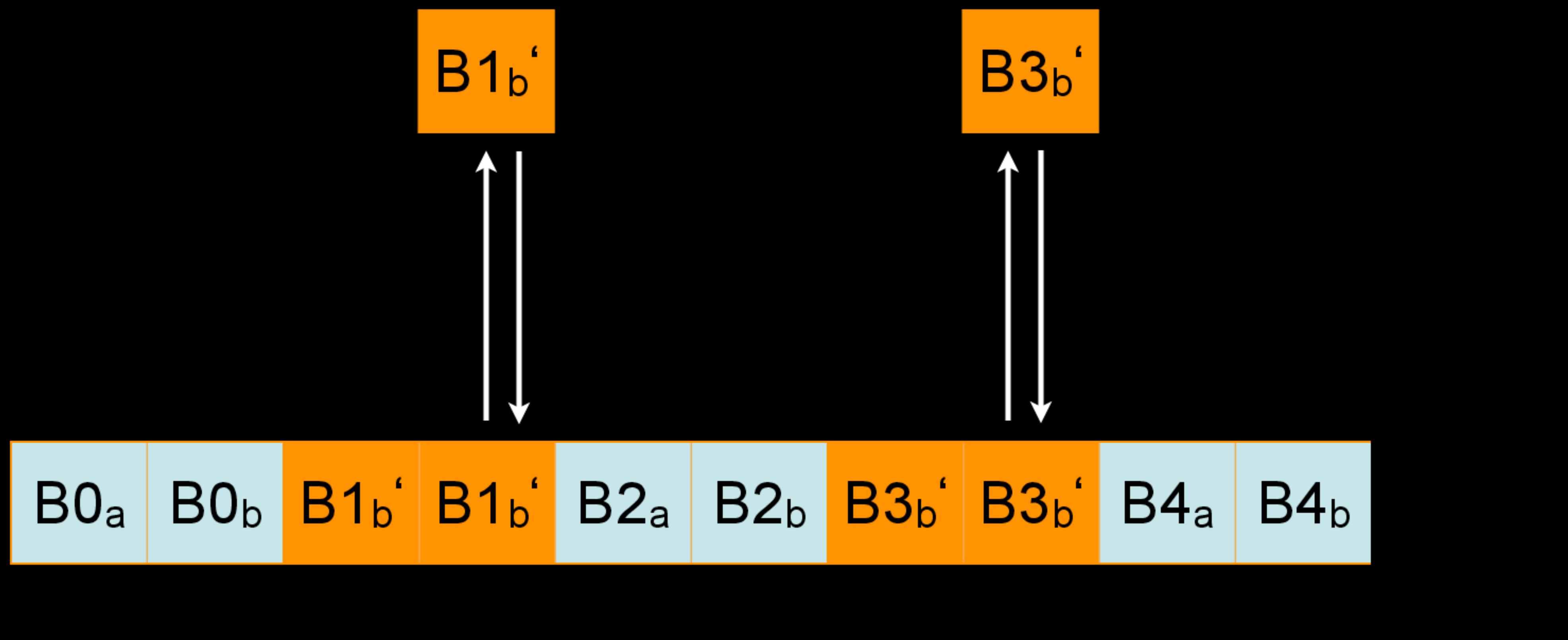
Switch Global Pointer!

T1



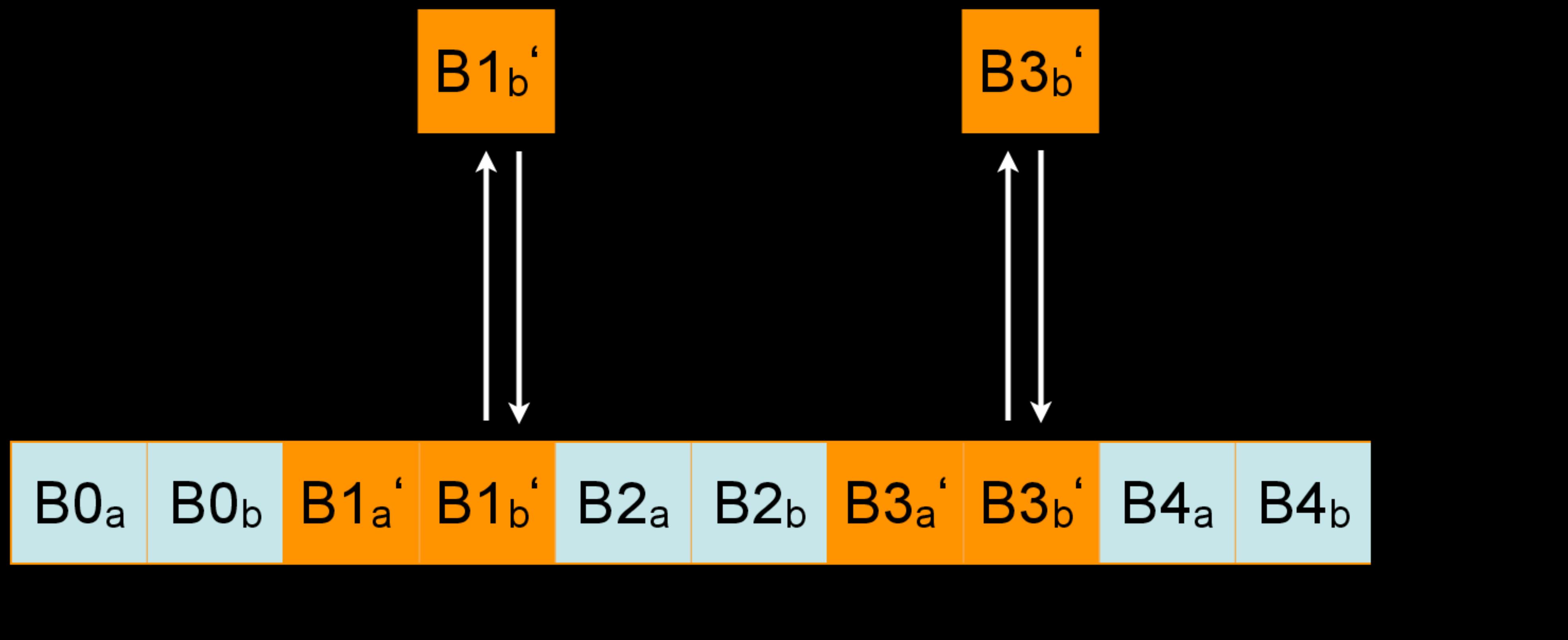
Copy b over a

T1



Copy b over a

T1



Done.

B0 _a	B0 _b	B1 _a	B1 _b	B2 _a	B2 _b	B3 _a	B3 _b	B4 _a	B4 _b
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b



pointer to
consistent version

A Second Transaction T2

T2

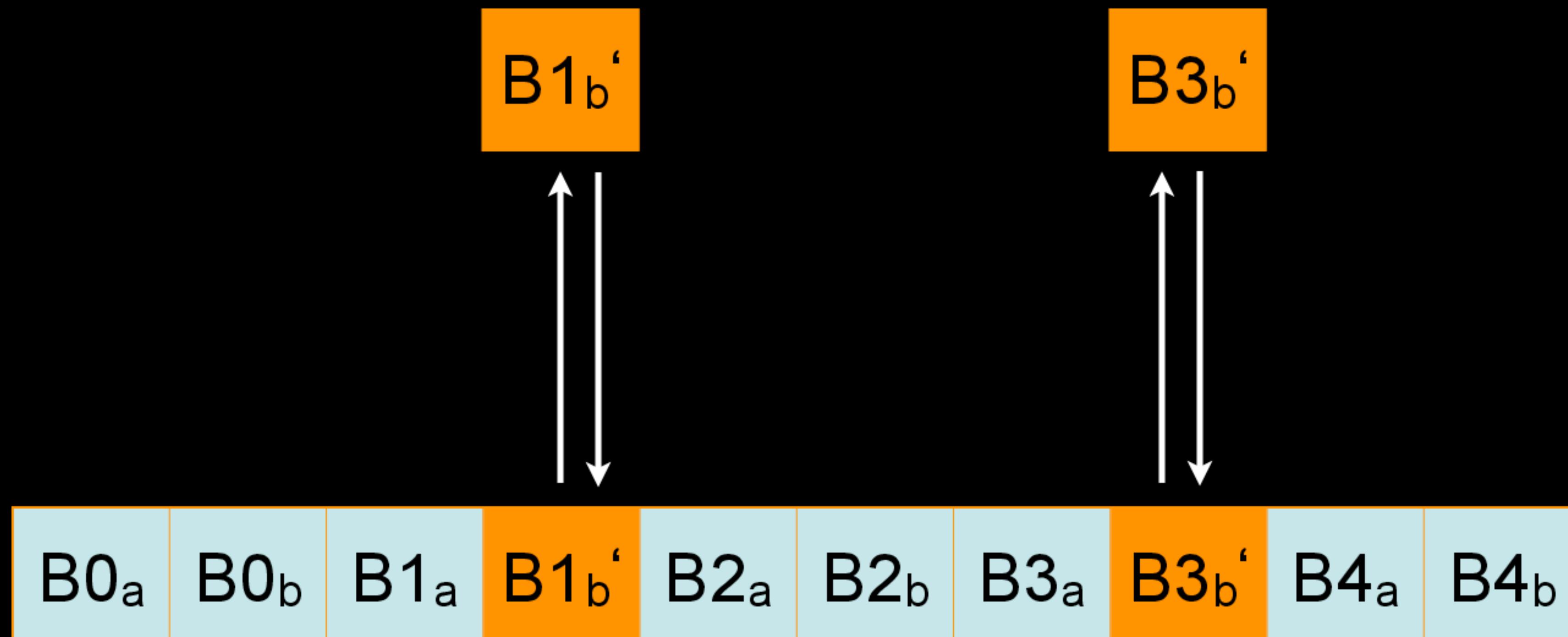


b

pointer to
consistent version

Aborting T1?

T1

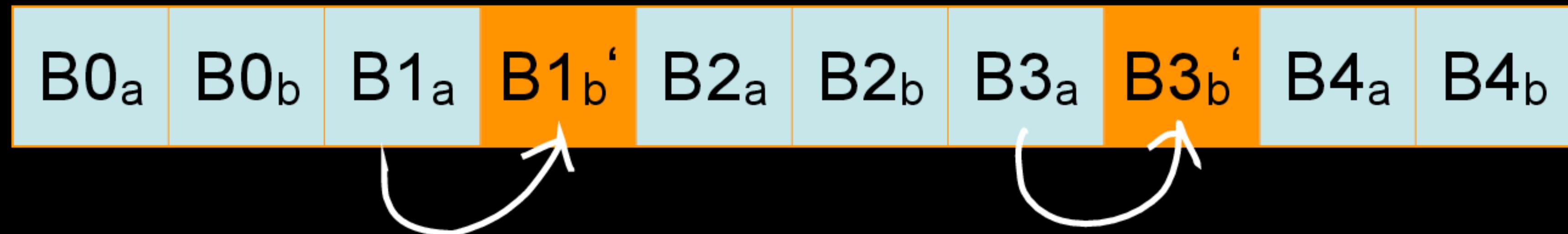


a

pointer to
consistent version

DO NOT Switch Global Pointer!

T1



a

pointer to
consistent version

Copy a over b

B0 _a	B0 _b	B1 _a	B1 _a	B2 _a	B2 _b	B3 _a	B3 _a	B4 _a	B4 _b
-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------

a

pointer to
consistent version

Done.

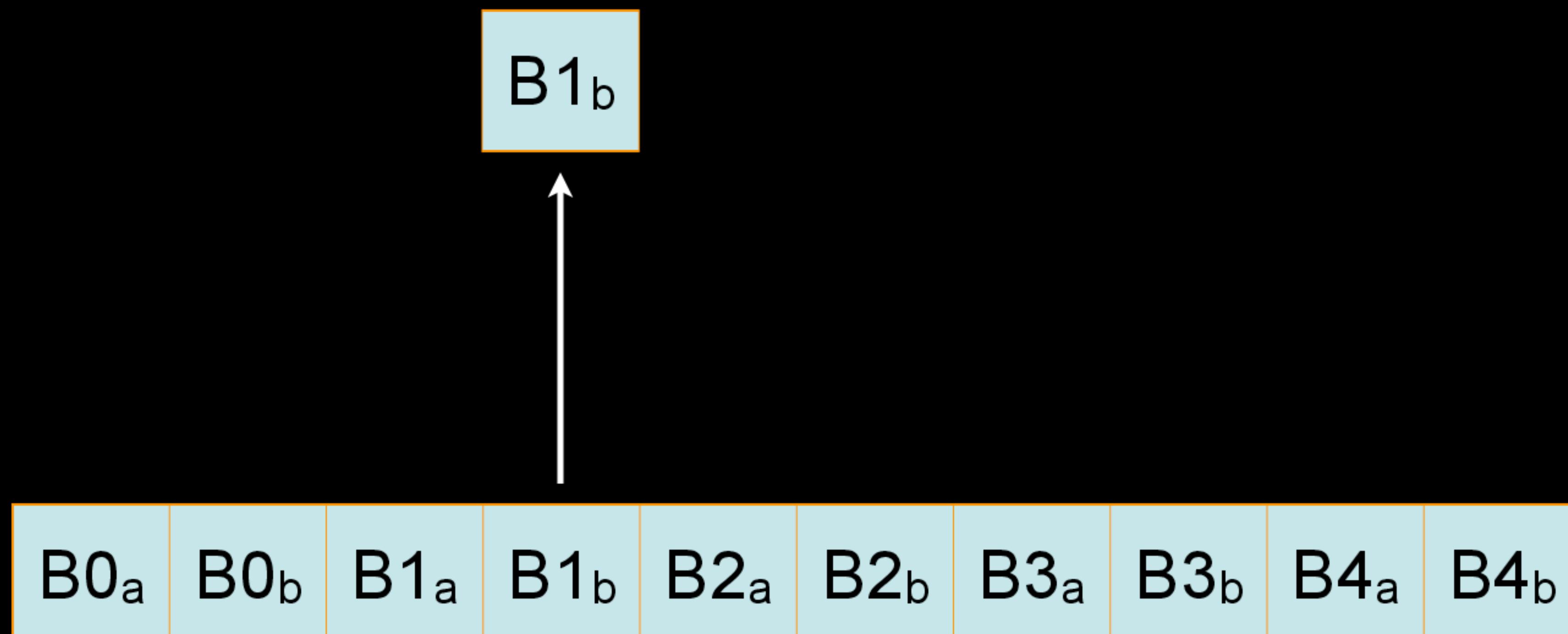
B0 _a	B0 _b	B1 _a	B1 _b	B2 _a	B2 _b	B3 _a	B3 _b	B4 _a	B4 _b
-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------

a

pointer to
consistent version

A Second Transaction T2

T2



a

pointer to
consistent version

Discussion

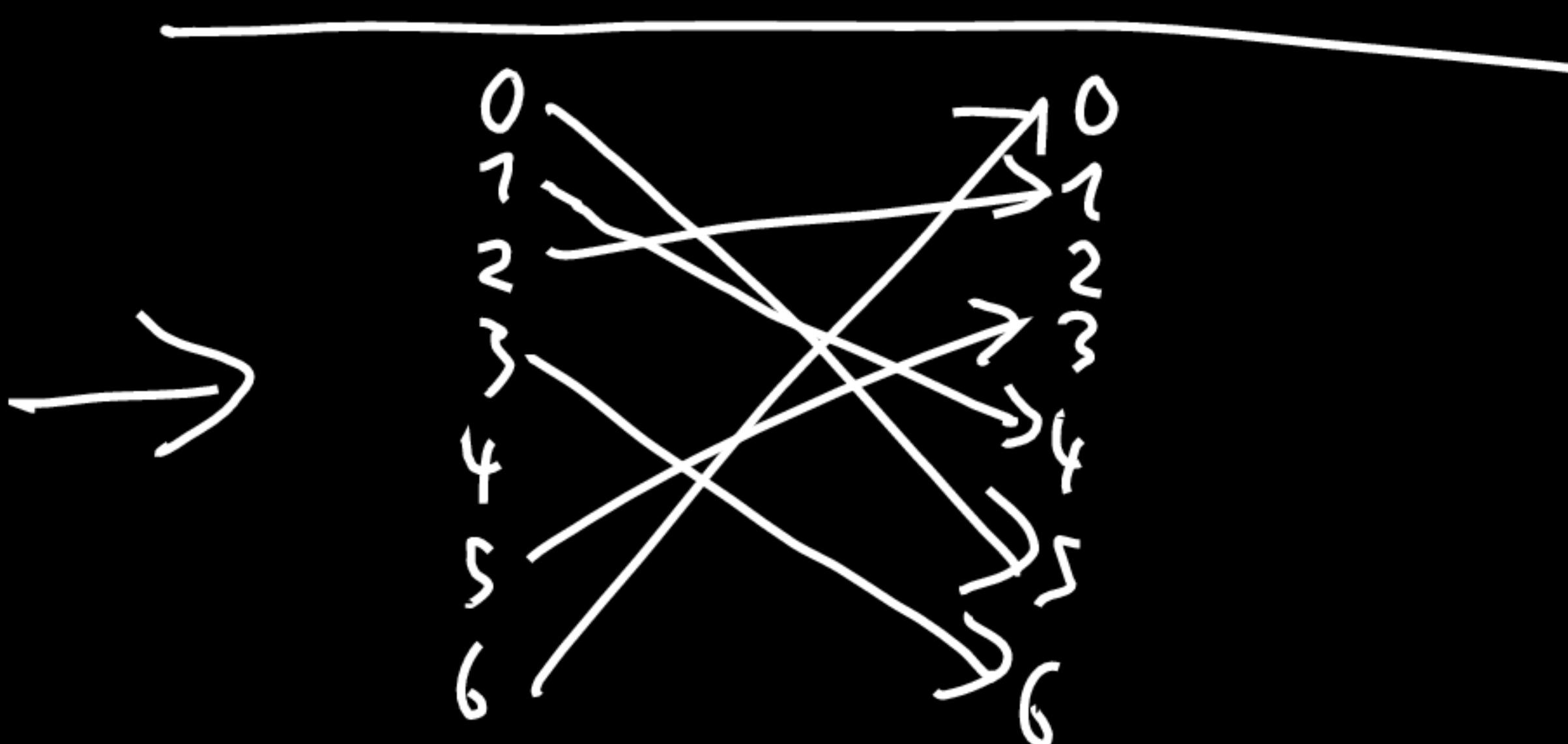
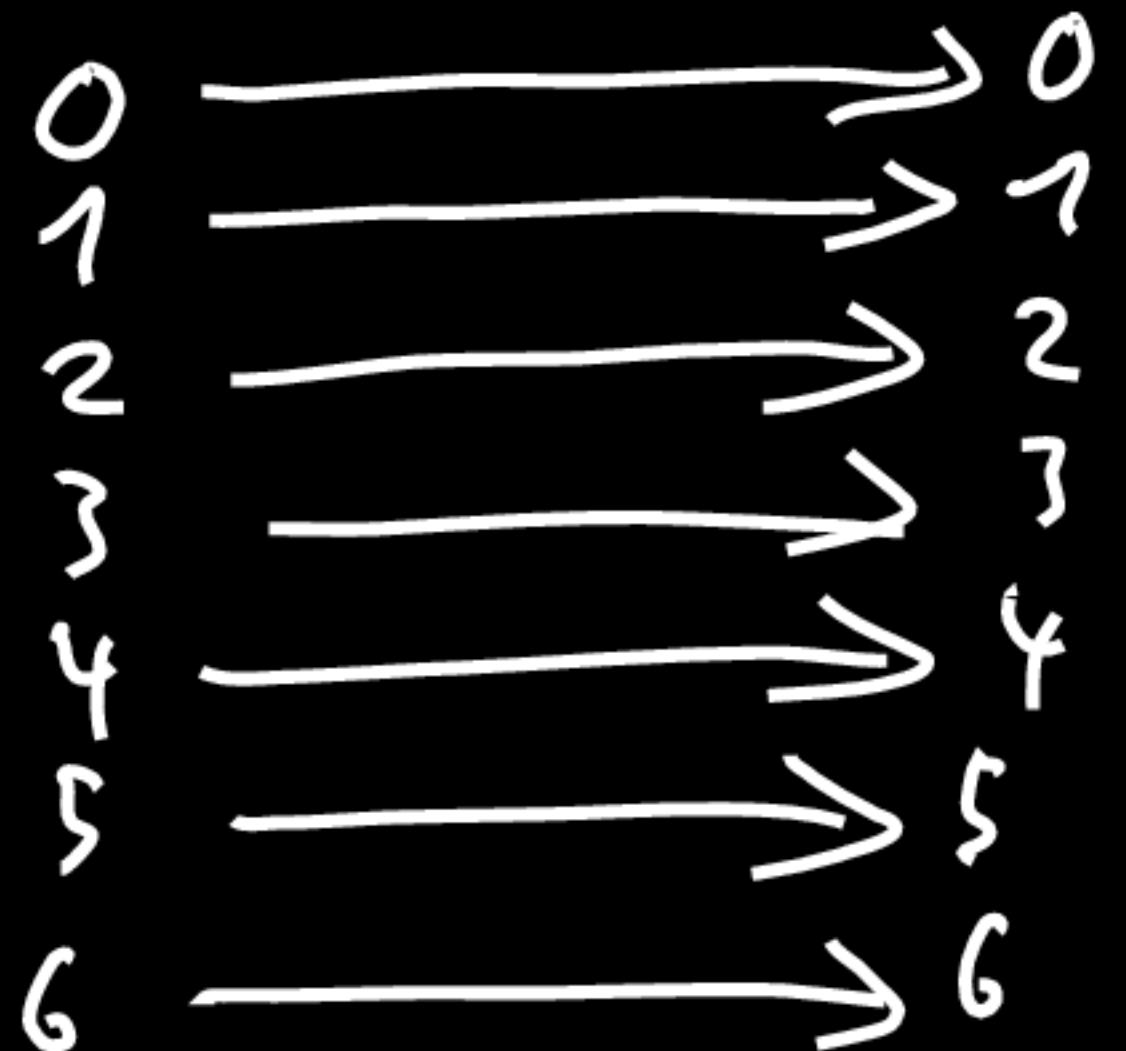
Advantages:

no extra help data structures

undo of changes easy

no fragmentation

Logical physical



Discussion

Advantages:

no extra help data structures

undo of changes easy

no fragmentation

Disadvantages:

Doubles storage for all blocks