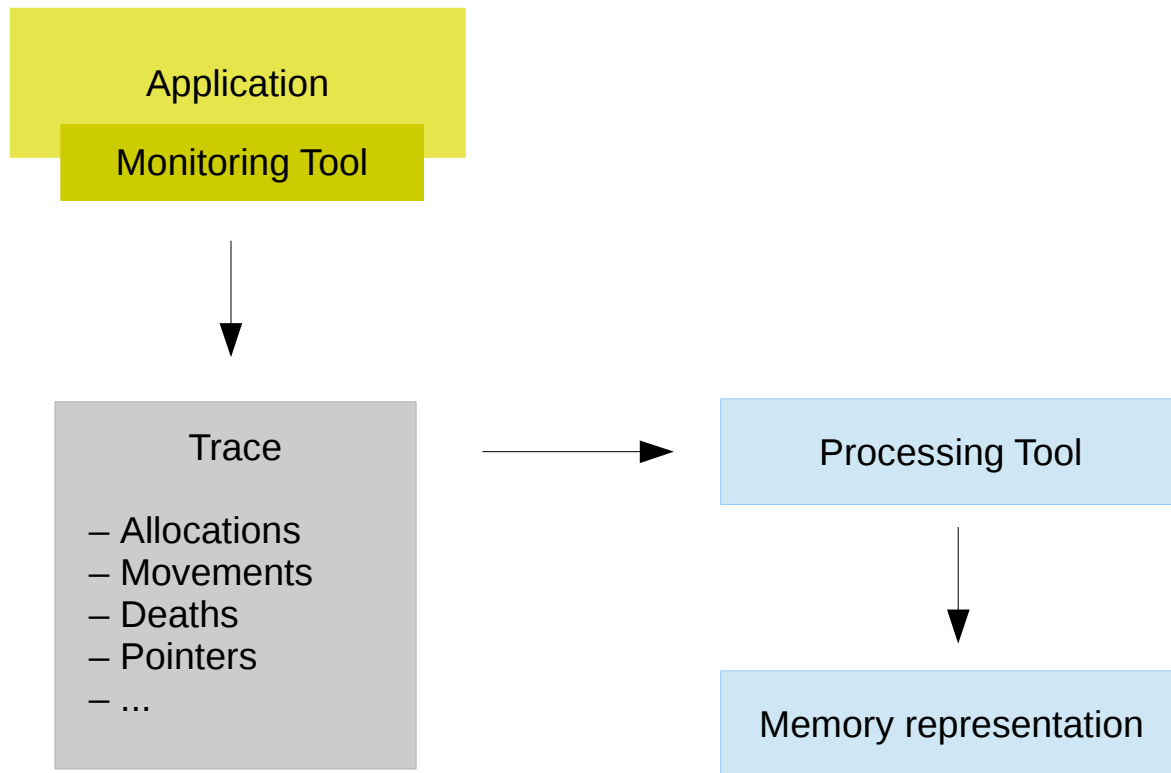




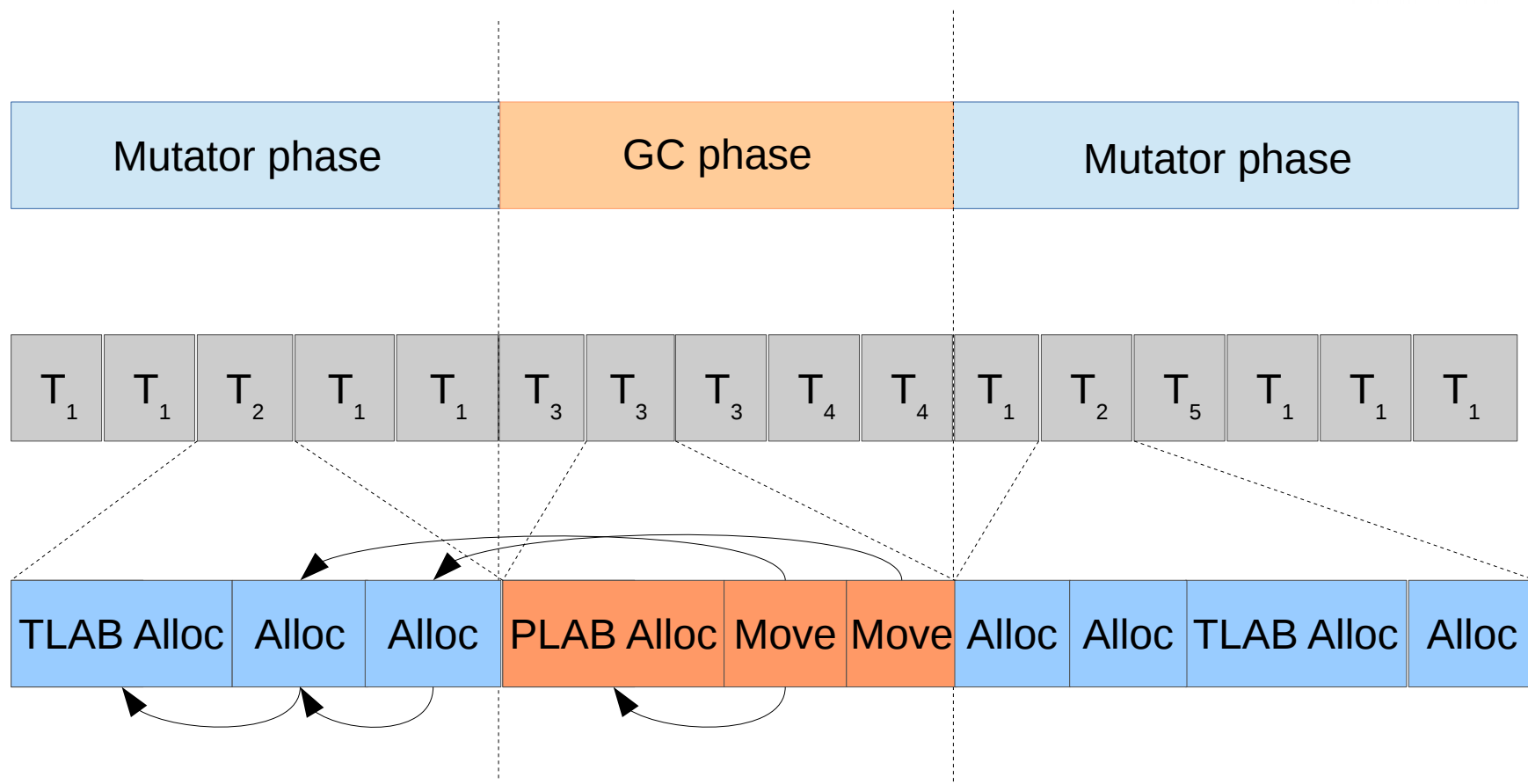
Offline Processing of Data

Verena Bitto
Philipp Lengauer

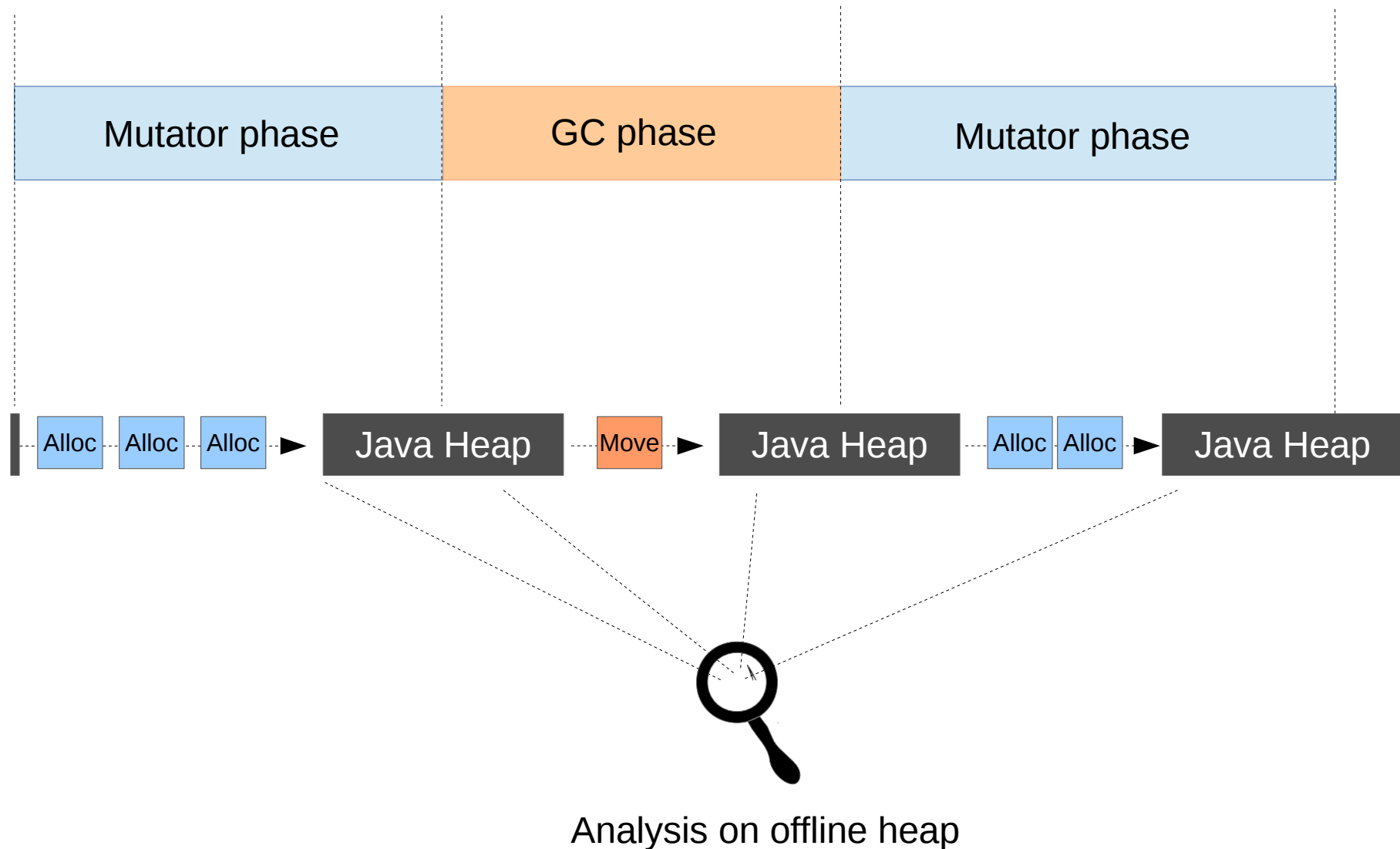
2016-03-13



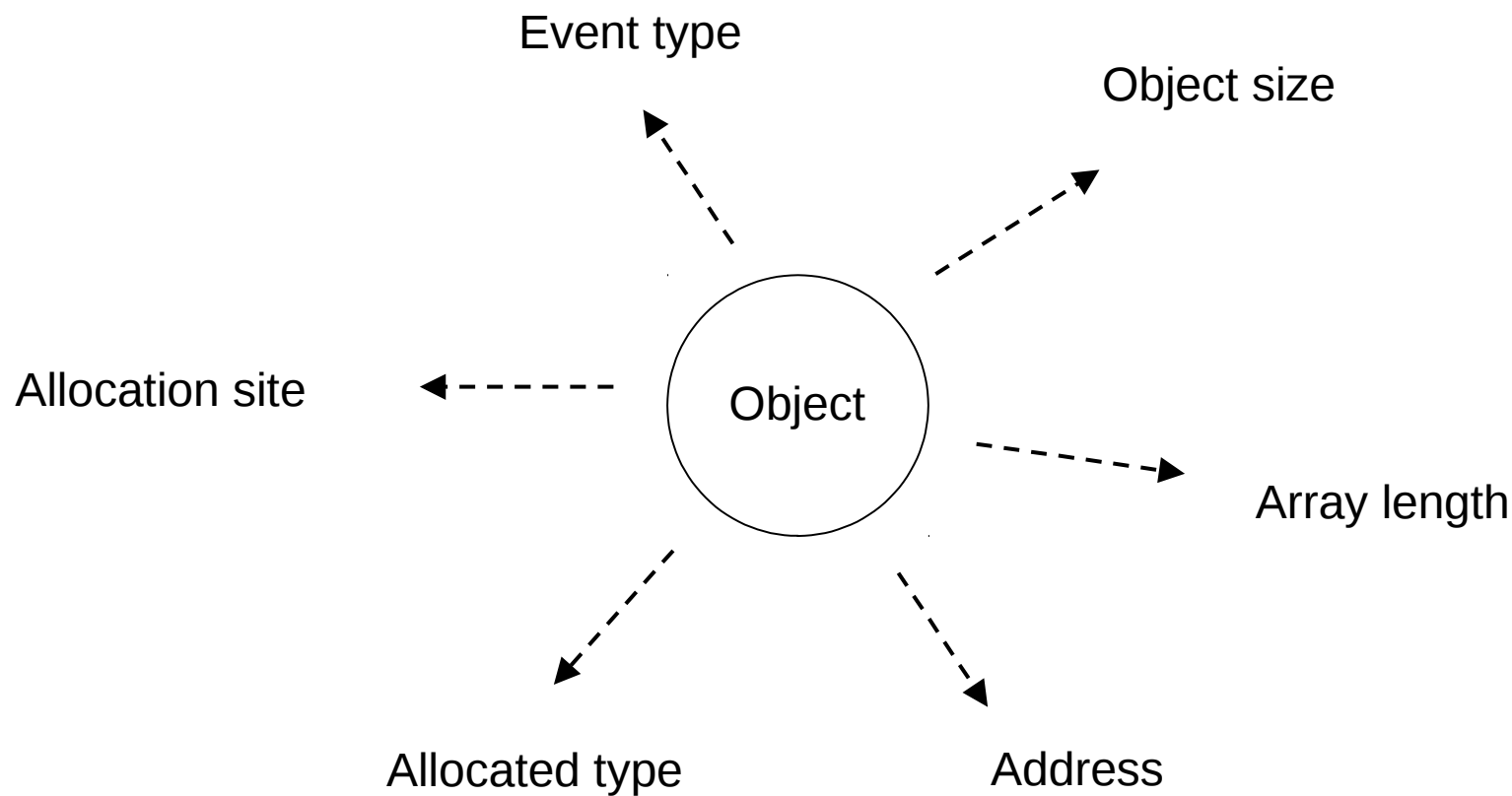
Trace Data



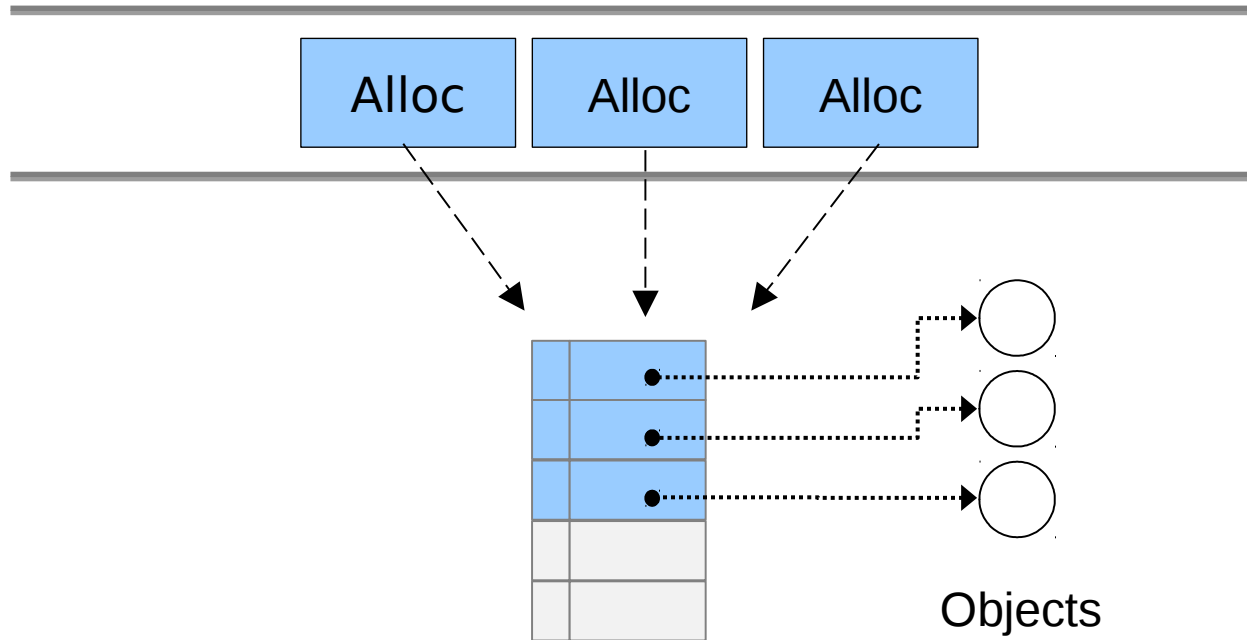
Memory representation (1/2)



Memory representation (2/2)



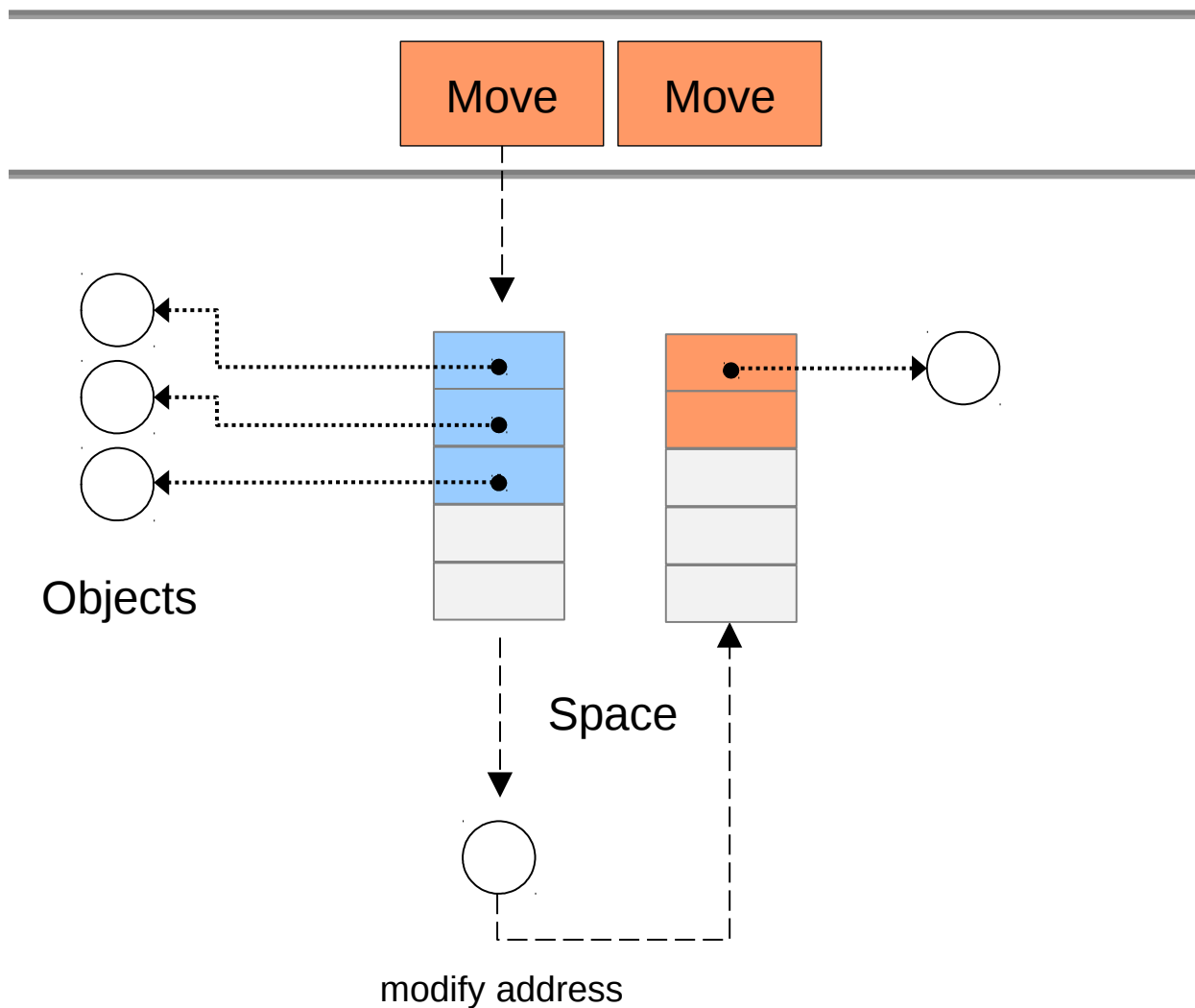
Trace Processing – Naïve Heap Map (1/2)



Space (addr → object)

(e.g., Eden, survivor-from, survivor-to, old)

Trace Processing – Naïve Heap Map (2/2)



Trace Processing – Sequential Processing

```

EventType type = getNextEventType();

switch(type) {

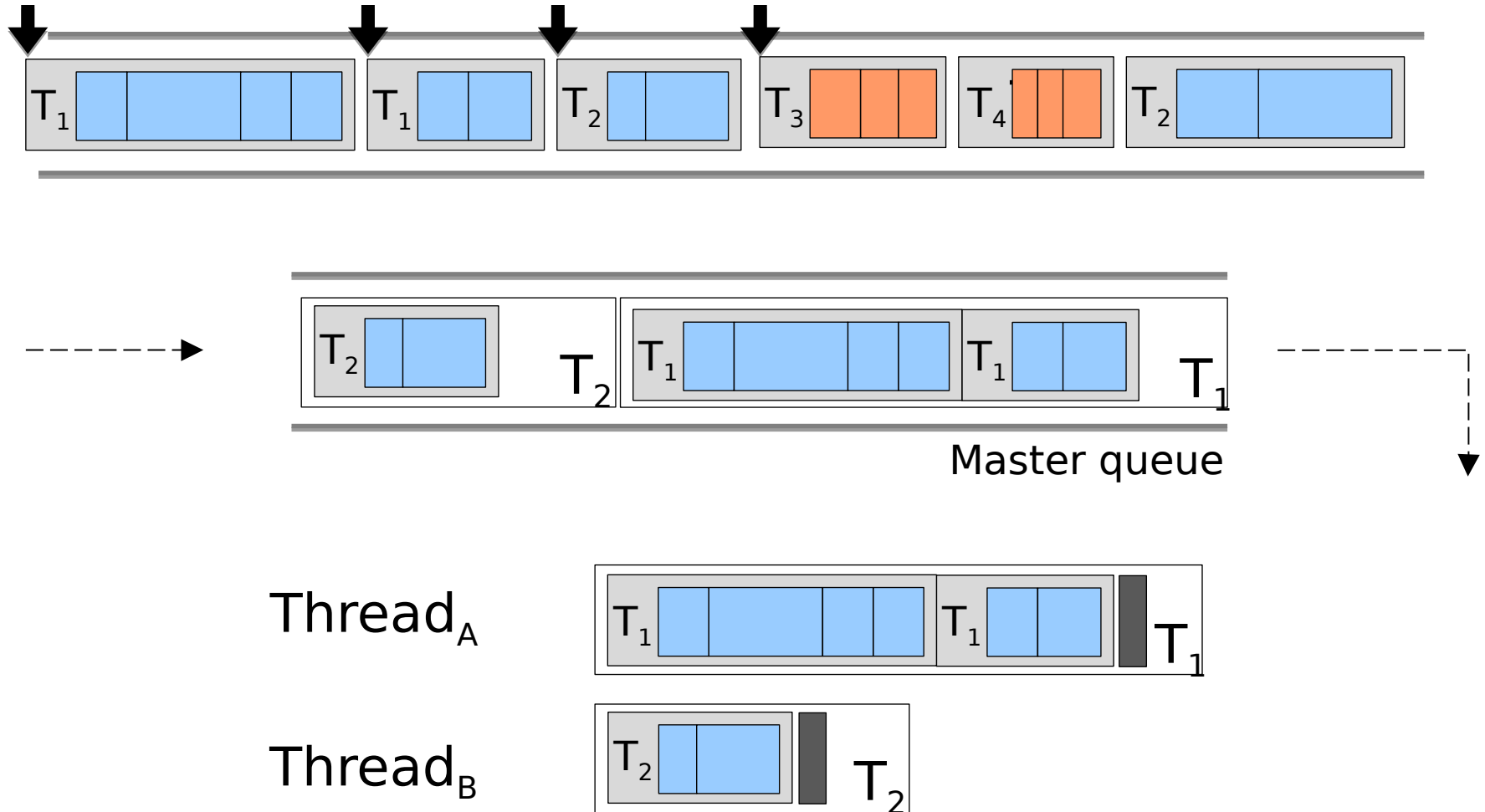
    case TLAB_ALLOC: {
        parseTlabAlloc(type);    break;
    }
    case OBJ_ALLOC: {
        parseObjAlloc (type);    break;
    }
    case GC_MOVE:{
        parseGCMove(type);    break;
    }

    ...

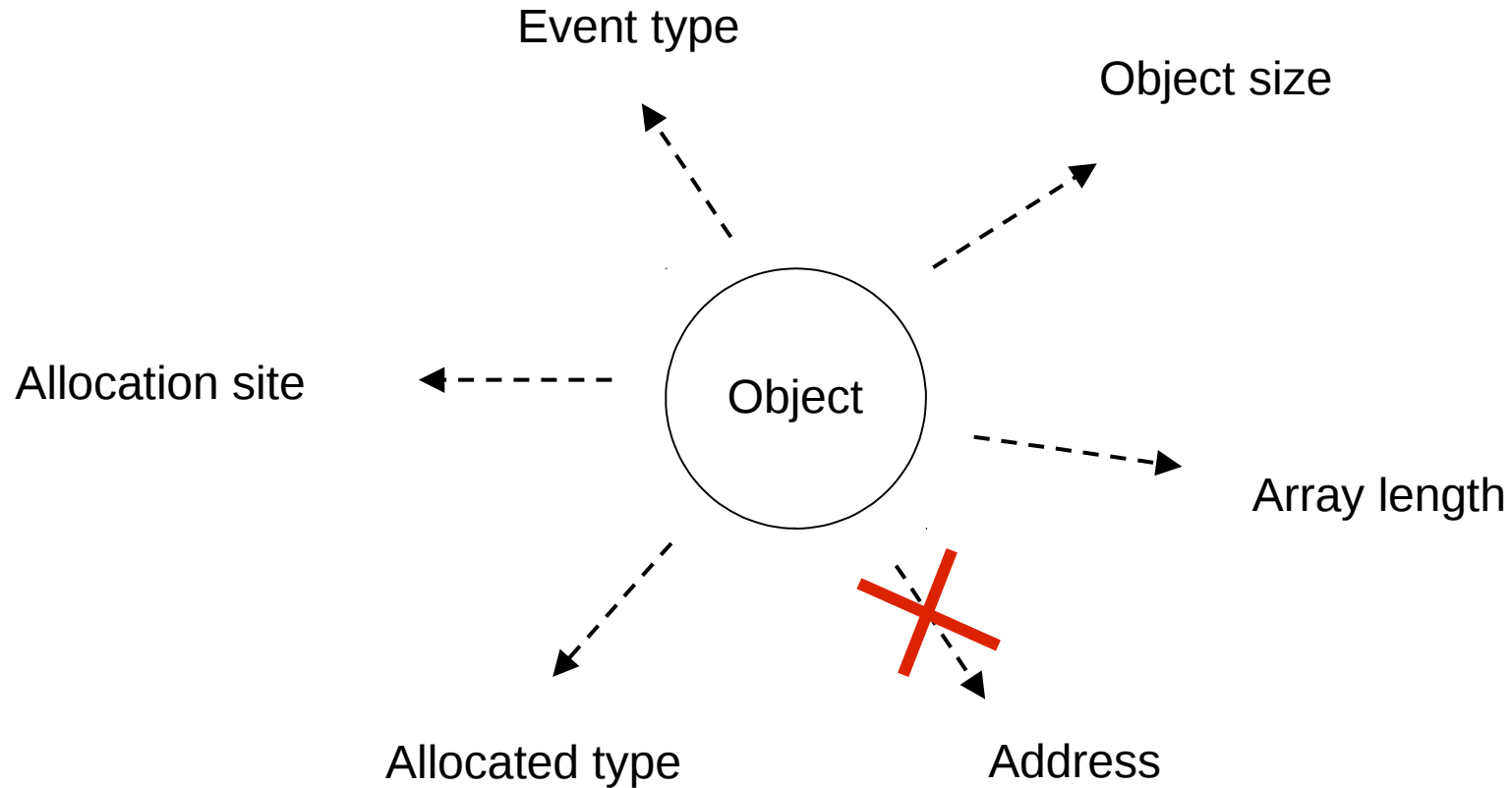
}

```

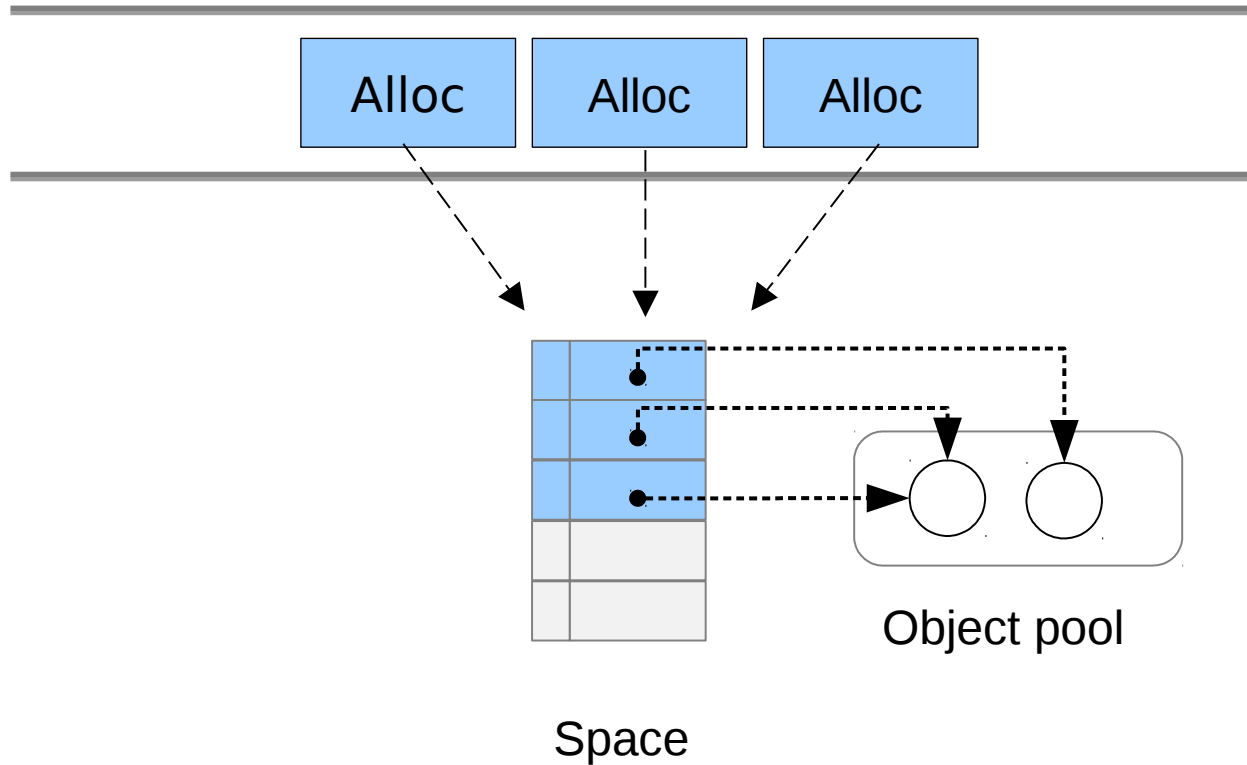

Trace Processing – Parallel Processing



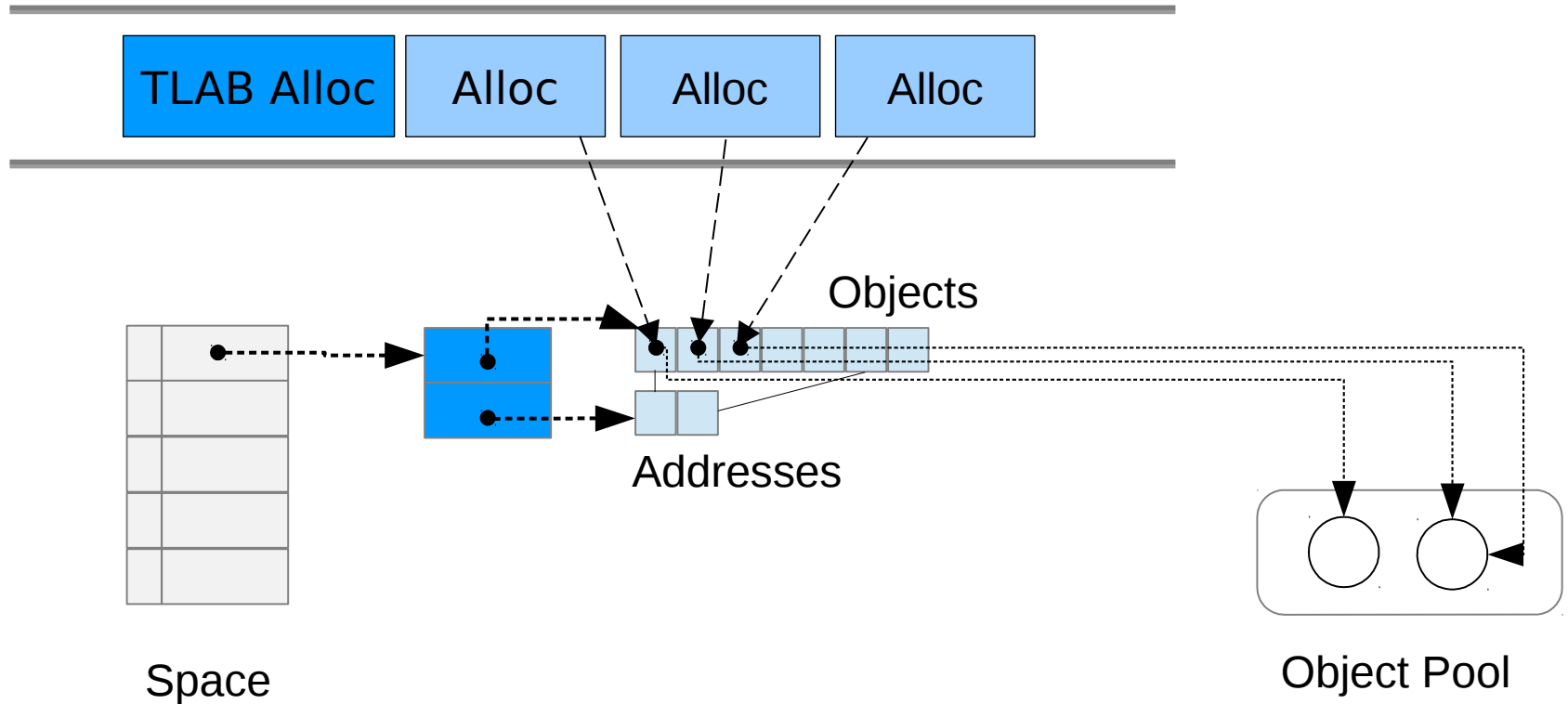
Trace Processing – Lightweight Objects (1/2)



Trace Processing – Lightweight Objects (1/2)



Trace Processing – Lightweight Objects (2/2)



Evaluation – Naïve vs Lightweight (1/2)

DaCapo	Trace [MB]	Processing Time [s]		Drop [%]
		Naïve	Lightweight	
avro	551	22.6	6.0	↓ 77.5
batik	1,119	124.7	44.4	↓ 64.4
eclipse	621	32.4	15.2	↓ 53.1
fop	461	25.9	8.6	↓ 67.0
jython	16,082	-	233.1	
luindex	69	4.4	2.6	↓ 40.1
lusearch	2,467	59.3	14.5	↓ 75.5
pmd	2,457	115.0	22.4	↓ 80.5
sunflow	11,346	605.3	81.0	↓ 86.6
tomcat	9,824	403.7	71.0	↓ 82.4
tbeans	48,113	-	406.0	
tsoap	52,186	-	575.8	
xalan	8,669	391.9	63.2	↓ 86.6

Evaluation – Naïve vs Lightweight (2/2)

DaCapo	Trace [MB]	Garbage Collection Time [s]		Drop [%]
		Naïve	Lightweight	
avrorra	551	11.6	0.5	↓ 96.0
batik	1,119	18.4	8.7	↓ 52.7
eclipse	621	5.5	0.8	↓ 86.2
fop	461	12.3	0.3	↓ 97.5
jython	16,082	-	18.7	
luindex	69	0.2	0.1	↓ 58.1
lusearch	2,467	9.9	0.4	↓ 95.5
pmd	2,457	55.2	2.3	↓ 95.9
sunflow	11,346	347.0	2.7	↓ 99.2
tomcat	9,824	184.6	2.1	↓ 99.9
tbeans	48,113	-	61.0	
tsoap	52,186	-	30.8	
xalan	8,669	182.7	1.5	↓ 99.2

