

**Table 1 – Measurements results for the affected aspects before and after applying AOR methods: Aspecttetris project**

Aspect- Oriented Refactoring Method		Aspect Name	Inheritance		Coupling		Cohesion	Size and Complexity		
			DIT	NOC	CBC	RFC	LCOO	WOC	NOA	LOC
Change Advice Kind from Around	Before	NextBlock.java	1	0	2	2	0	2	3	31
	After	NextBlock.java	1	0	2	3	1	3	3	33
Inline Method into Advice	Before	Counter.java	1	0	4	7	3	7	5	47
	After	Counter.java	1	0	4	6	1	6	5	43
Extract Method from Advice	Before	Levels.java	1	0	4	4	0	4	4	44
	After	Levels.java	1	0	4	5	1	5	4	47
Introduce Aspect Protection	Before	Menu.java	1	0	2	3	0	3	2	44
	After	Menu.java	1	0	2	3	0	3	3	47
Generalize before or after Advice to around Advice	Before	Counter.java	1	0	4	6	1	6	5	43
	After	Counter.java	1	0	4	5	1	5	5	42
Change Advice kind form Before to After	Before	NextBlock.java	1	0	2	3	1	3	2	33
	After	NextBlock.java	1	0	2	3	1	3	2	33
Delete Unreferenced Named Pointcut	Before	NewBlocks.java	1	0	4	5	0	5	6	77
	After	NewBlocks.java	1	0	4	5	0	5	5	75
Delete Unreachable Advice	Before	Counter.java	1	0	4	5	1	5	5	42
	After	Counter.java	1	0	4	4	0	4	5	39

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Aspect- Oriented Refactoring Method	Aspect Name	Inheritance		Coupling		Cohesion	Size and Complexity			
		DIT	NOC	CBC	RFC	LCOO	WOC	NOA	LOC	
Eliminate Duplicated Pointcut	Before	Counter.java	1	0	4	4	0	4	5	40
		NextBlock.java	1	0	2	3	1	3	3	34
		GameInfo.java	2	0	1	1	0	1	3	16
		GuiInit.java	-	-	-	-	-	-	-	-
	After	Counter.java	1	0	4	4	0	4	4	38
		NextBlock.java	1	0	2	3	1	3	2	32
		GameInfo.java	2	0	1	1	0	1	2	14
		GuiInit.java	1	0	3	0	0	0	1	5
Pull Up Pointcut	Before	GameInfo.java	2	0	2	1	0	1	2	17
		Menu.java	2	0	2	2	0	2	4	47
		GuiAspect	1	2	1	1	0	1	1	4
	After	GameInfo.java	2	0	2	1	0	1	1	15
		Menu.java	2	0	2	2	0	2	3	45
		GuiAspect	1	2	1	1	0	1	2	6

Table 2– Changes in the internal quality metrics caused by applying refactoring methods: Aspecttetrtris project

Aspect-Oriented Construct	Aspect- Oriented Refactoring Method	Inheritance		Coupling		Cohesion	Size and Complexity		
		DIT	NOC	CBC	RFC	LCOO	WOC	NOA	LOC
<b>Advice</b>	Change Advice Kind from Around	-	-	-	↑	↑	↑	-	↑
	Extract Method from Advice	-	-	-	↑	↑	↑	-	↑
	Inline Method into Advice	-	-	-	↓	↓	↓	-	↓
	Delete Unreachable Advice	-	-	-	↓	↓	↓	-	↓
	Generalize before or after Advice to around Advice	-	-	-	↓	-	↓	-	↓
	Change Advice kind from Before to After	-	-	-	-	-	-	-	-
<b>Declare Clause</b>	Introduce Aspect Protection	-	-	-	-	-	-	↑	↑
<b>Pointcut</b>	Delete Unreferenced Named Pointcut	-	-	-	-	-	-	↓	↓
	Pull up Pointcut	-	-	-	-	-	-	↓	↓
	Eliminate Duplicated Pointcut	-	-	-	-	-	-	↓	↓