

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

Aspect- Oriented Refactoring Method	Aspect Name	Inheritance		Coupling		Cohesion	Size and Complexity			
		DIT	NOC	CBC	RFC	LCOO	WOC	NOA	LOC	
Merge Advice Bodies	Before	AlignCommandUndo	1	0	2	11	9	12	2	64
	After	AlignCommandUndo	1	0	2	10	9	11	2	62
Merge Advice Bodies	Before	BringToFrontCommandUndo	1	0	2	5	2	5	2	19
	After	BringToFrontCommandUndo	1	0	2	4	2	4	2	17
Separate Pointcuts	Before	FigureSelectionObserverRole	1	0	3	5	3	5	2	23
	After	FigureSelectionObserverRole	1	0	3	5	3	5	3	25
Change Advice Kind form Around	Before	UndoableCommand	1	0	3	6	0	7	9	79
	After	UndoableCommand	1	0	3	7	2	8	9	80
Merge Advice Bodies	Before	DeleteCommandUndo	1	0	2	6	0	6	2	39
	After	DeleteCommandUndo	1	0	2	5	0	5	2	37
Move Static Introduction	Before	FigureSelectionSubjectRole	1	0	4	6	4	7	4	28
		FigureSelectionObserverRole	1	0	3	5	3	5	3	22
	After	FigureSelectionSubjectRole	1	0	3	5	2	6	4	25
		FigureSelectionObserverRole	1	0	4	5	3	6	3	26

Table 1 – Continued

Aspect- Oriented Refactoring Method	Aspect Name	Inheritance		Coupling		Cohesion	Size and Complexity			
		DIT	NOC	CBC	RFC	LCOO	WOC	NOA	LOC	
Delete Unreachable Advice	Before	UndoableCommand	1	0	3	7	2	8	9	80
	After	UndoableCommand	1	0	3	6	0	7	9	77
Delete Unreferenced Named Pointcut	Before	UndoableCommand	1	0	3	6	0	7	9	77
	After	UndoableCommand	1	0	3	6	0	7	8	75
Extract Method form Advice	Before	CutCommandUndo	1	0	3	12	5	12	3	76
	After	CutCommandUndo	1	0	3	13	8	13	3	79
Delete Unreachable Advice	Before	DuplicateCommandUndo	1	0	1	4	6	4	1	21
	After	DuplicateCommandUndo	1	0	1	3	3	3	1	19
Inline Method Into Advice	Before	CommandContracts	1	0	1	3	1	3	2	18
	After	CommandContracts	1	0	1	2	0	2	2	15
Inline Method Into Advice	Before	CutCommandUndo	1	0	3	13	8	13	3	79
	After	CutCommandUndo	1	0	3	12	7	12	3	76
Push Down Declare Parents	Before	FigureSelectionObserver	1	1	3	0	0	1	2	15
		FigureSelectionObserverRole	2	0	6	2	3	2	4	20
	After	FigureSelectionObserver	1	1	2	0	0	1	1	14
		FigureSelectionObserverRole	2	0	6	2	3	2	5	21

Table 1– Continued

Aspect- Oriented Refactoring Method	Aspect Name	Inheritance		Coupling		Cohesion	Size and Complexity			
		DIT	NOC	CBC	RFC	LCOO	WOC	NOA	LOC	
Push Down Declare Parents	Before	FigureSelectionObserver	1	1	2	0	0	1	1	14
		FigureSelectionObserverRole	2	0	6	2	3	2	5	21
	After	FigureSelectionObserver	1	1	1	0	0	1	0	13
		FigureSelectionObserverRole	2	0	6	2	3	2	6	22
Pull Up Pointcut	Before	PersistentFigure	1	2	2	1	1	2	1	14
		PersistentImageFigure	2	0	2	3	3	3	1	34
		PersistentTextFigure	2	0	2	3	3	3	1	45
	After	PersistentFigure	1	2	2	1	1	2	2	16
		PersistentImageFigure	2	0	2	3	3	3	0	32
		PersistentTextFigure	2	0	2	3	3	3	0	43
Pull Up Advice	Before	PersistentImageFigure	2	0	2	3	3	3	0	32
		PersistentTextFigure	2	0	2	3	3	3	0	43
		PersistentFigure	1	2	2	1	1	2	2	15
	After	PersistentImageFigure	2	0	2	2	2	2	0	28
		PersistentTextFigure	2	0	2	2	2	2	0	39
		PersistentFigure	1	2	2	2	2	2	2	19

Table 2 – Changes in the internal quality metrics caused by applying refactoring methods: AJHotDraw 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>	Merge Advice Bodies	-	-	-	↓	-	↓	-	↓
	Inline Method Into Advice	-	-	-	↓	↓	↓	-	↓
	Pull Up Advice	-	-	-	↓	↓	↓	-	↓
	Delete Unreachable Advice	-	-	-	↓	↓	↓	-	↓
	Extract Method form Advice	-	-	-	↑	↑	↑	-	↑
	Change Advice Kind form Around	-	-	-	↑	↑	↑	-	↑
<b>Pointcut</b>	Separate Pointcuts	-	-	-	-	-	-	↑	↑
	Delete Unreferenced Named Pointcut	-	-	-	-	-	-	↓	↓
	Pull Up Pointcut	-	-	-	-	-	-	↓	↓
<b>Declare Clause</b>	Push Down Declare Parents	-	-	↓	-	-	-	↓	↓
<b>Inter-Type Declaration</b>	Move Static Introduction	-	-	↓	↓	↓	↓	-	↓