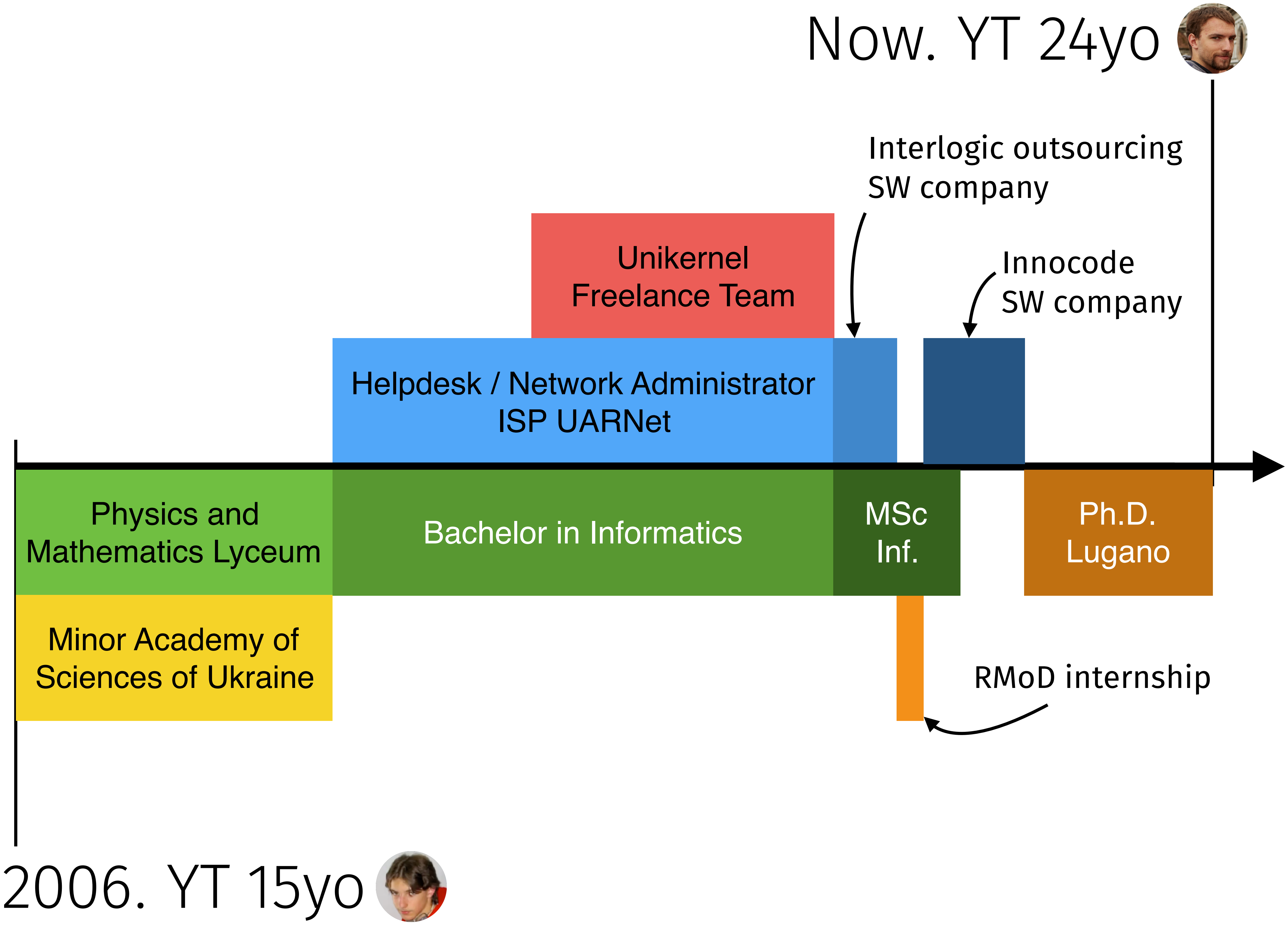
Stories About Renraku — the new Quality Model of Pharo

@yuriy_tymchuk

Software Composition Group



Now. YT 24yo

Interlogic outsourcing SW company

Innocode SW company

Unikernel Freelance Team

Helpdesk / Network Administrator ISP UARNet

Physics and Mathematics Lyceum

Bachelor in Informatics

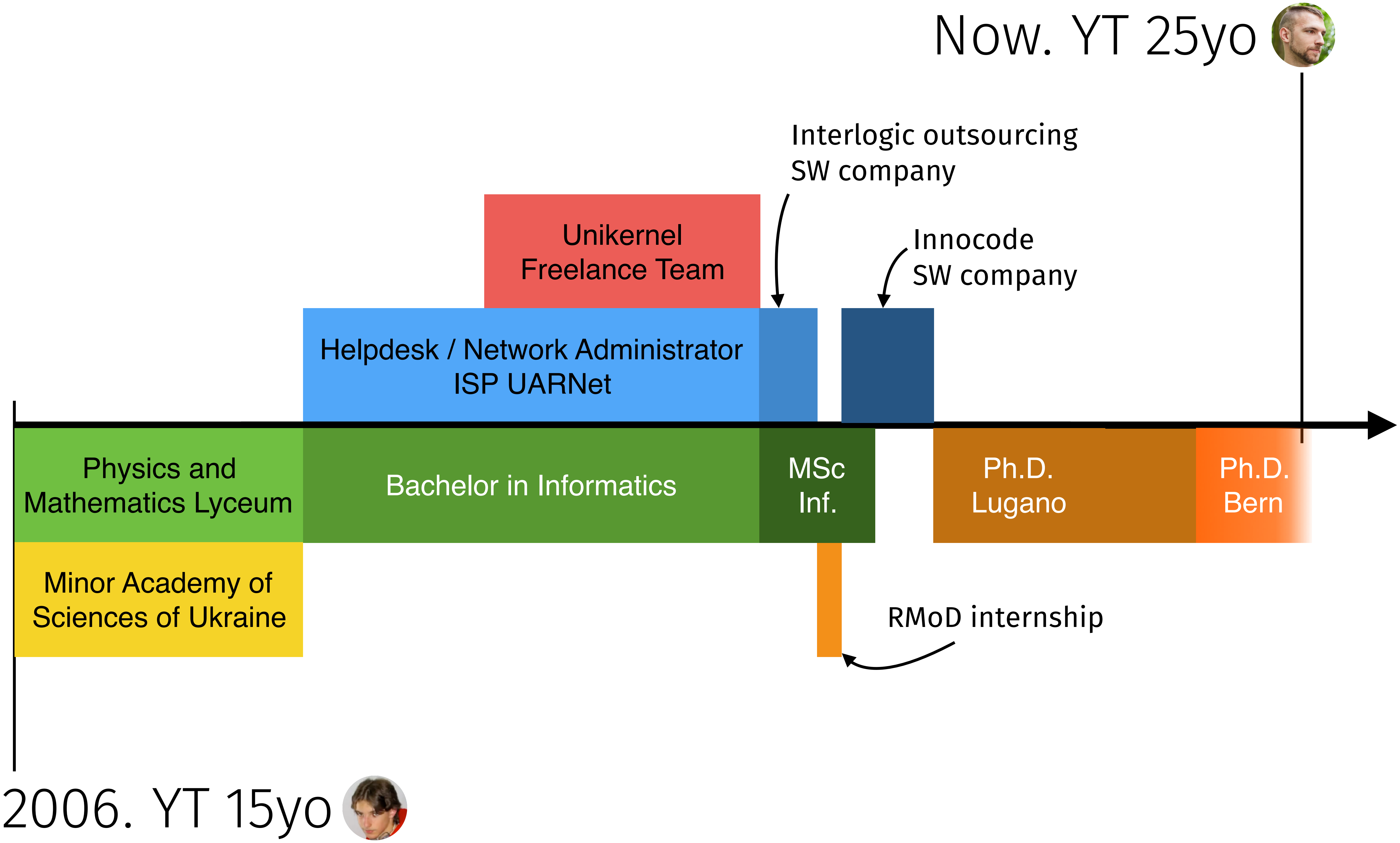
MSc Inf.

Ph.D. Lugano

Minor Academy of Sciences of Ukraine

RMoD internship

2006. YT 15yo



Now. YT 25yo

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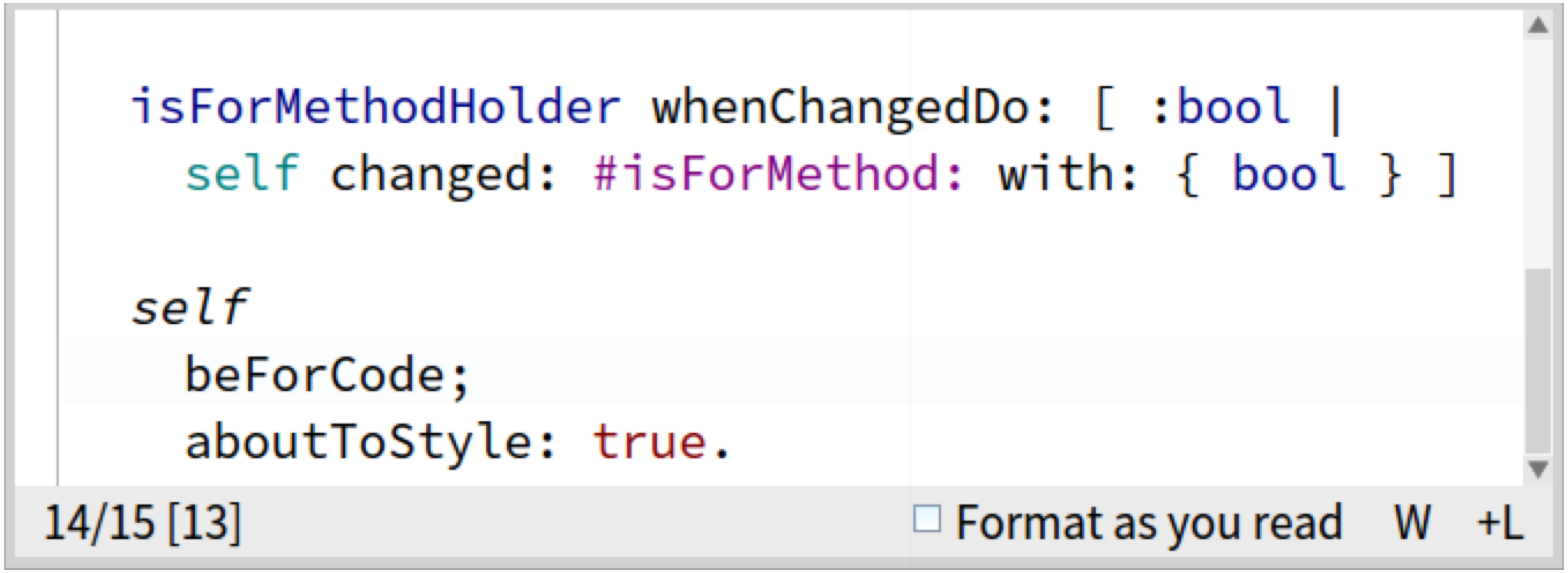
A Mistake



```
isForMethodHolder whenChangedDo: [ :bool |
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self
  beForCode;
  aboutToStyle: true.
```
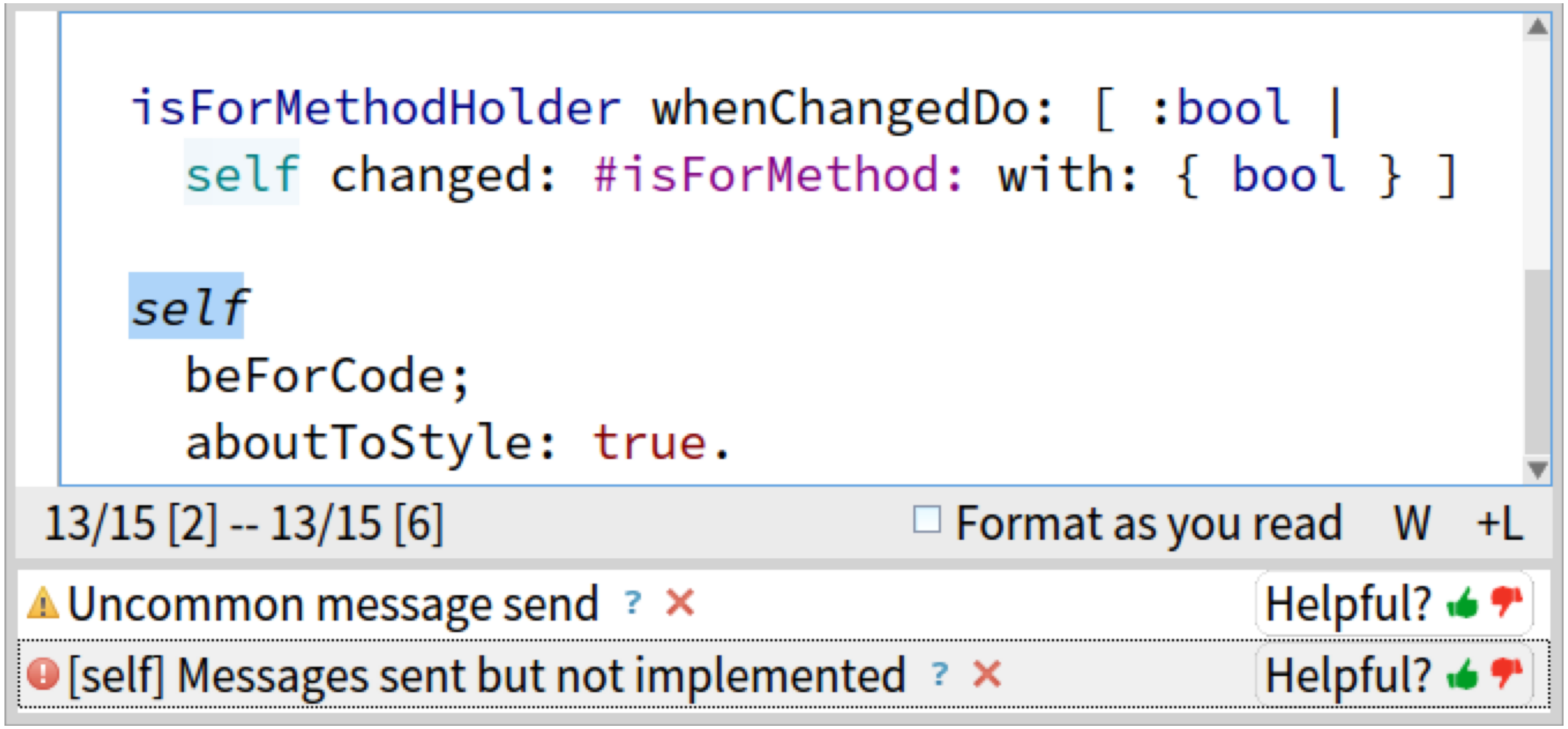

14/15 [13] □ Format as you read W +L

A Mistake can be Solved Early



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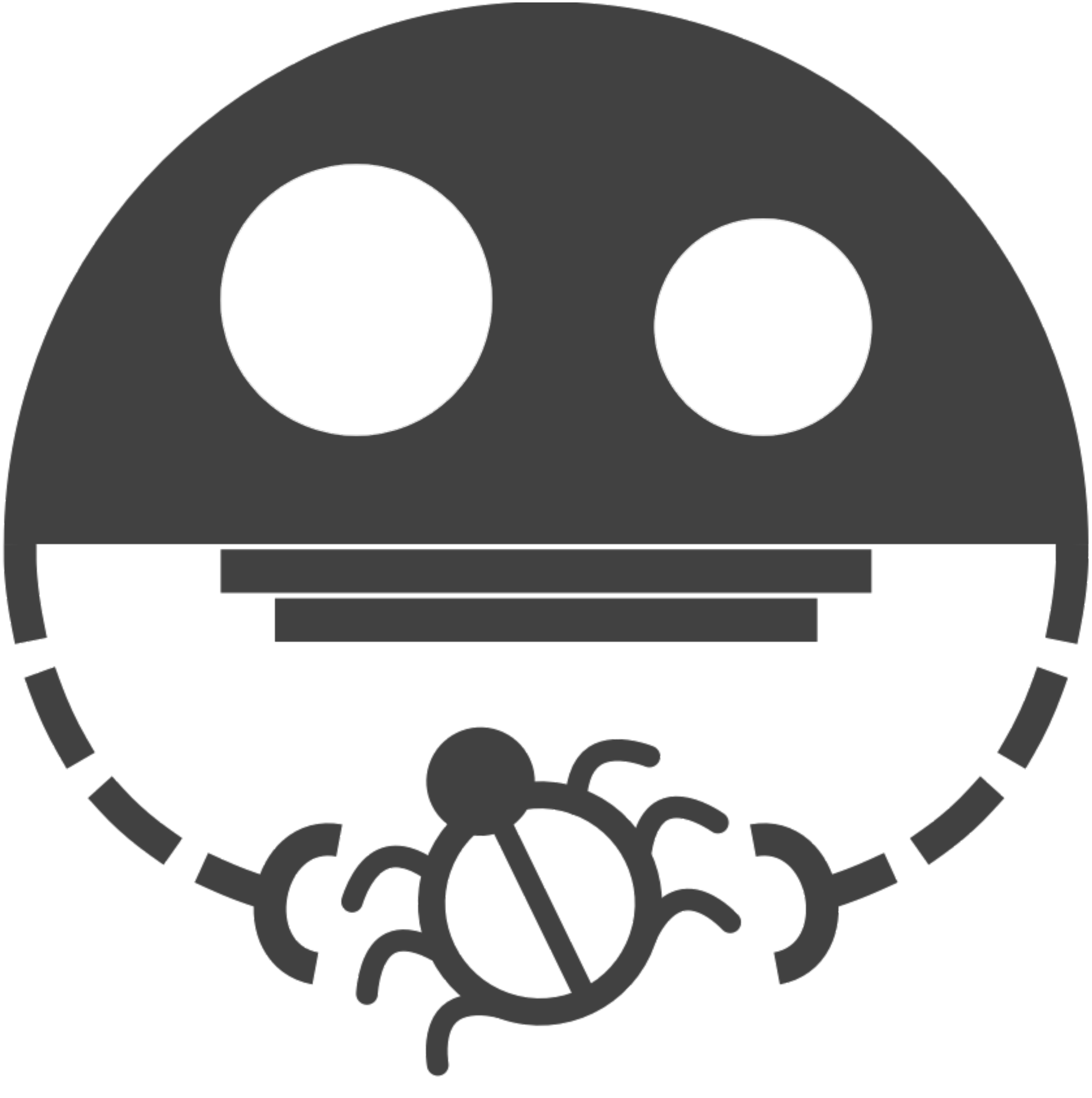
13/15 [2] -- 13/15 [6]   □ Format as you read   W   +L

⚠ Uncommon message send ? ✕   Helpful? 👍 👎

❗ [self] Messages sent but not implemented ? ✕   Helpful? 👍 👎

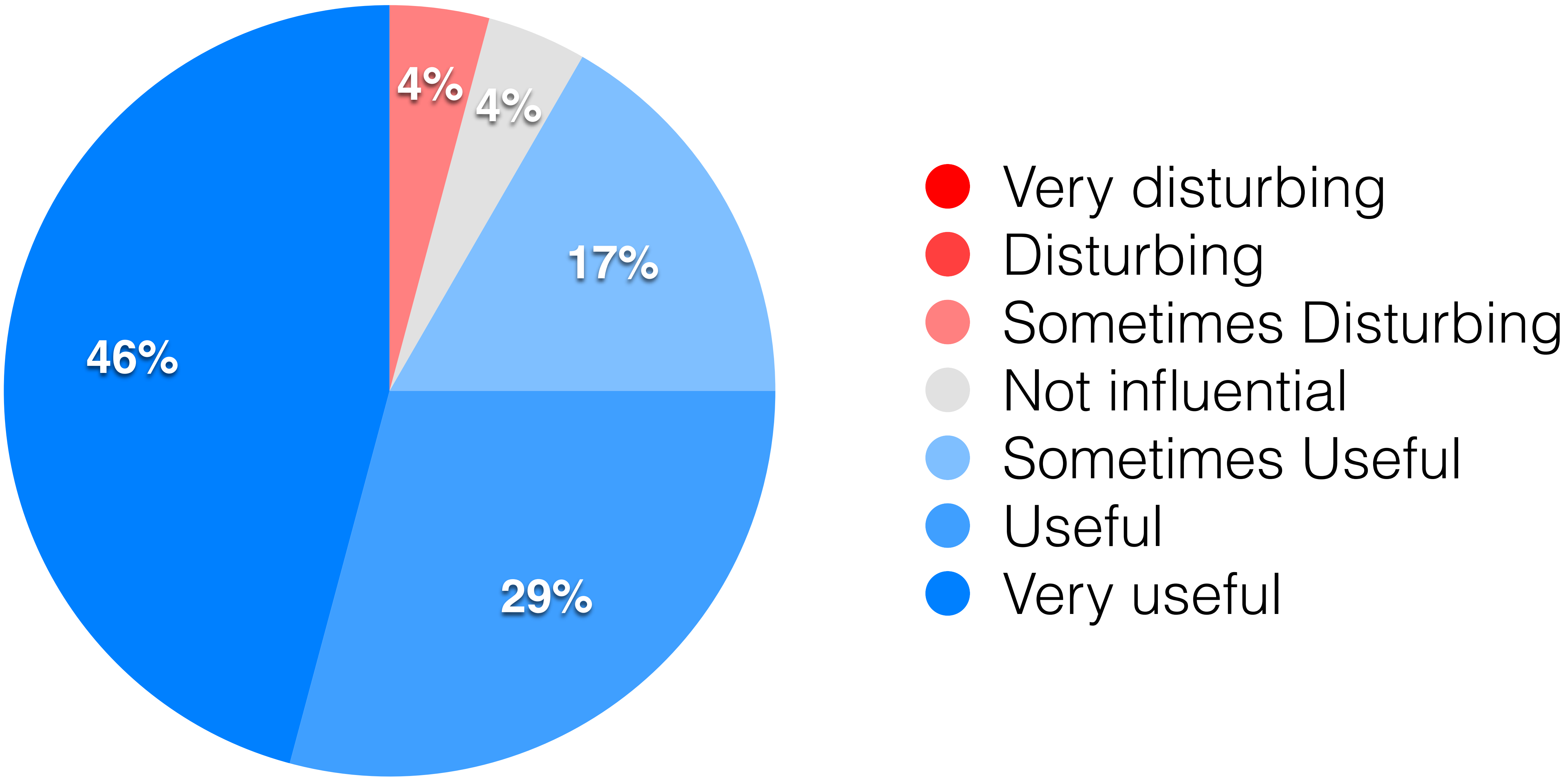


How do you find QualityAssistant?

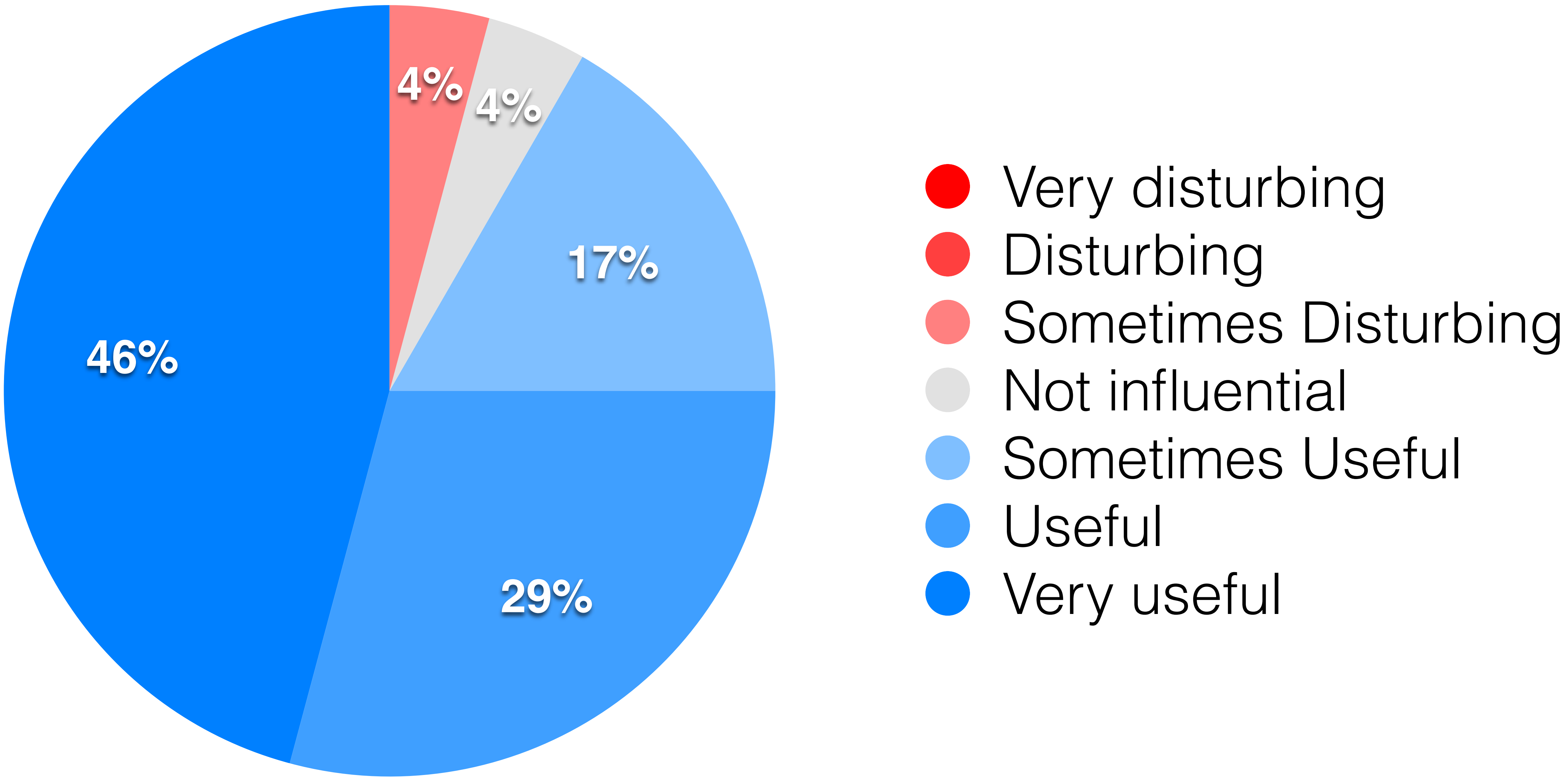
How do you find QualityAssistant?

- 🔴 Very disturbing
- 🔴 Disturbing
- 🔴 Sometimes Disturbing
- ⚪ Not influential
- 🔵 Sometimes Useful
- 🔵 Useful
- 🔵 Very useful

How do you find QualityAssistant?



How often do you use CriticBrowser?



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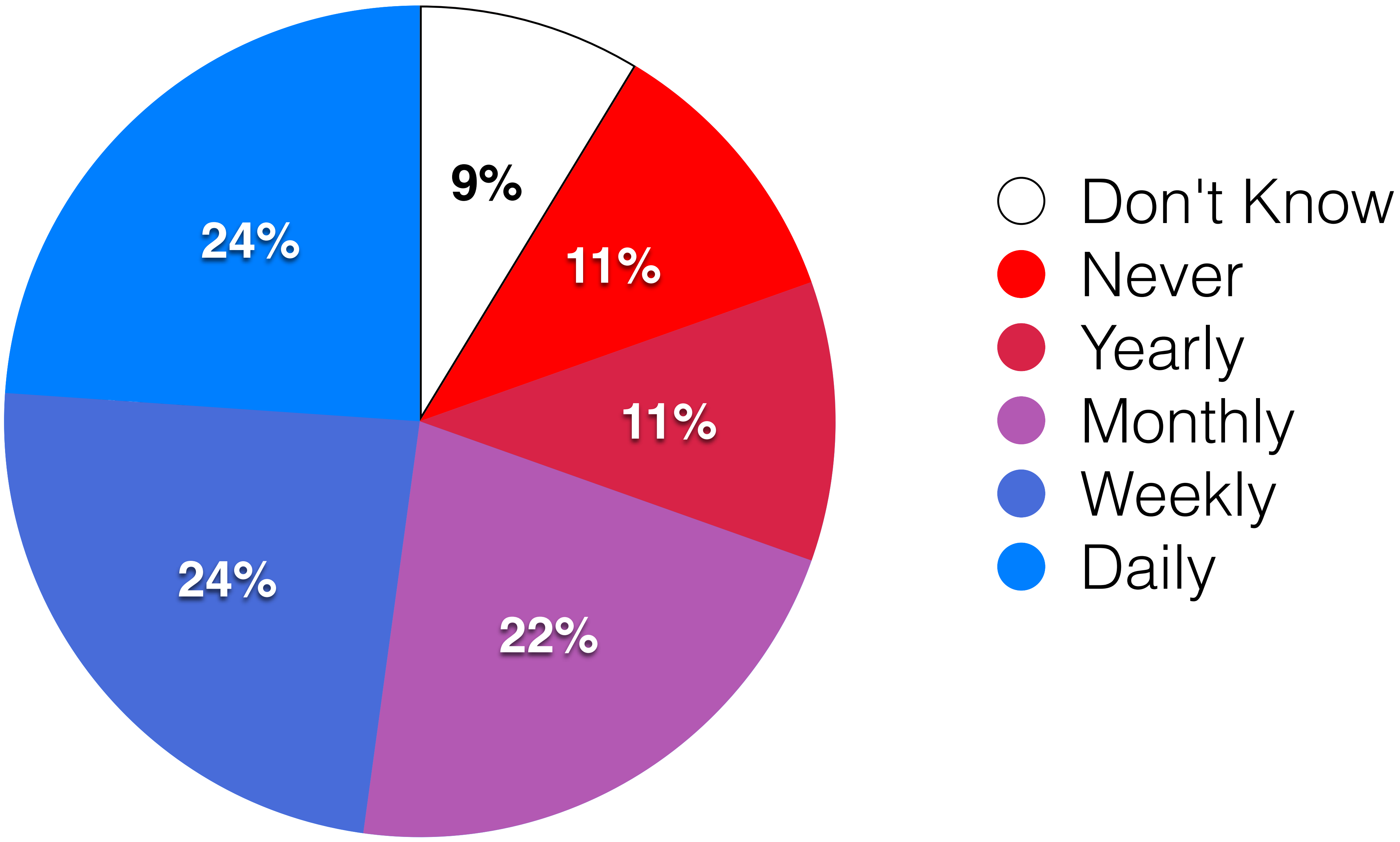
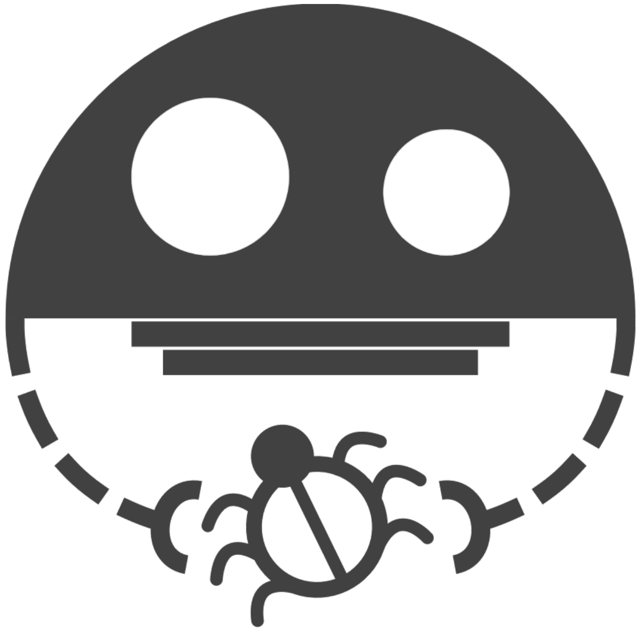
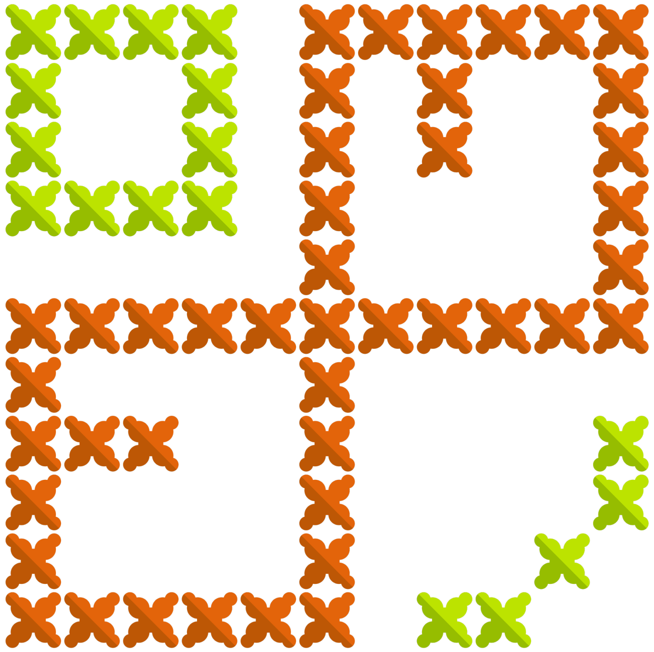




Renraku



ONE DOES NOT SIMPLY

“SHOW” RENRAKU

The Origin

Renraku

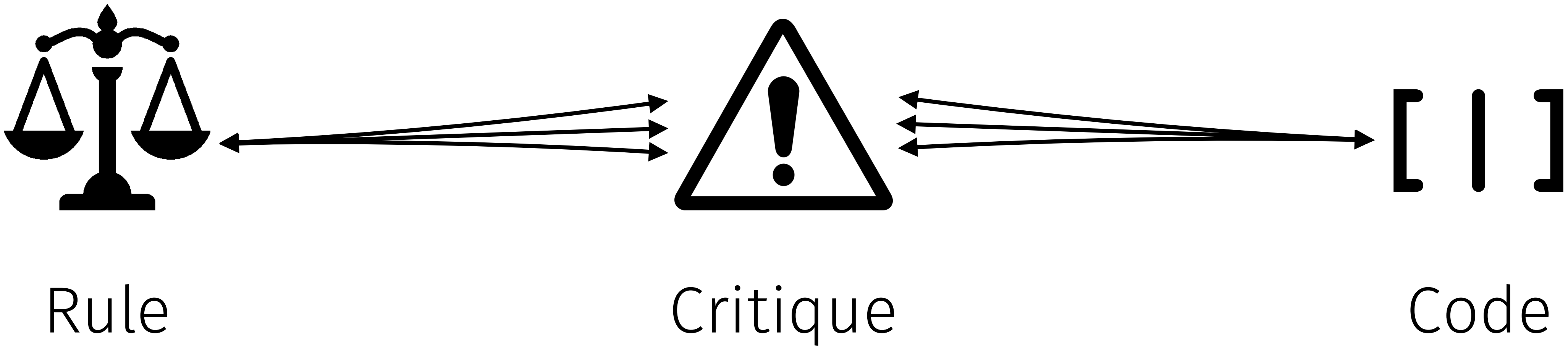
連絡

Renraku

Rule

Code

Renraku

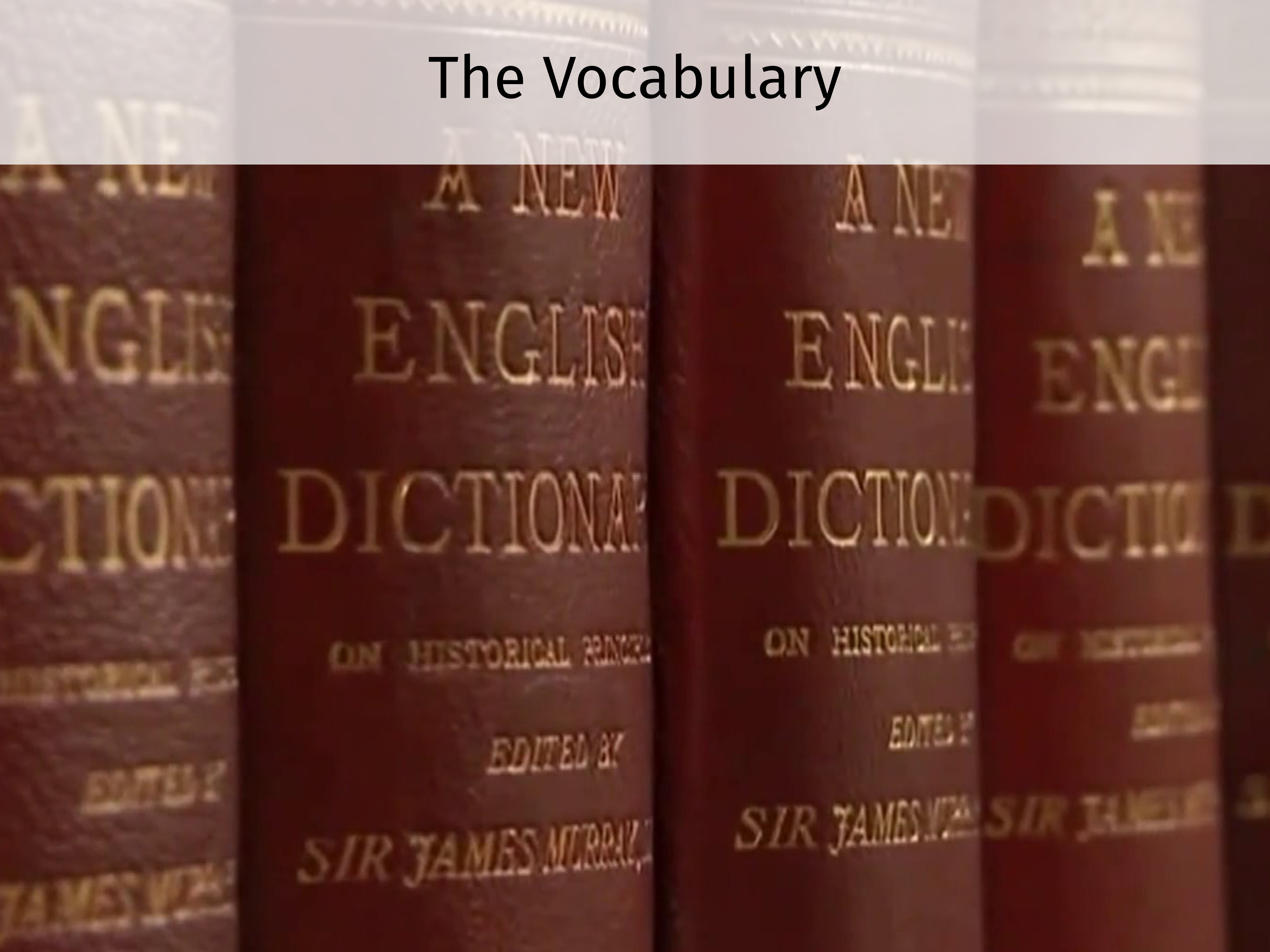


Rule

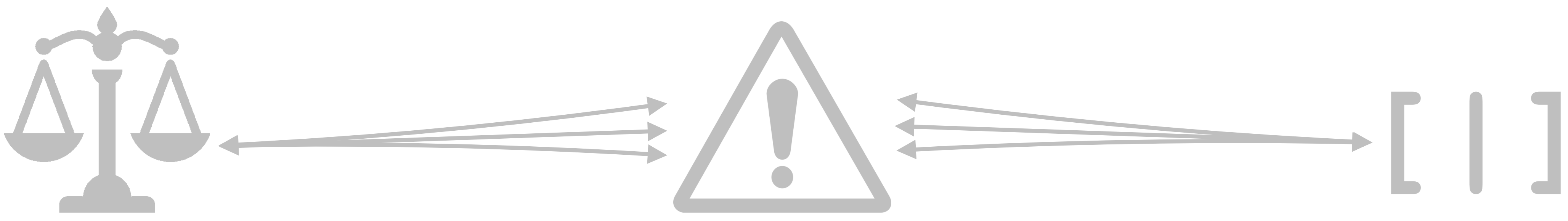
Critique

Code

The Vocabulary



Renraku



Rule

Critique

Code

English Language

Critic

⚠

Critique

English Language

Critic

⚠

Critique

English Language

Critic

⚠

Critique

Huge Refactoring

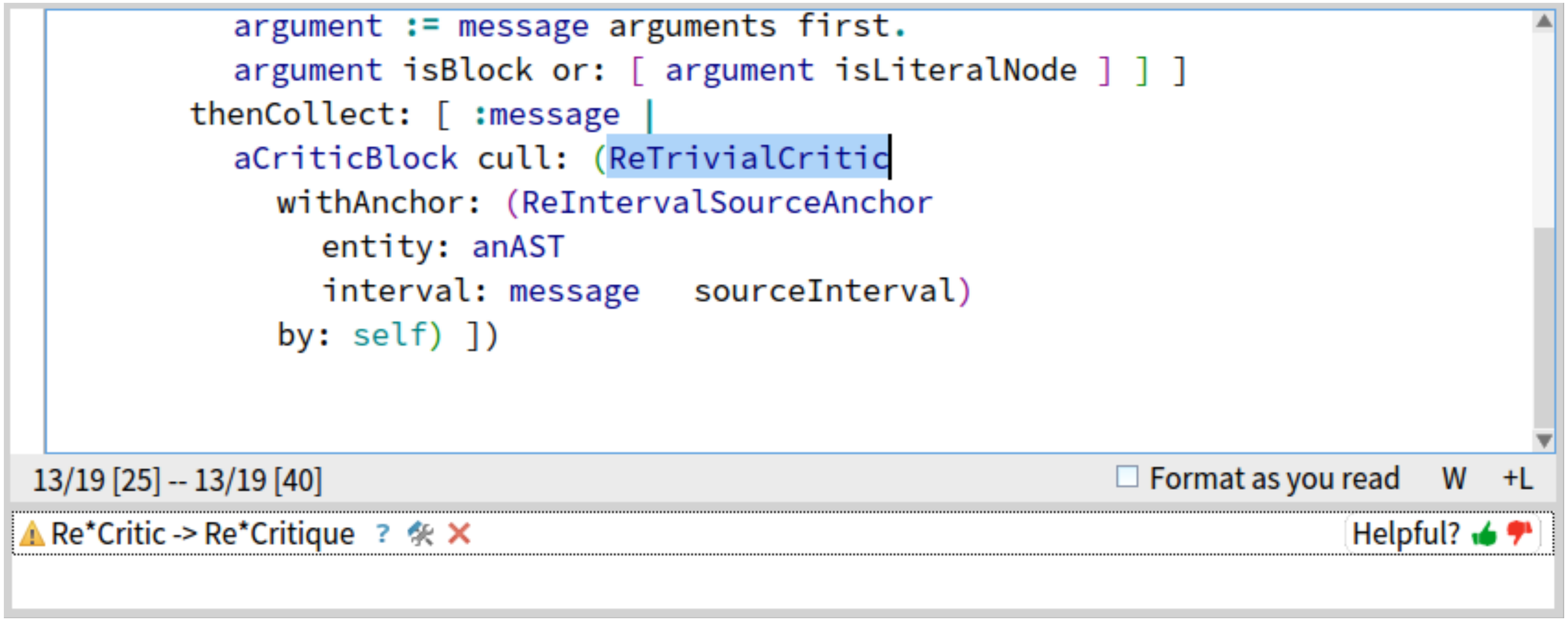
Critic

⚠

Critique

ReTrivialCritic → ReTrivialCritique

Our Dog Food is Good

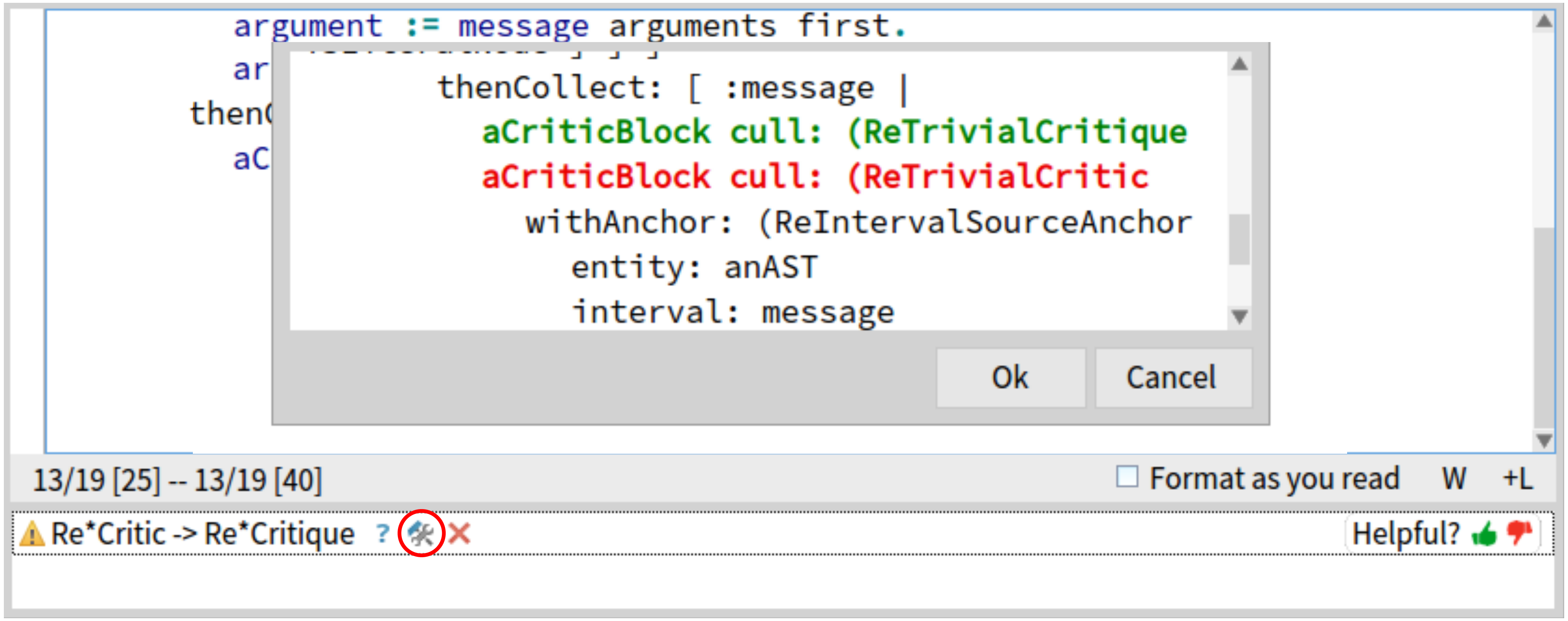


```
  argument := message arguments first.
  argument isBlock or: [ argument isLiteralNode ] ] ]
thenCollect: [ :message |
  aCriticBlock cull: (ReTrivialCritic
    withAnchor: (ReIntervalSourceAnchor
      entity: anAST
      interval: message   sourceInterval)
    by: self) ])
```

13/19 [25] -- 13/19 [40]

⚠ Re*Critic -> Re*Critique

Our Dog Food is Good!



```
        argument := message arguments first.
        ar
      then(
        aC
```

```
        thenCollect: [ :message |
            aCriticBlock cull: (ReTrivialCritique
            aCriticBlock cull: (ReTrivialCritic
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                entity: anAST
                interval: message
```
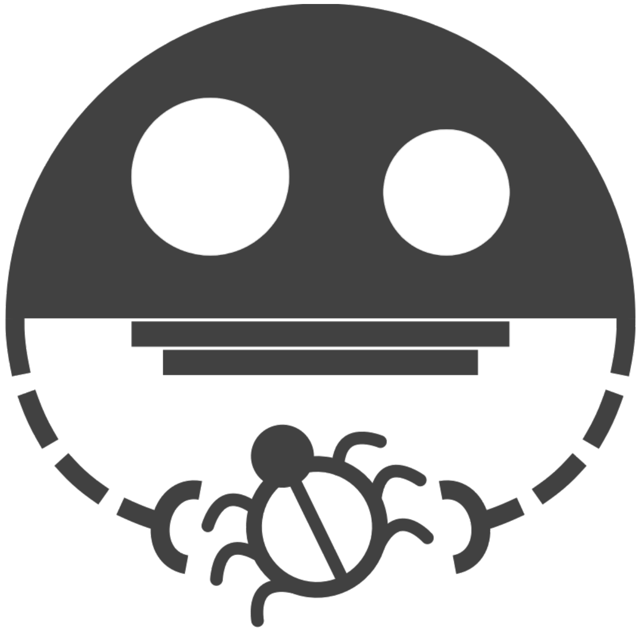

13/19 [25] -- 13/19 [40]

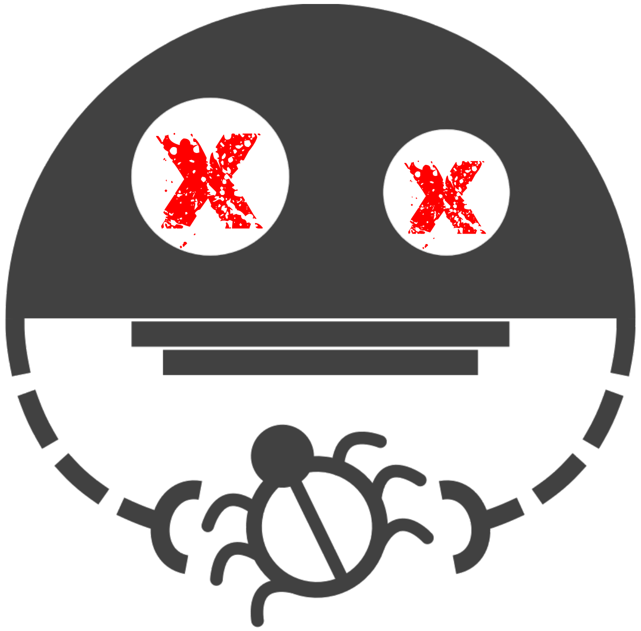
□ Format as you read W +L

⚠ Re*Critic -> Re*Critique ? ✕

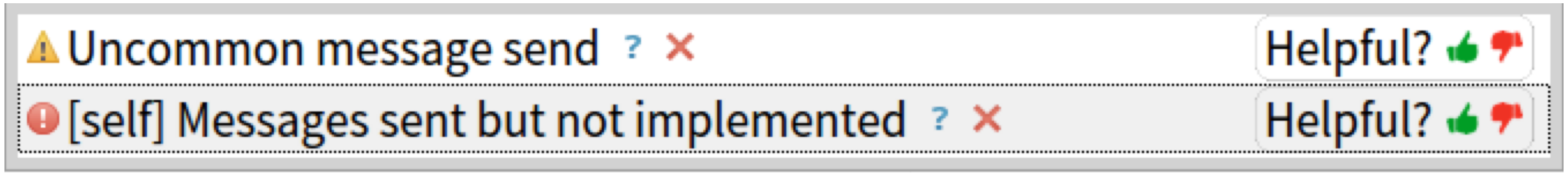
Death and Life



Who Shoots the Assistant?



Who is the Assistant?



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❗ [self] Messages sent but not implemented ? ✕ Helpful? 👍 👎

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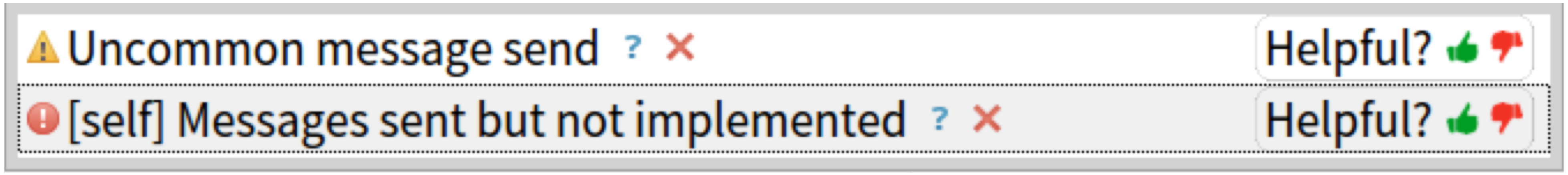

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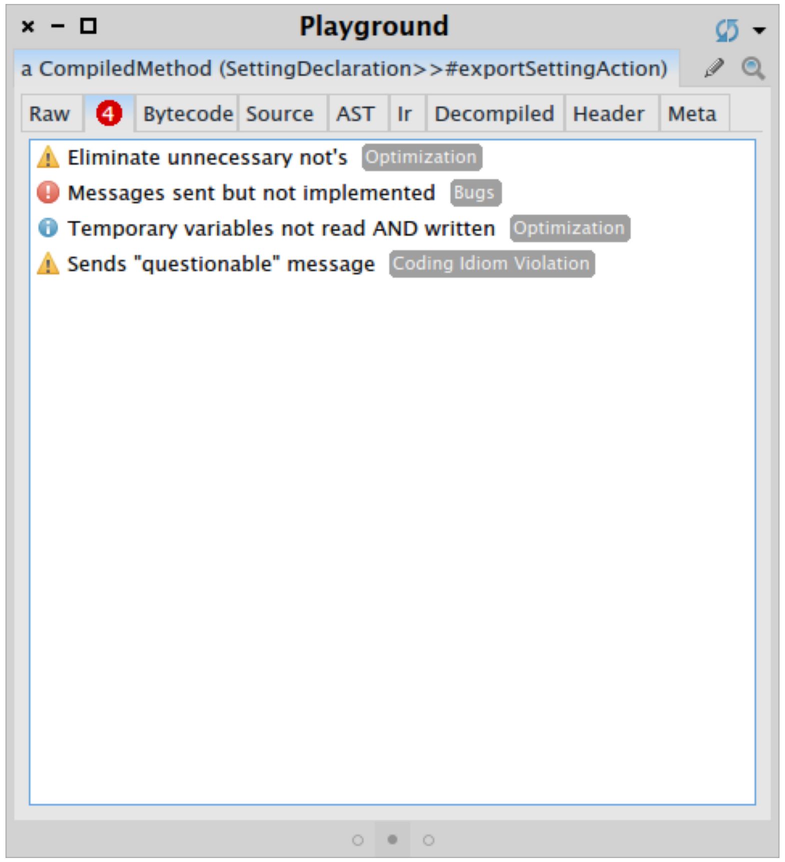
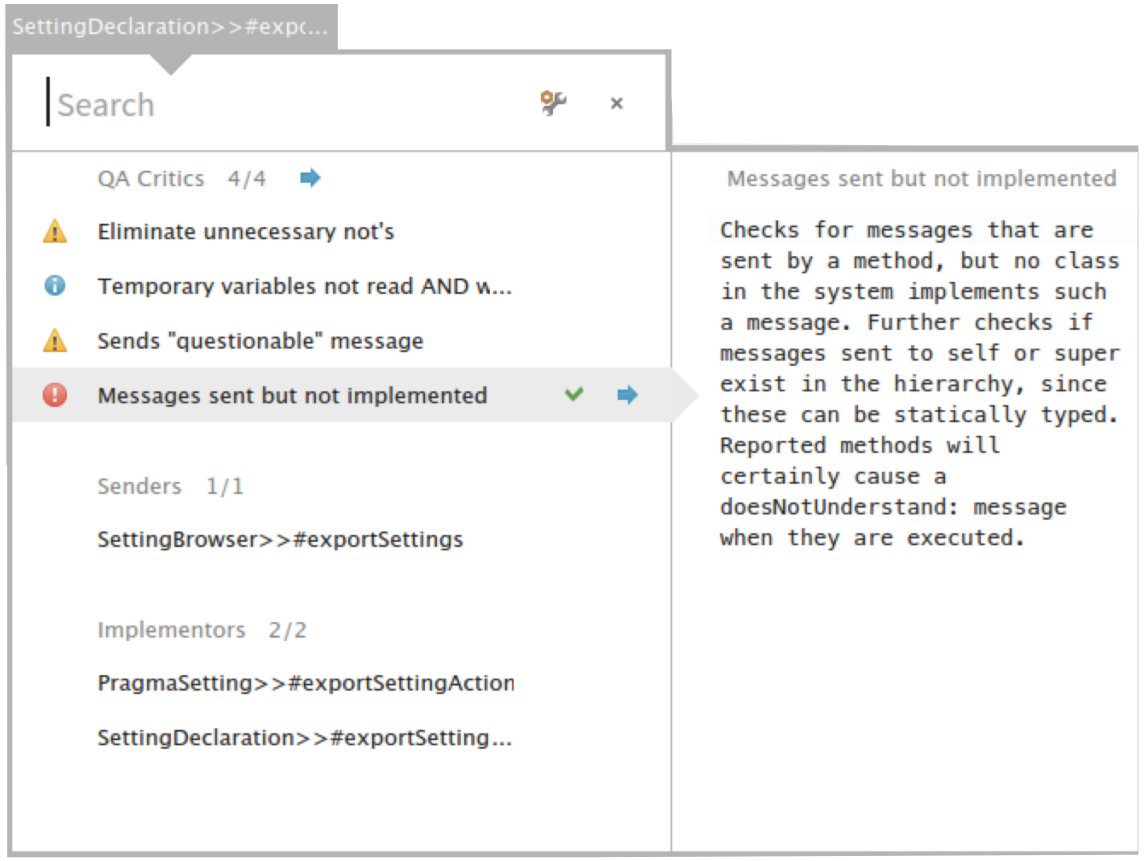


a CompiledMethod (SettingDeclaration>>#exportSettingAction)

Raw | 4 | Bytecode | Source | AST | Ir | Decompiled | Header | Meta

⚠ Eliminate unnecessary not's Optimization
❗ Messages sent but not implemented Bugs
ⓘ Temporary variables not read AND written Optimization
⚠ Sends "questionable" message Coding Idiom Violation



QA Critics 4/4

⚠ Eliminate unnecessary not's
ⓘ Temporary variables not read AND w...
⚠ Sends "questionable" message
❗ Messages sent but not implemented ✓

Senders 1/1

SettingBrowser>>#exportSettings

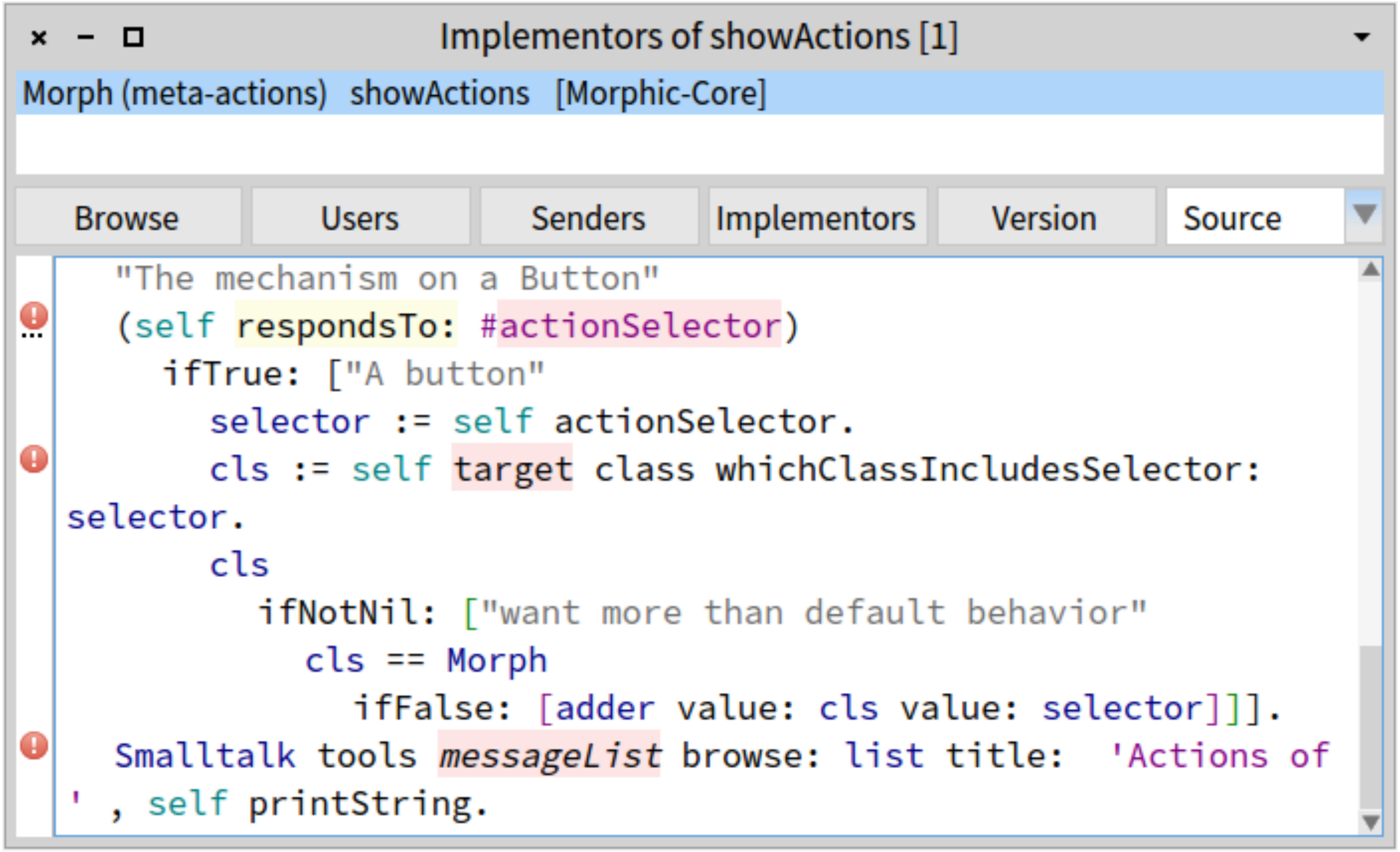
Implementors 2/2

PragmaSetting>>#exportSettingAction
SettingDeclaration>>#exportSetting...

Messages sent but not implemented

Checks for messages that are sent by a method, but no class in the system implements such a message. Further checks if messages sent to self or super exist in the hierarchy, since these can be statically typed. Reported methods will certainly cause a doesNotUnderstand: message when they are executed.

This is not QualityAssistant


Implementors of showActions [1]
Morph (meta-actions) showActions [Morphic-Core]
Browse
Users
Senders
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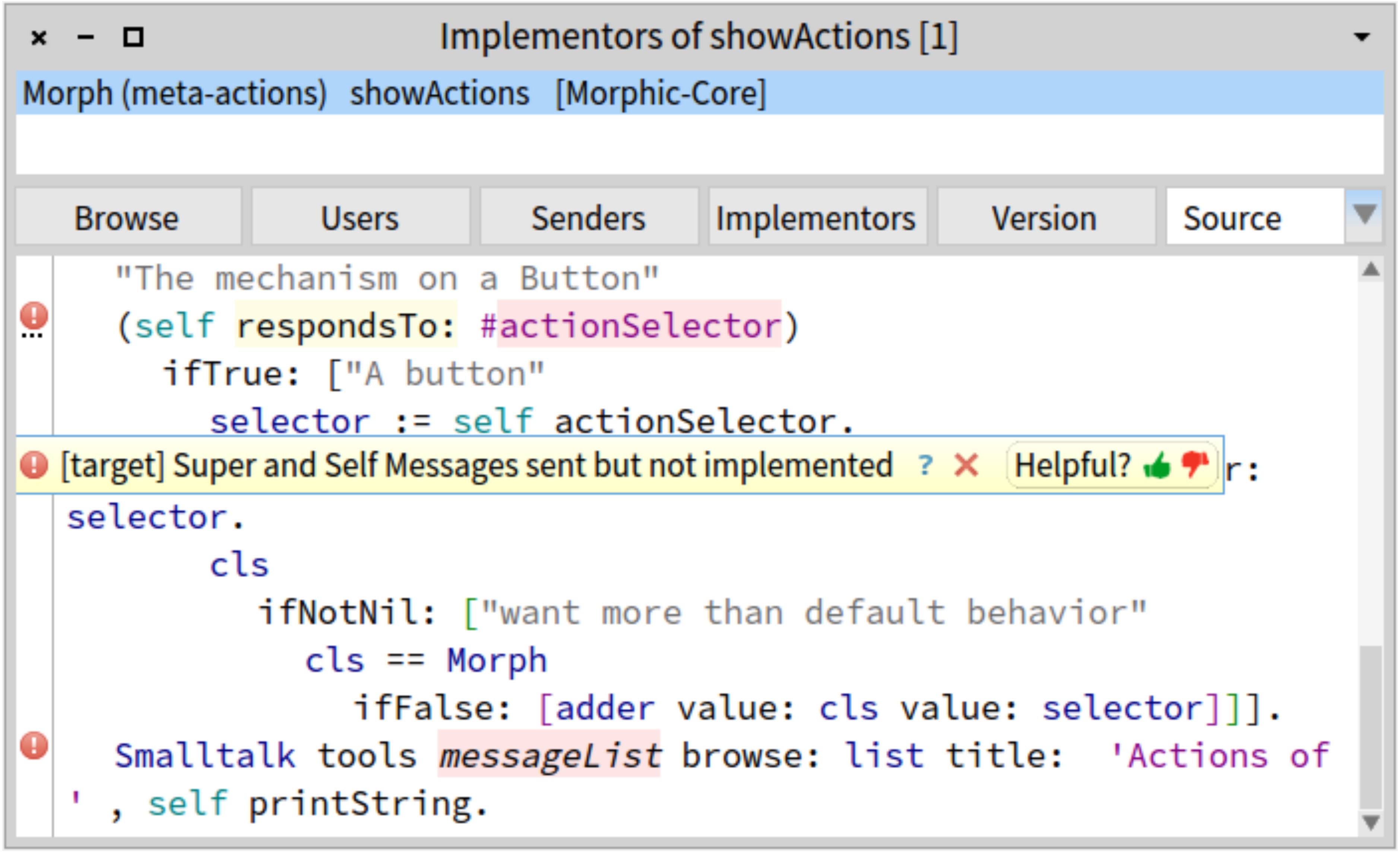
Version
Source

```
	"The mechanism on a Button"
	(self respondsTo: #actionSelector)
		ifTrue: ["A button"
			selector := self actionSelector.
			cls := self target class whichClassIncludesSelector:
selector.
			cls
				ifNotNil: ["want more than default behavior"
					cls == Morph
						ifFalse: [adder value: cls value: selector]]].
	Smalltalk tools messageList browse: list title:  'Actions of
' , self printString.
```

This is not QualityAssistant



Morph (meta-actions) showActions [Morphic-Core]

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```

[target] Super and Self Messages sent but not implemented ? × Helpful?

```
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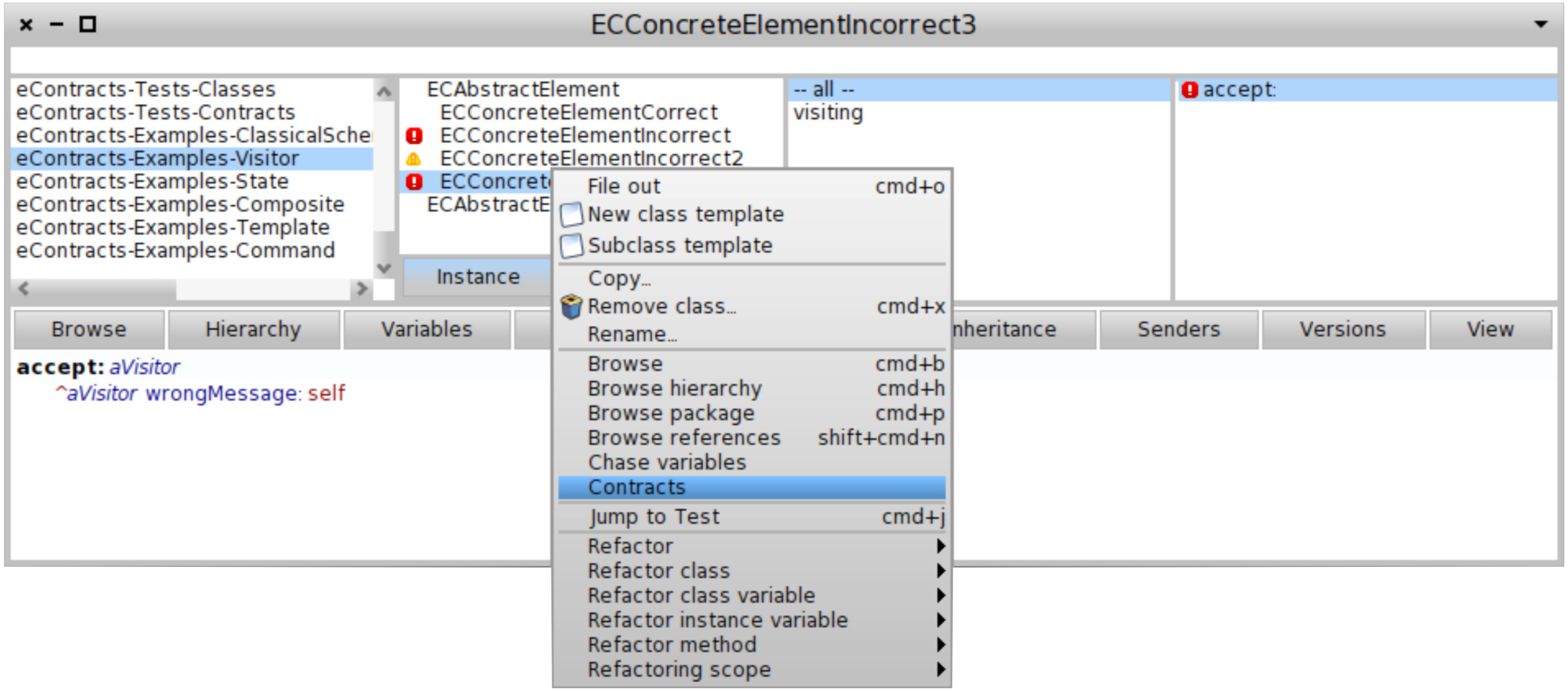
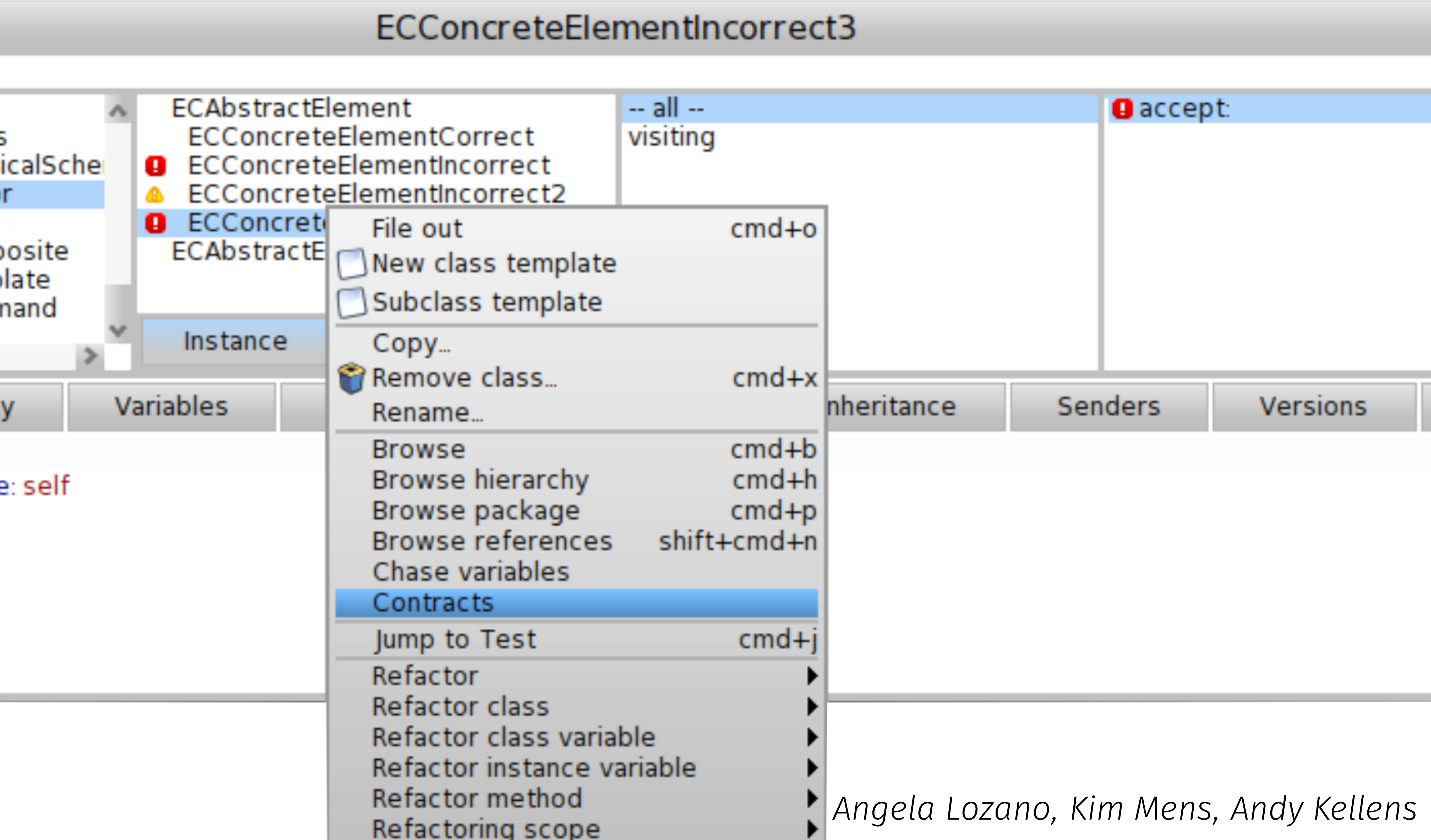
Usage Contracts (2013)



```
accept: aVisitor
    ^aVisitor wrongMessage: self
```

Angela Lozano, Kim Mens, Andy Kellens

Usage Contracts (2013)



Angela Lozano, Kim Mens, Andy Kellens

Polycriticism

Issue Tracker Connection

Issue Tracker Connection

We want to link FogBugs issues to Pharo's classes and methods.

Can we display this information in QualityAssistant?

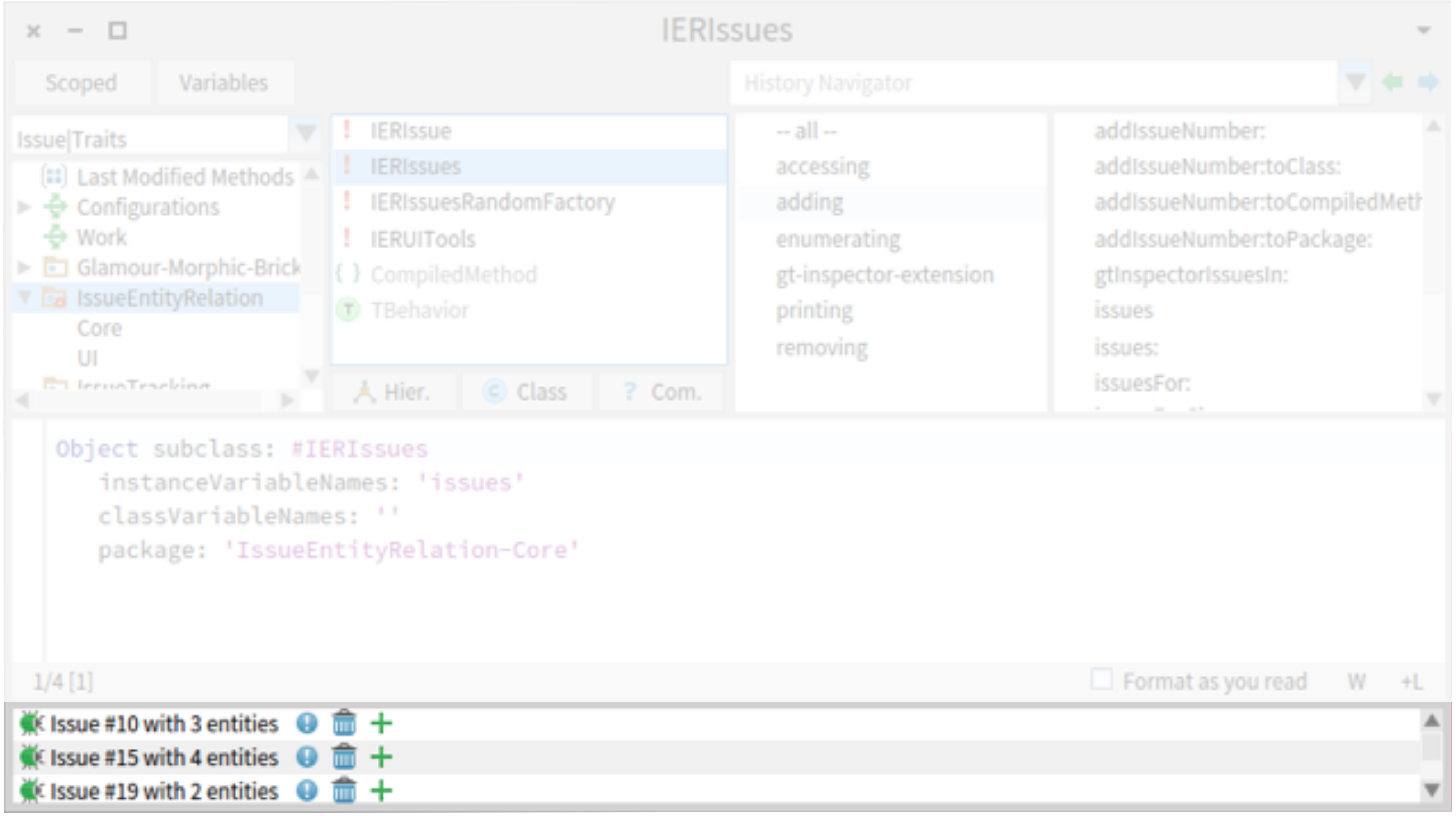
Issue Tracker Connection

Issue Tracker Connection

Sure!

Just follow the Renraku protocol

External Properties for Editor



```
Object subclass: #IERIssues
    instanceVariableNames: 'issues'
    classVariableNames: ''
    package: 'IssueEntityRelation-Core'
```

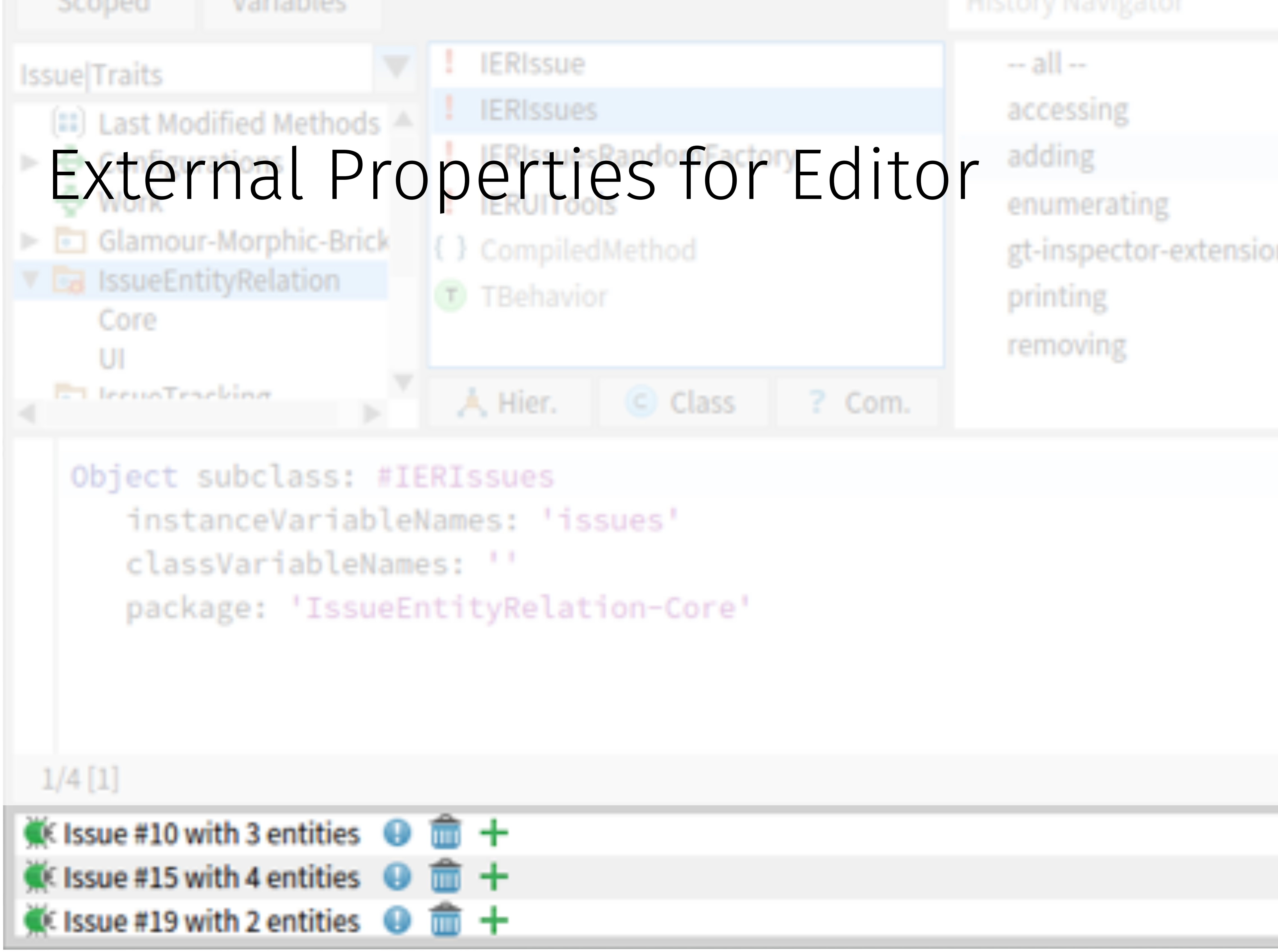
Issue #10 with 3 entities

Issue #15 with 4 entities

Issue #19 with 2 entities

by Juraj Kubelka

External Properties for Editor



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Issue #10 with 3 entities

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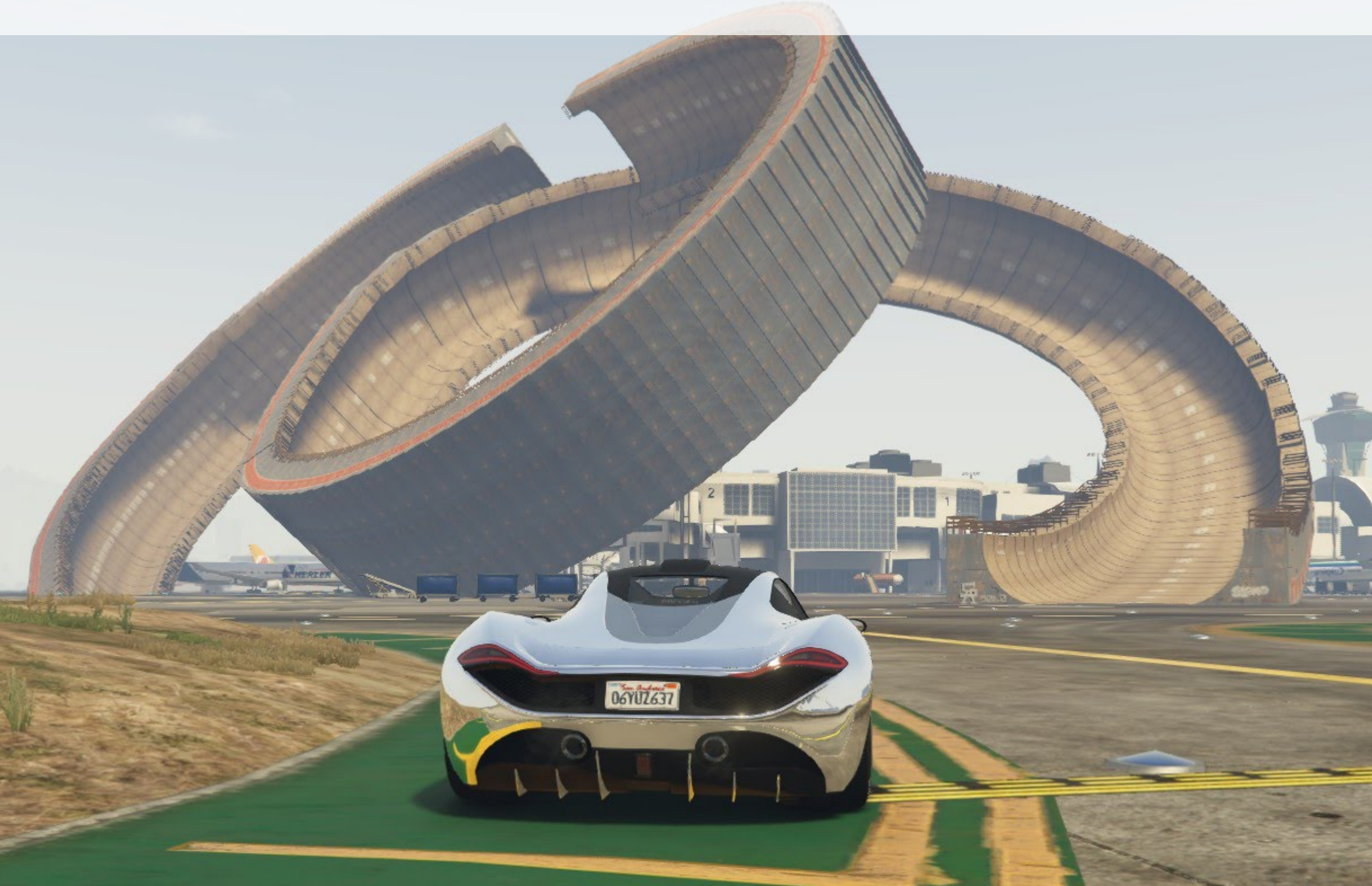
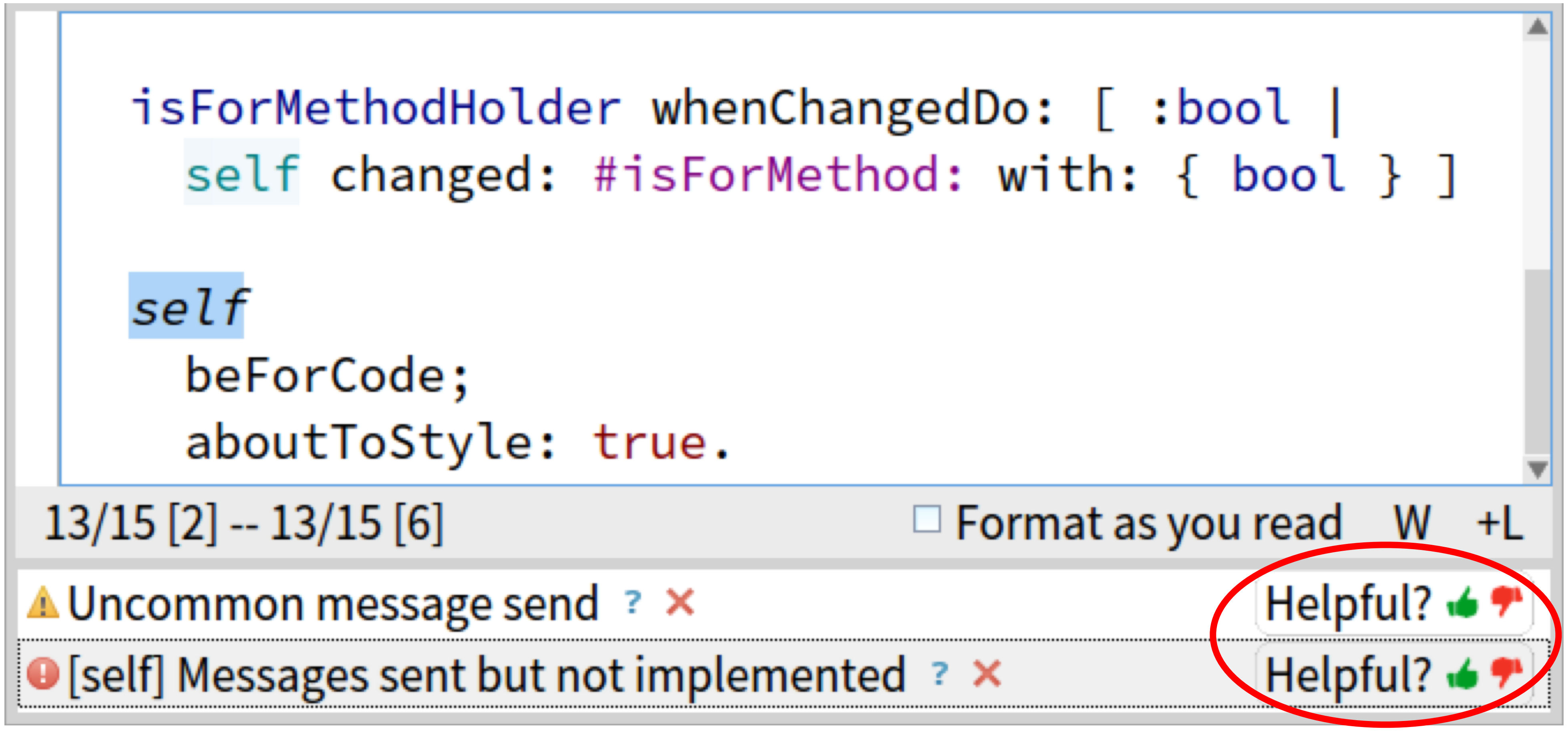
by Juraj Kubelka

Feedback Loop



Feedback



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isForMethodHolder whenChangedDo: [ :bool |
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13/15 [2] -- 13/15 [6]

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RBInstVarInSubclassesRule

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„I have no idea what this rules does“

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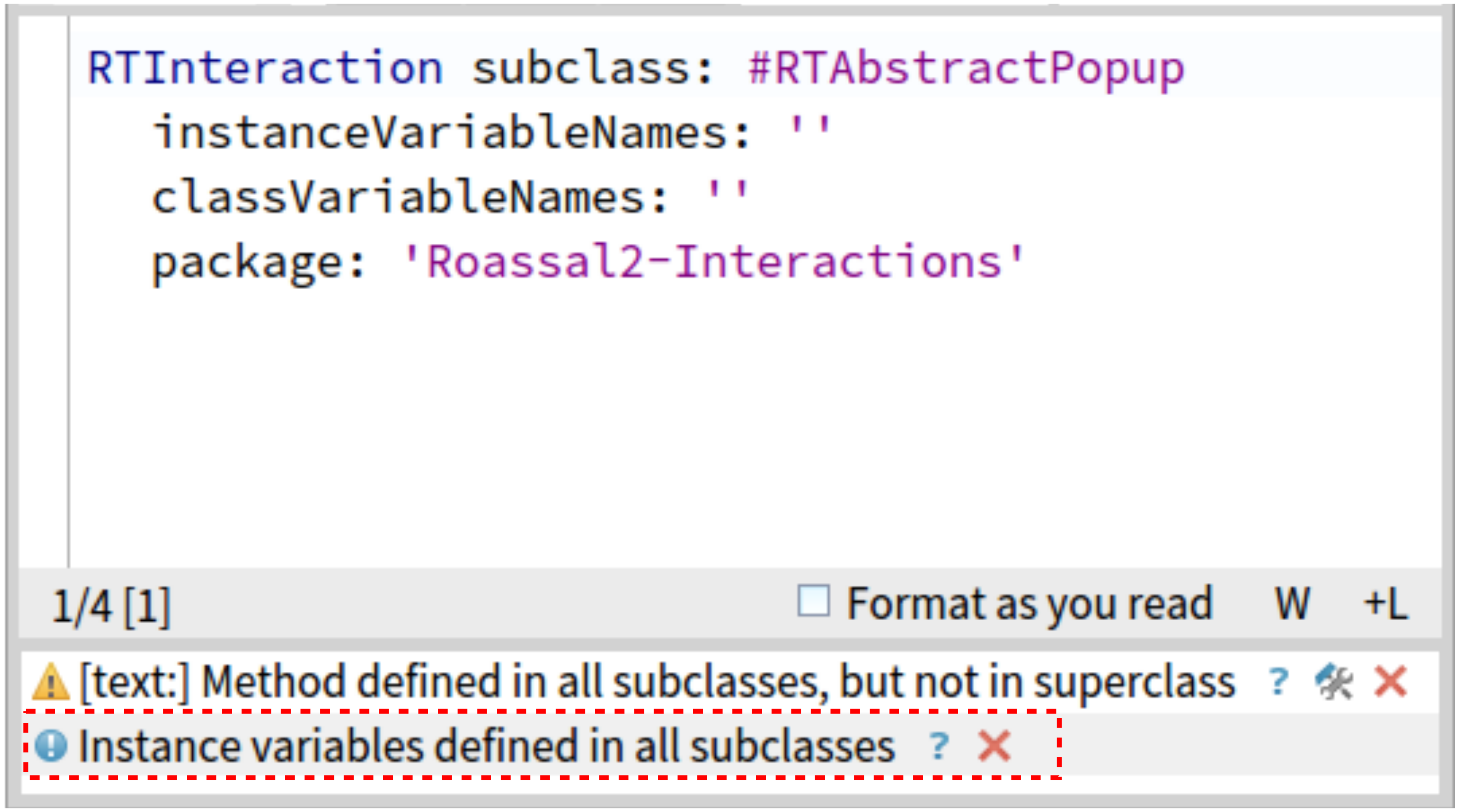


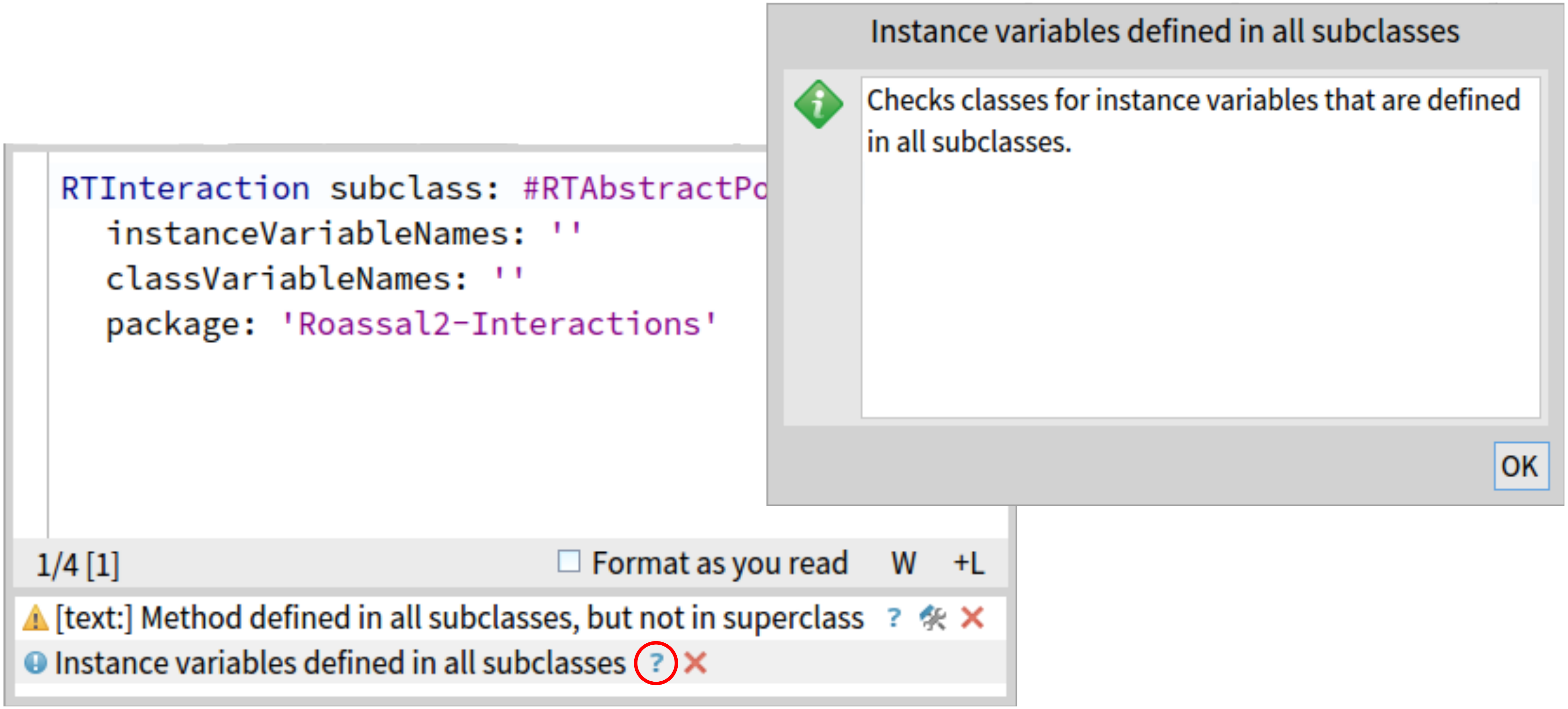
```
RTInteraction subclass: #RTAbstractPopup
   instanceVariableNames: ''
   classVariableNames: ''
   package: 'Roassal2-Interactions'
```

⚠ [text:] Method defined in all subclasses, but not in superclass ? ✕

Instance variables defined in all subclasses ? ✕

RBInstVarInSubclassesRule

„I have no idea what this rules does“



```
RTInteraction subclass: #RTAbstractPo
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```

1/4 [1] □ Format as you read W +L

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Instance variables defined in all subclasses ? ✕

Instance variables defined in all subclasses

Checks classes for instance variables that are defined in all subclasses.

RBInstVarInSubclassesRule

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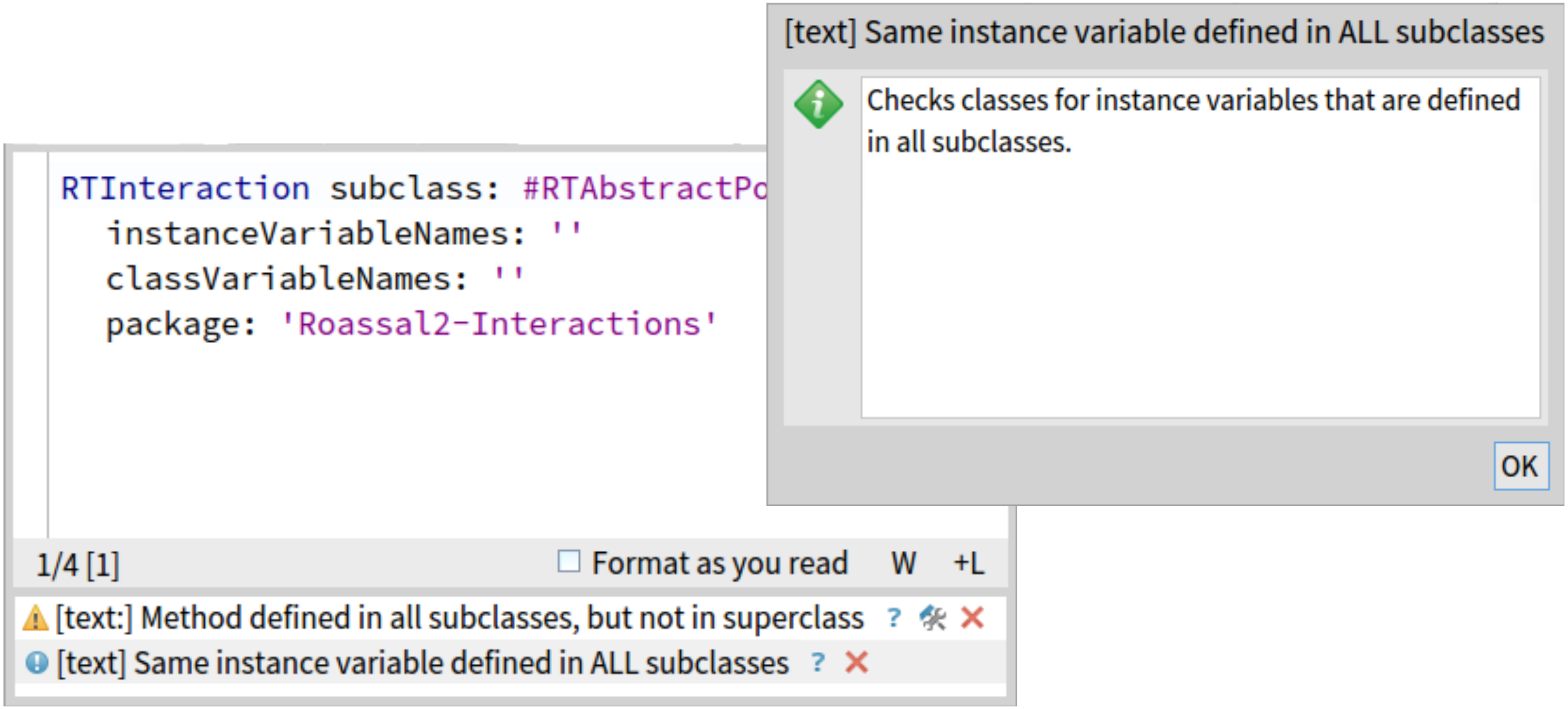

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[text] Same instance variable defined in ALL subclasses

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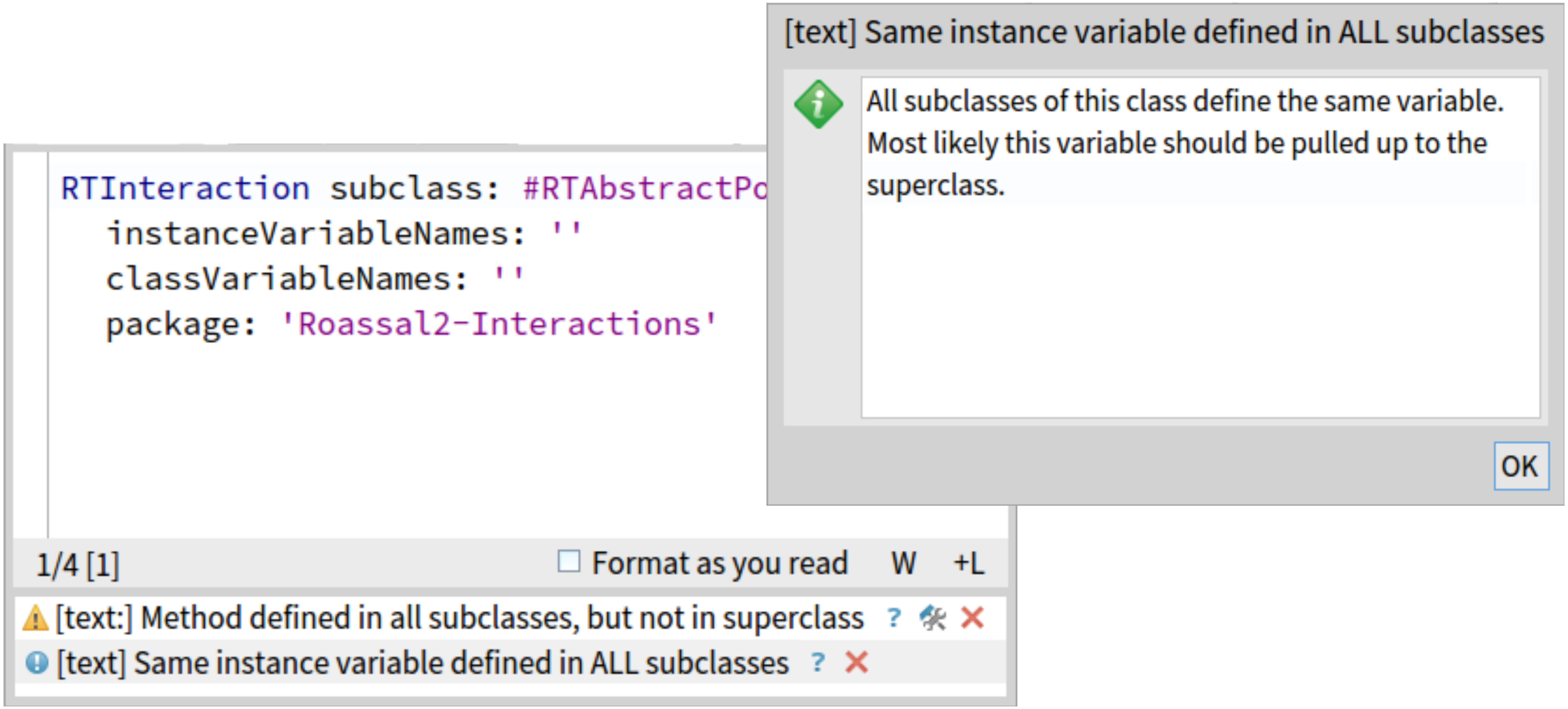

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```

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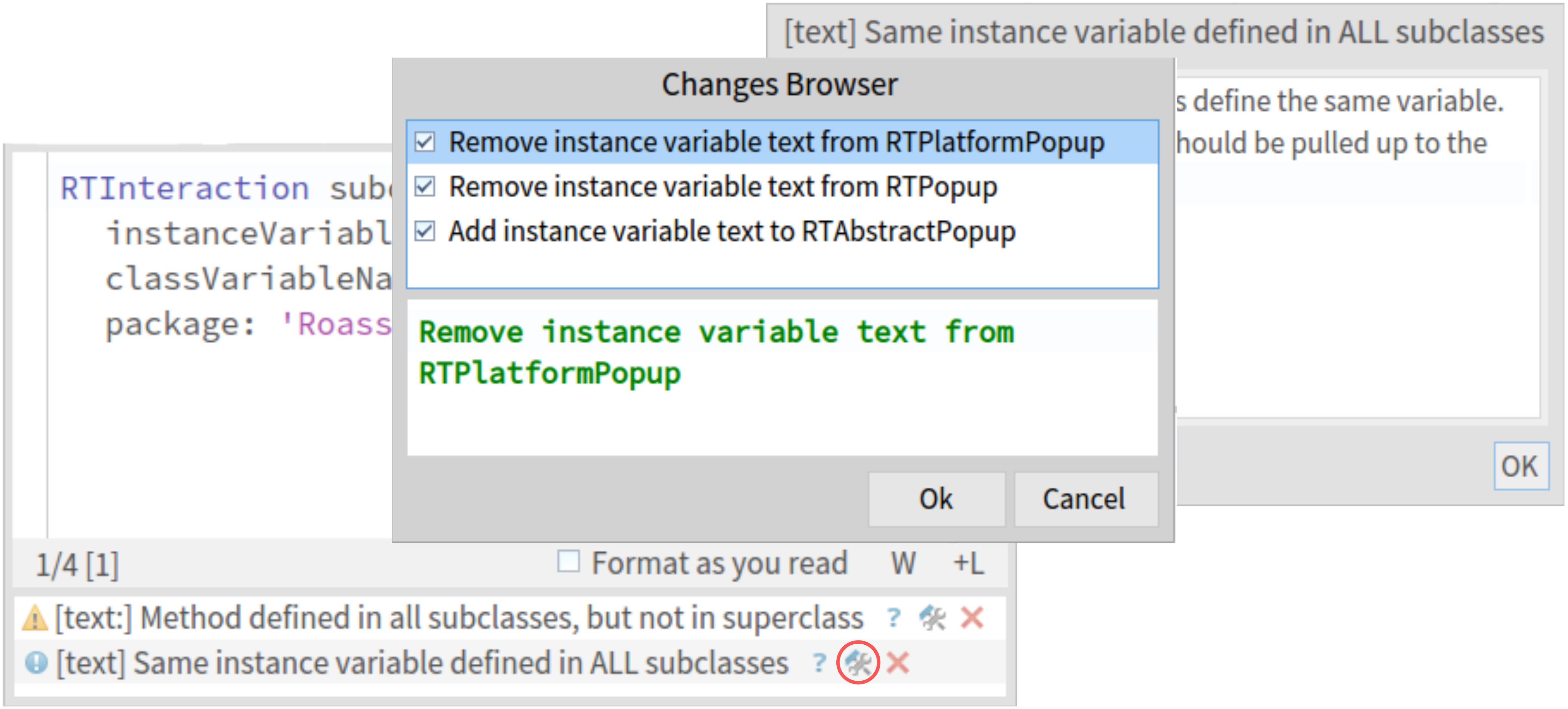
[text] Same instance variable defined in ALL subclasses ? ✕

[text] Same instance variable defined in ALL subclasses

All subclasses of this class define the same variable. Most likely this variable should be pulled up to the superclass.

RBInstVarInSubclassesRule

„I have no idea what this rules does“



[text] Same instance variable defined in ALL subclasses

s define the same variable.
hould be pulled up to the

```
RTInteraction subc
   instanceVariabl
   classVariableNa
   package: 'Roass
```

Changes Browser

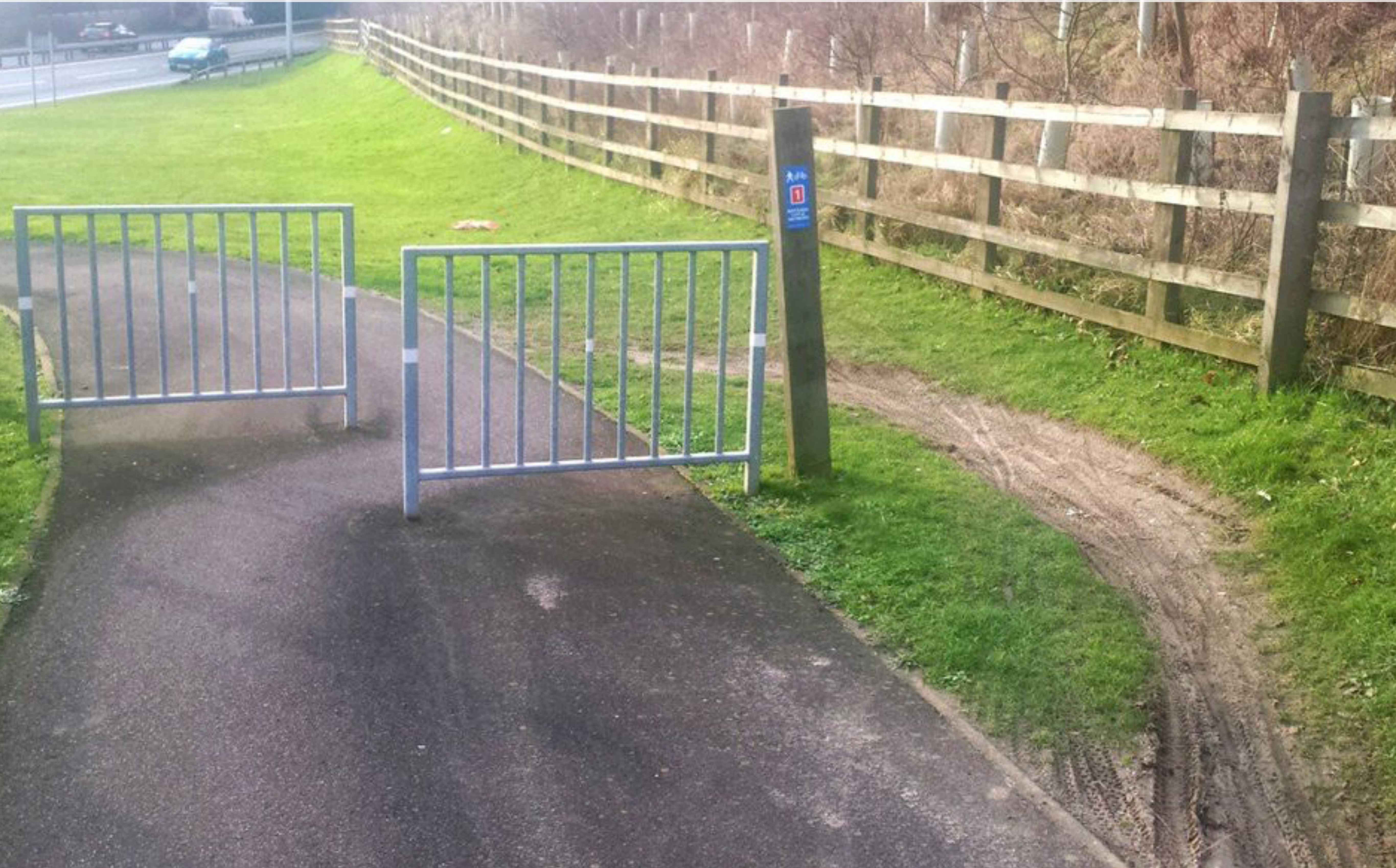
☑ Remove instance variable text from RTPlatformPopup
☑ Remove instance variable text from RTPopup
☑ Add instance variable text to RTAbstractPopup

```
Remove instance variable text from
RTPlatformPopup
```

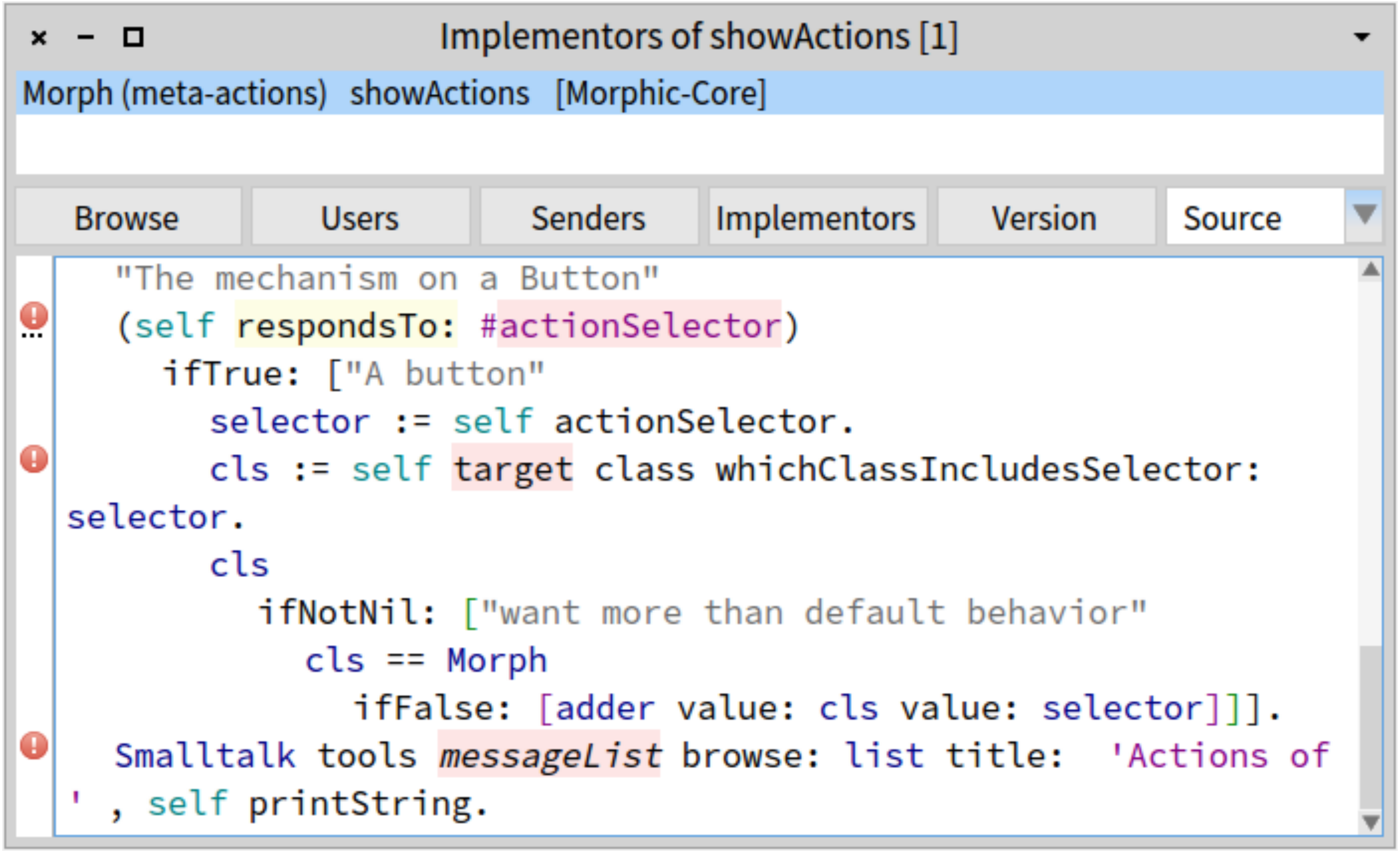
⚠ [text:] Method defined in all subclasses, but not in superclass ? ✕

[text] Same instance variable defined in ALL subclasses ? ✕

The Demand Shapes the Model



Started by the Message Browser



× – □
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```
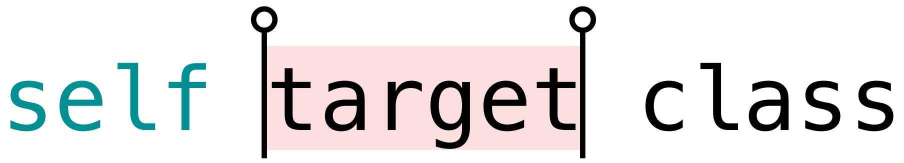

We Need an Interval

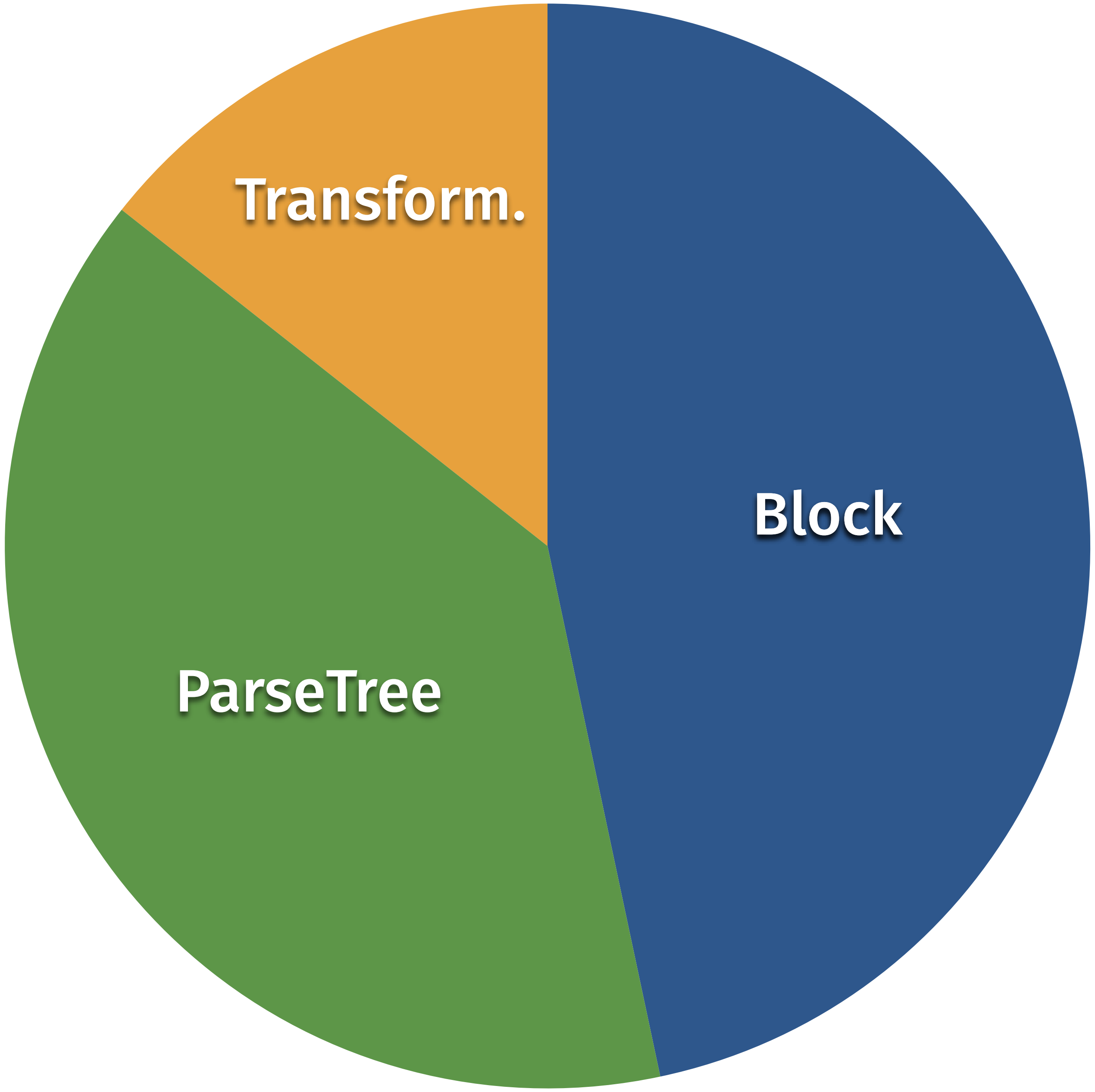
```
self target class
```

We Need an Interval

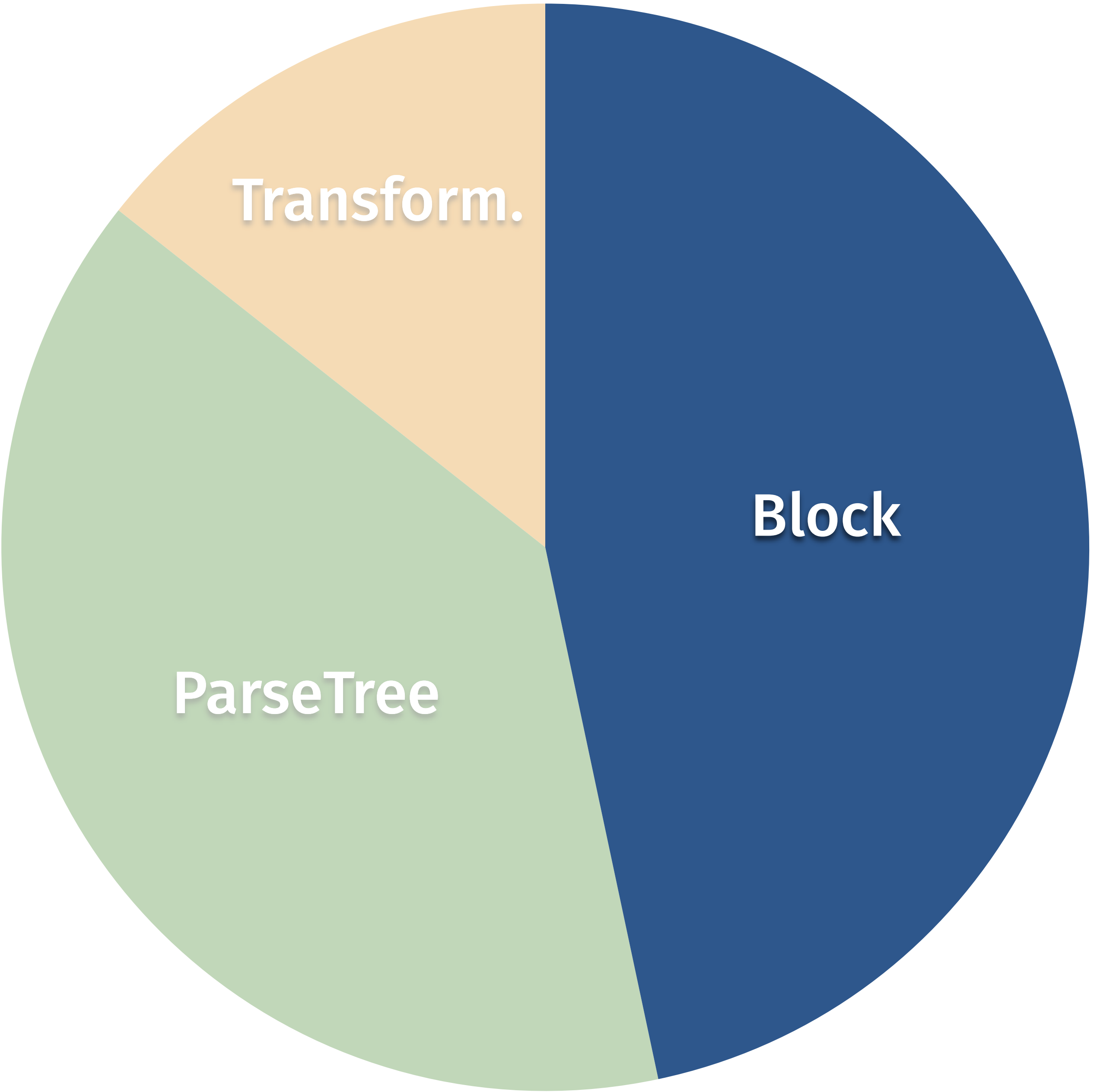


self target class

Types of Rules



Types of Rules



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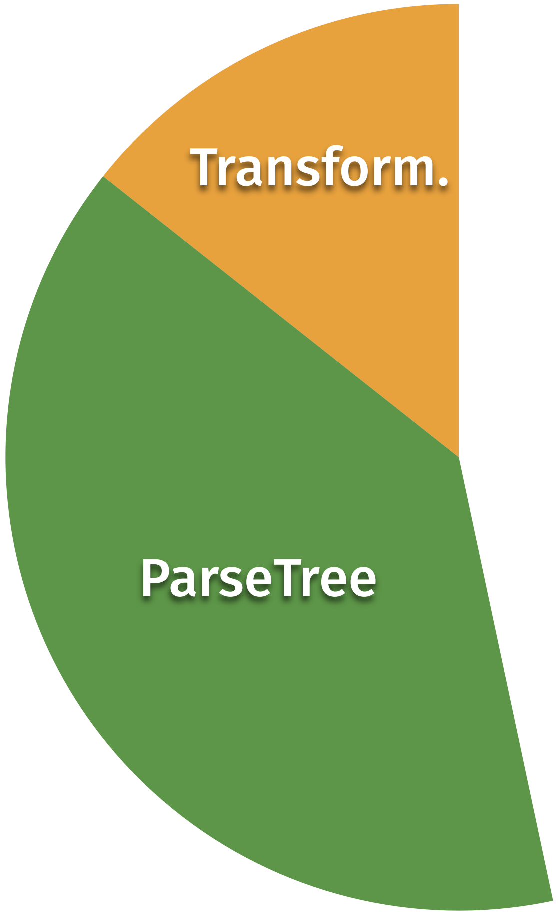

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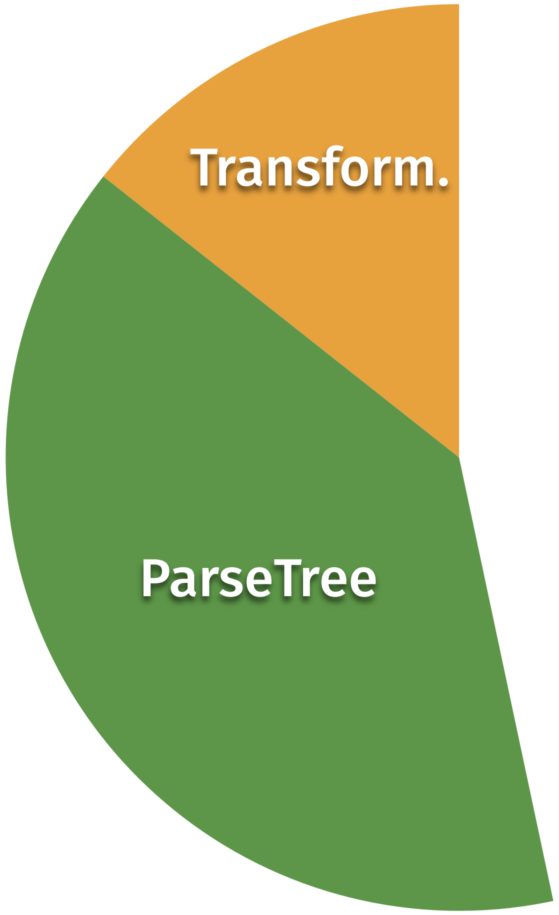
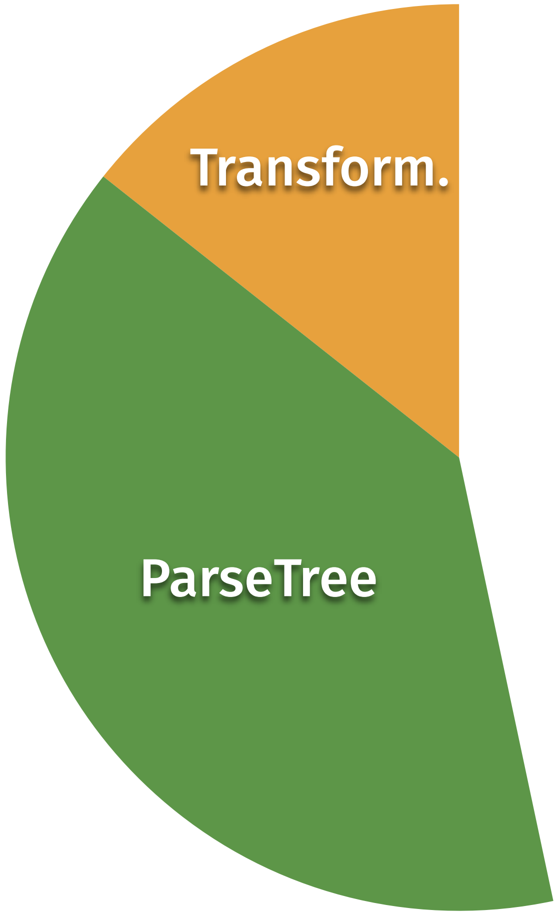


```
'Smalltalk ui icons iconNamed: `#aSymbol'
```

Types of Rules



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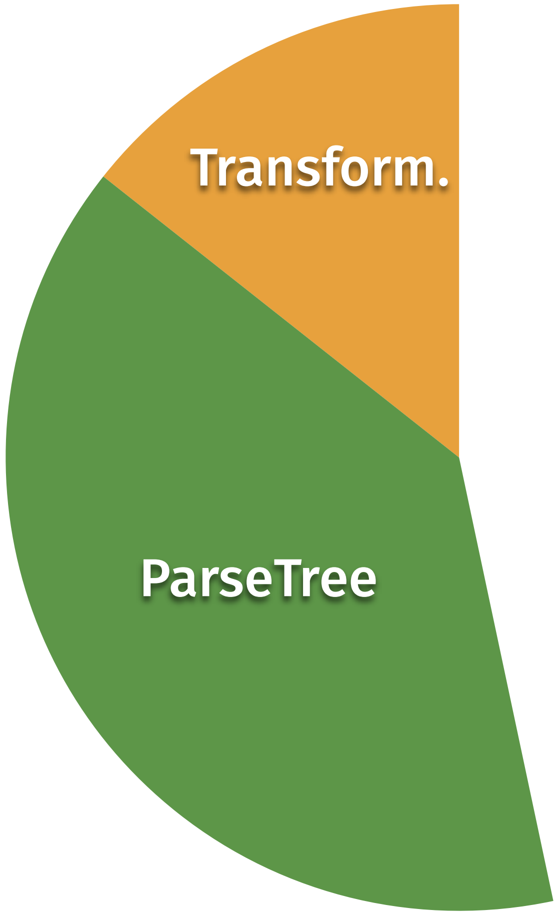
'Smalltalk ui icons iconNamed: `#aSymbol'

^ GLMGenericAction new
   icon: (Smalltalk ui icons iconNamed: #stop);
   action: [ self halt ].
```

Types of Rules



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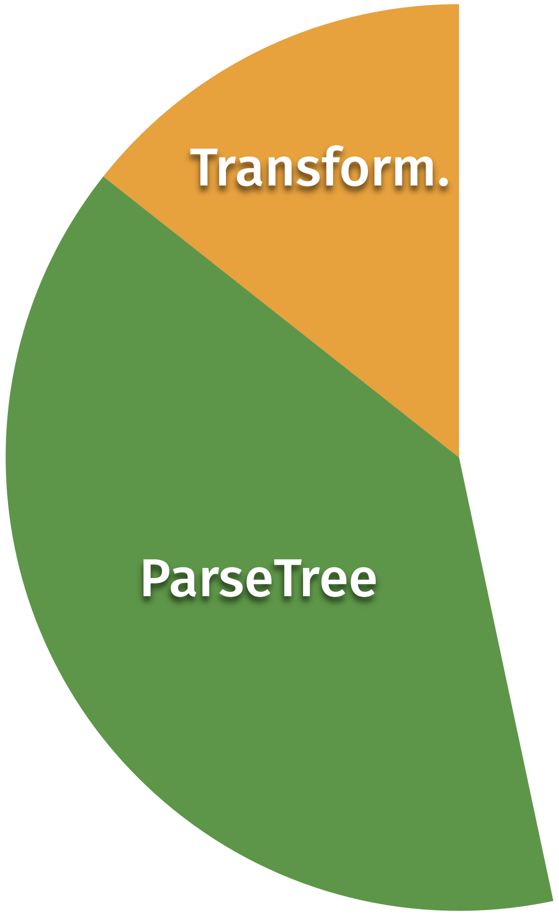

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```
'`#aSymbol asIcon'
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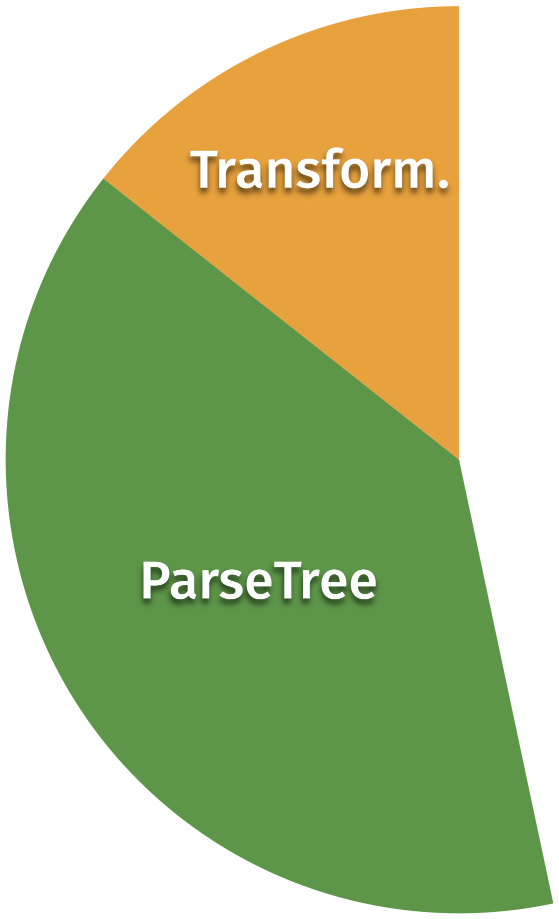
Types of Rules



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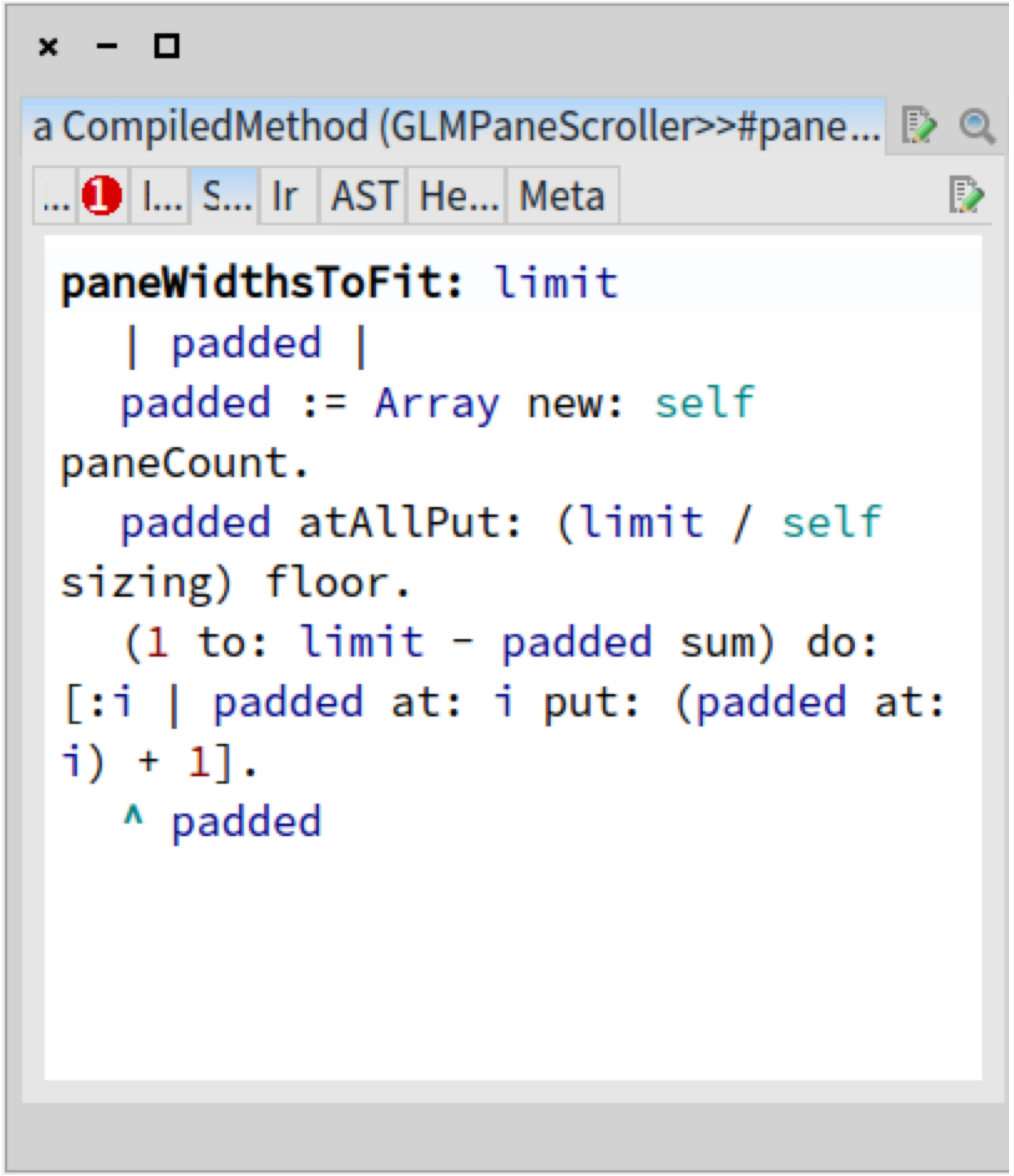
'`#aSymbol asIcon'

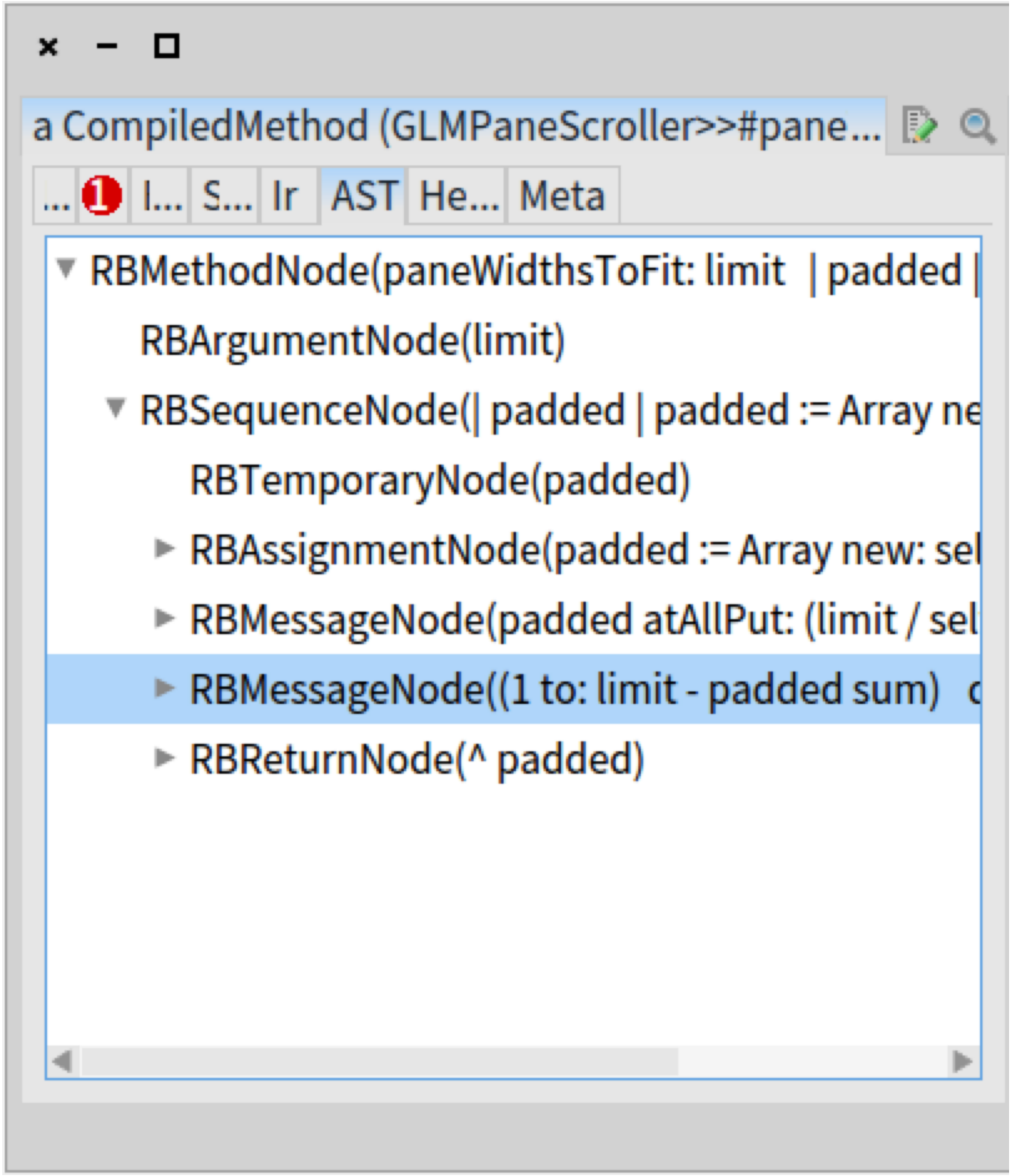
^ GLMGenericAction new
   icon: (#stop asIcon);
   action: [ self halt ].
```

Node-based Critiques


a CompiledMethod (GLMPaneScroller>>#pane...
... 1 I... S... Ir AST He... Meta

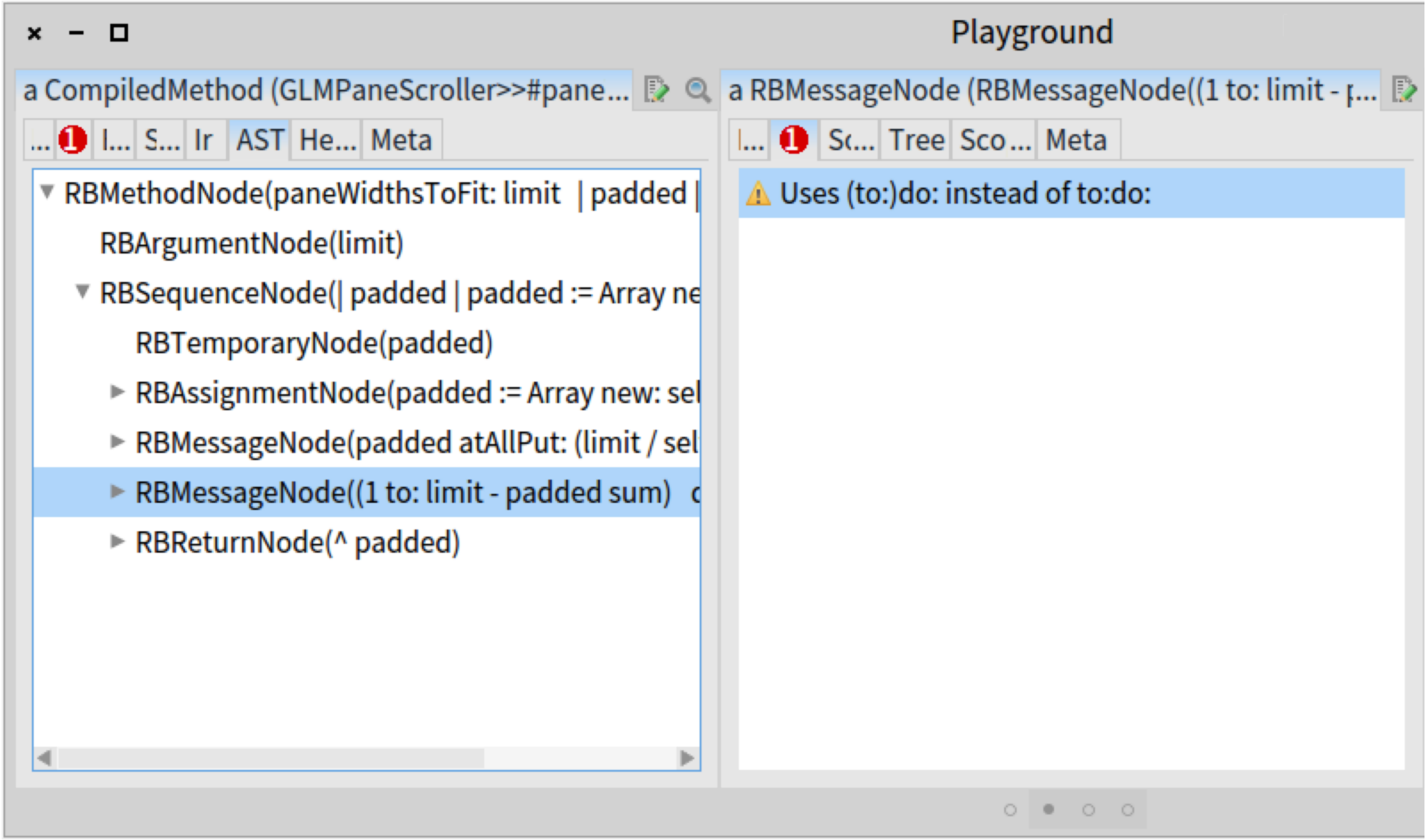
```
paneWidthsToFit: limit
   | padded |
   padded := Array new: self
paneCount.
   padded atAllPut: (limit / self
sizing) floor.
   (1 to: limit - padded sum) do:
[:i | padded at: i put: (padded at:
i) + 1].
   ^ padded
```

Node-based Critiques



```
▼ RBMethodNode(paneWidthsToFit: limit  | padded |
    RBArgumentNode(limit)
  ▼ RBSequenceNode(| padded | padded := Array ne
      RBTemporaryNode(padded)
    ► RBAssignmentNode(padded := Array new: sel
    ► RBMessageNode(padded atAllPut: (limit / sel
    ► RBMessageNode((1 to: limit - padded sum)  d
    ► RBReturnNode(^ padded)
```

Node-based Critiques

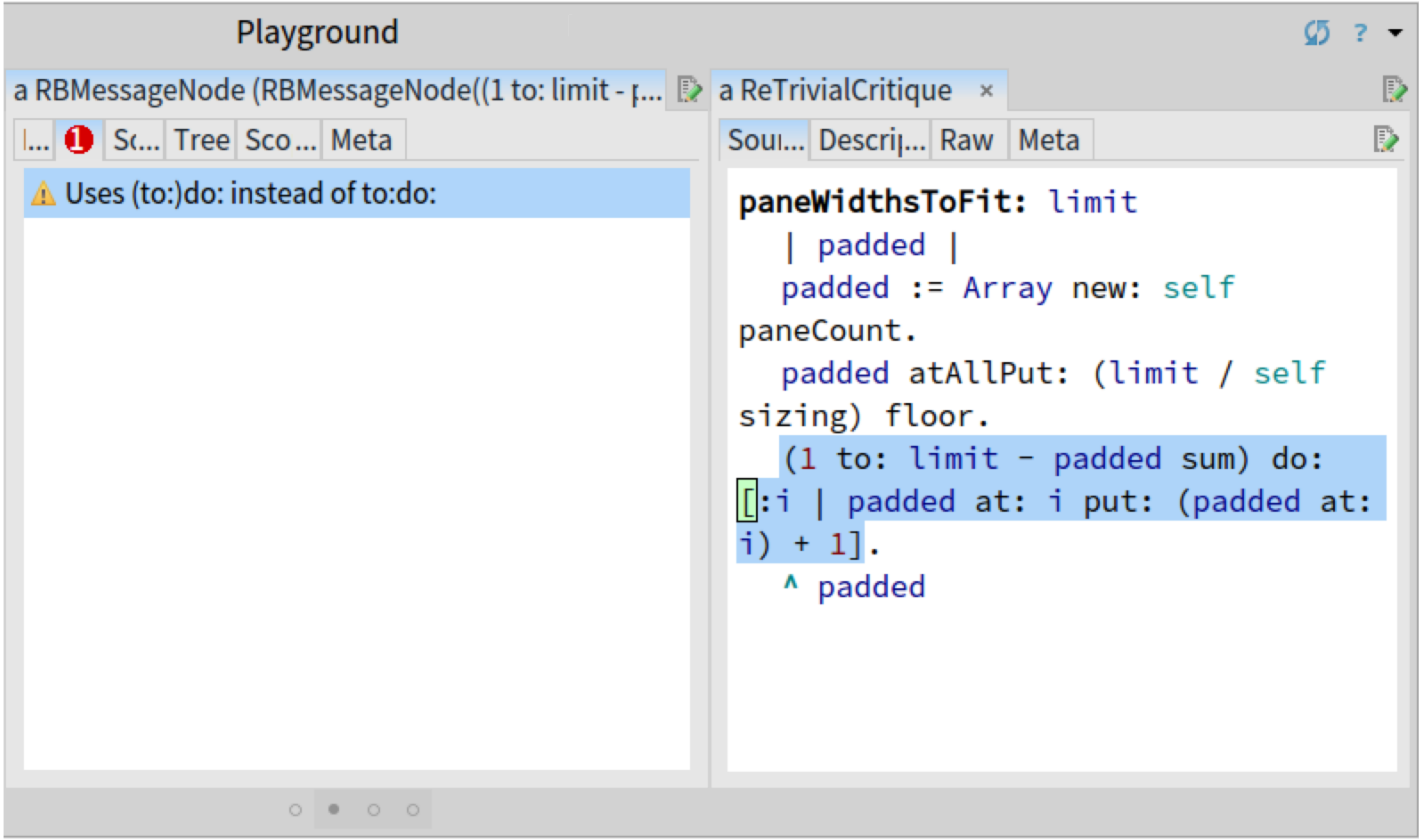


× − □
Playground
a CompiledMethod (GLMPaneScroller>>#pane...
... 1 I... S... Ir AST He... Meta
a RBMessageNode (RBMessageNode((1 to: limit - p...
I... 1 Sc... Tree Sco... Meta

```
▼ RBMethodNode(paneWidthsToFit: limit  | padded |
    RBArgumentNode(limit)
  ▼ RBSequenceNode(| padded | padded := Array ne
      RBTemporaryNode(padded)
    ▶ RBAssignmentNode(padded := Array new: sel
    ▶ RBMessageNode(padded atAllPut: (limit / sel
    ▶ RBMessageNode((1 to: limit - padded sum)  d
    ▶ RBReturnNode(^ padded)
```

⚠ Uses (to:)do: instead of to:do:

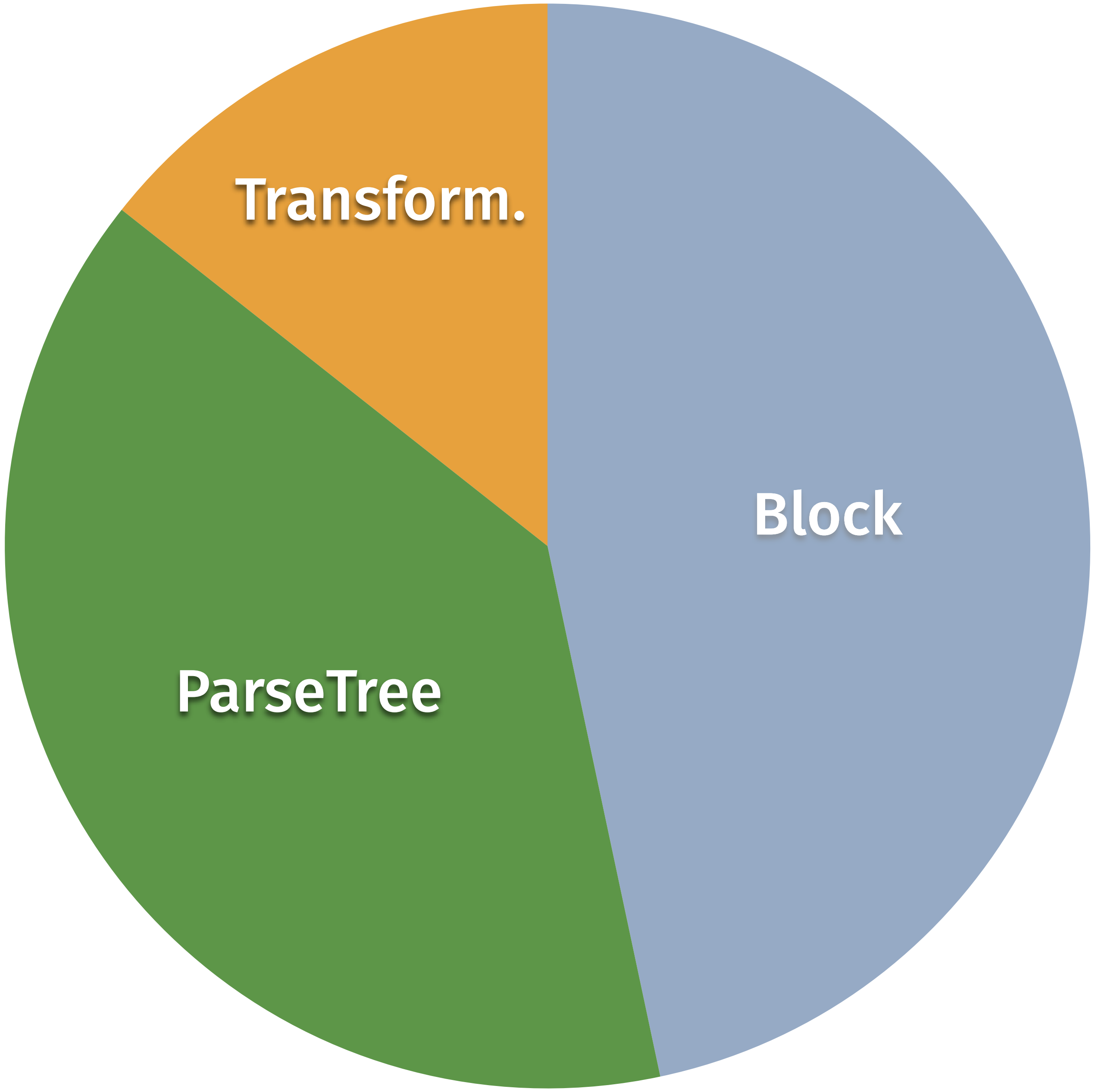
Node-based Critiques


Playground
a RBMessageNode (RBMessageNode((1 to: limit - p...
a ReTrivialCritique ×
I... 1 Sc... Tree Sco... Meta
Sou... Descri... Raw Meta

⚠ Uses (to:)do: instead of to:do:

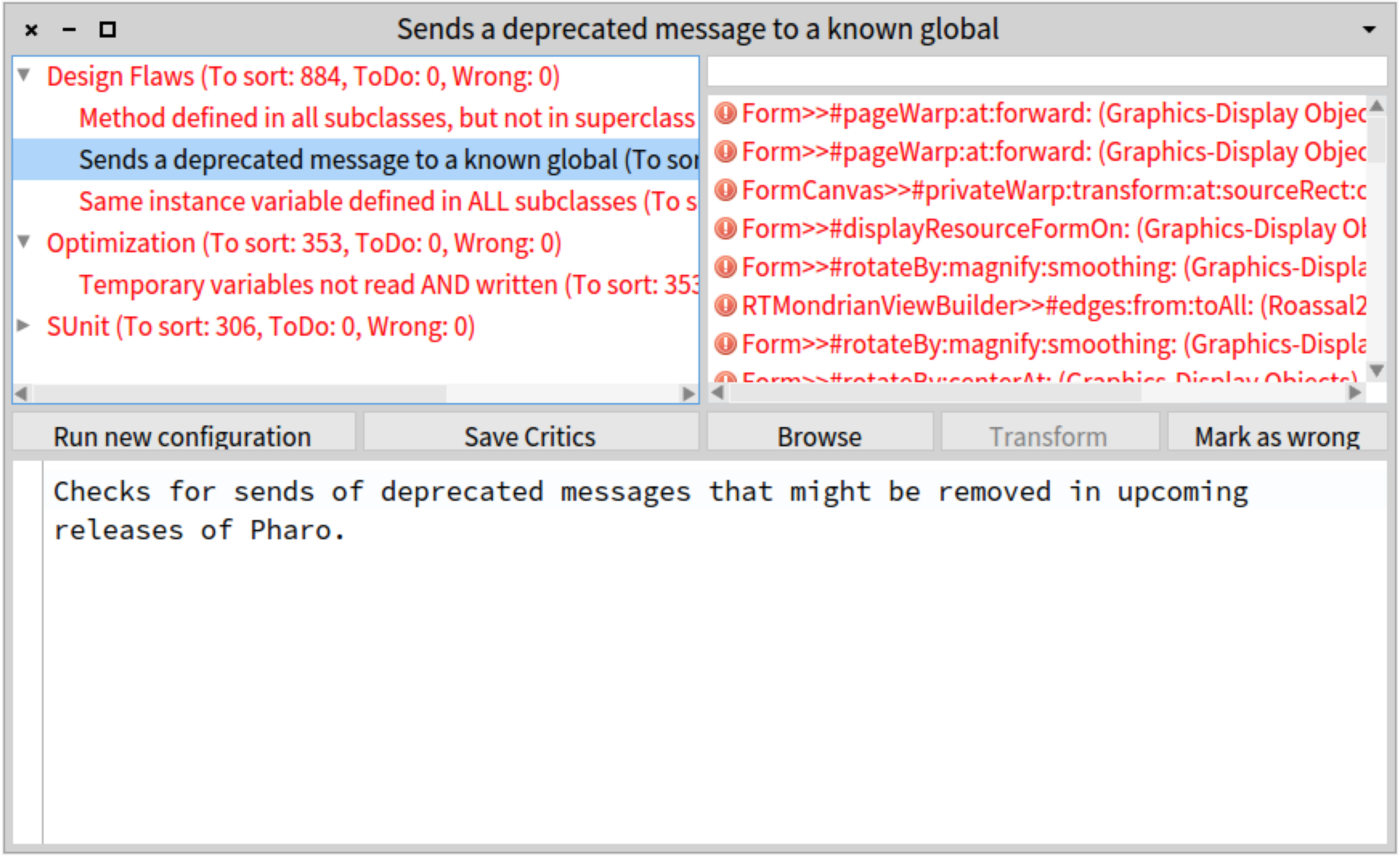
```
paneWidthsToFit: limit
   | padded |
   padded := Array new: self
paneCount.
   padded atAllPut: (limit / self
sizing) floor.
   (1 to: limit - padded sum) do:
[:i | padded at: i put: (padded at:
i) + 1].
   ^ padded
```

Interval Support



The Point of No Return

CriticBrowser on Renraku

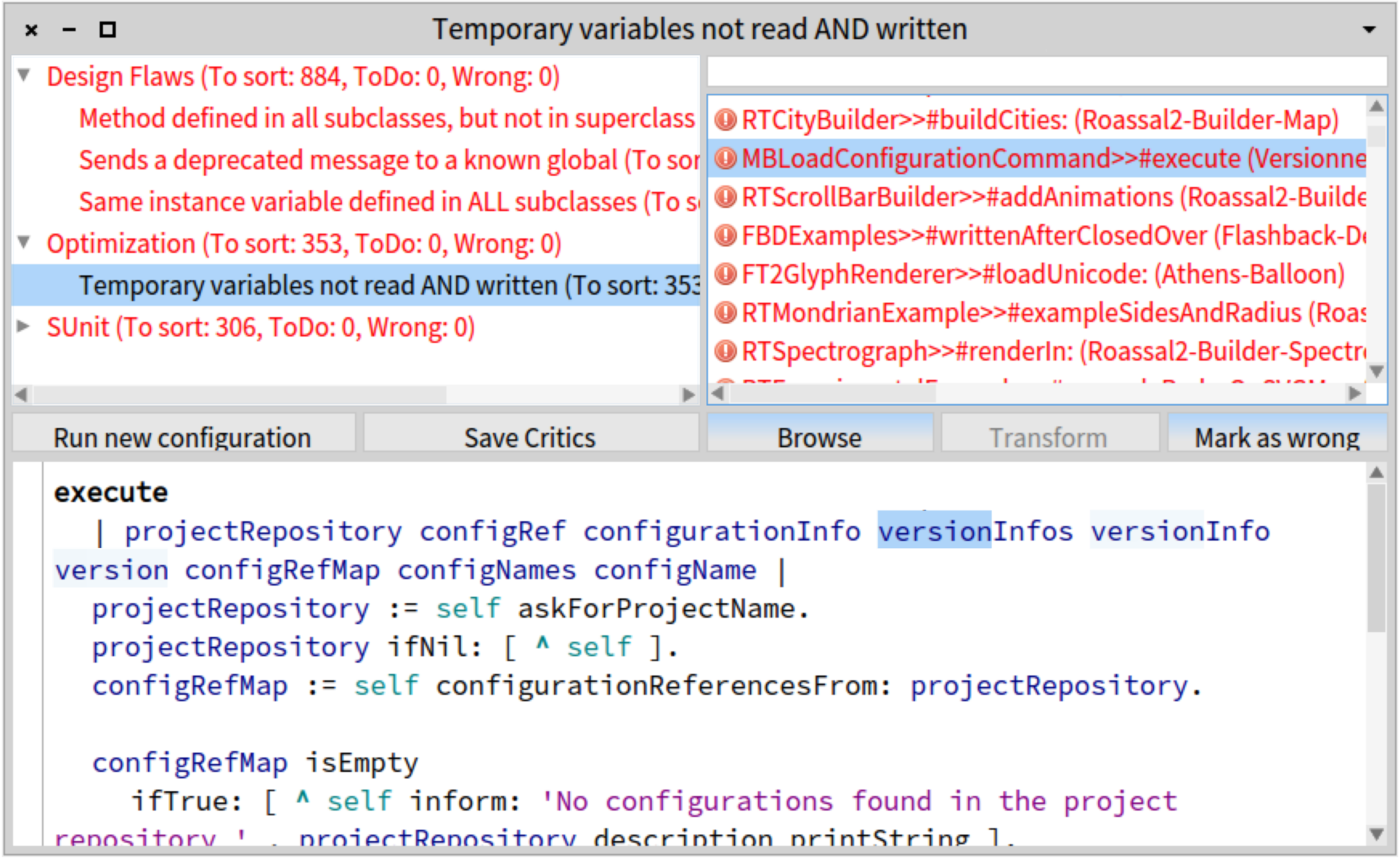


- ▼ Design Flaws (To sort: 884, ToDo: 0, Wrong: 0)
  - Method defined in all subclasses, but not in superclass
  - Sends a deprecated message to a known global (To sor
  - Same instance variable defined in ALL subclasses (To s
- ▼ Optimization (To sort: 353, ToDo: 0, Wrong: 0)
  - Temporary variables not read AND written (To sort: 353
- ▶ SUnit (To sort: 306, ToDo: 0, Wrong: 0)

```
Form>>#pageWarp:at:forward: (Graphics-Display Objec
Form>>#pageWarp:at:forward: (Graphics-Display Objec
FormCanvas>>#privateWarp:transform:at:sourceRect:c
Form>>#displayResourceFormOn: (Graphics-Display Ob
Form>>#rotateBy:magnify:smoothing: (Graphics-Displa
RTMondrianViewBuilder>>#edges:from:toAll: (Roassal2
Form>>#rotateBy:magnify:smoothing: (Graphics-Displa
Form>>#rotateBy:centerAt: (Graphics-Display Objects)
```

```
Checks for sends of deprecated messages that might be removed in upcoming
releases of Pharo.
```

Old Highlight



Temporary variables not read AND written

- Design Flaws (To sort: 884, ToDo: 0, Wrong: 0)
  - Method defined in all subclasses, but not in superclass
  - Sends a deprecated message to a known global (To sor
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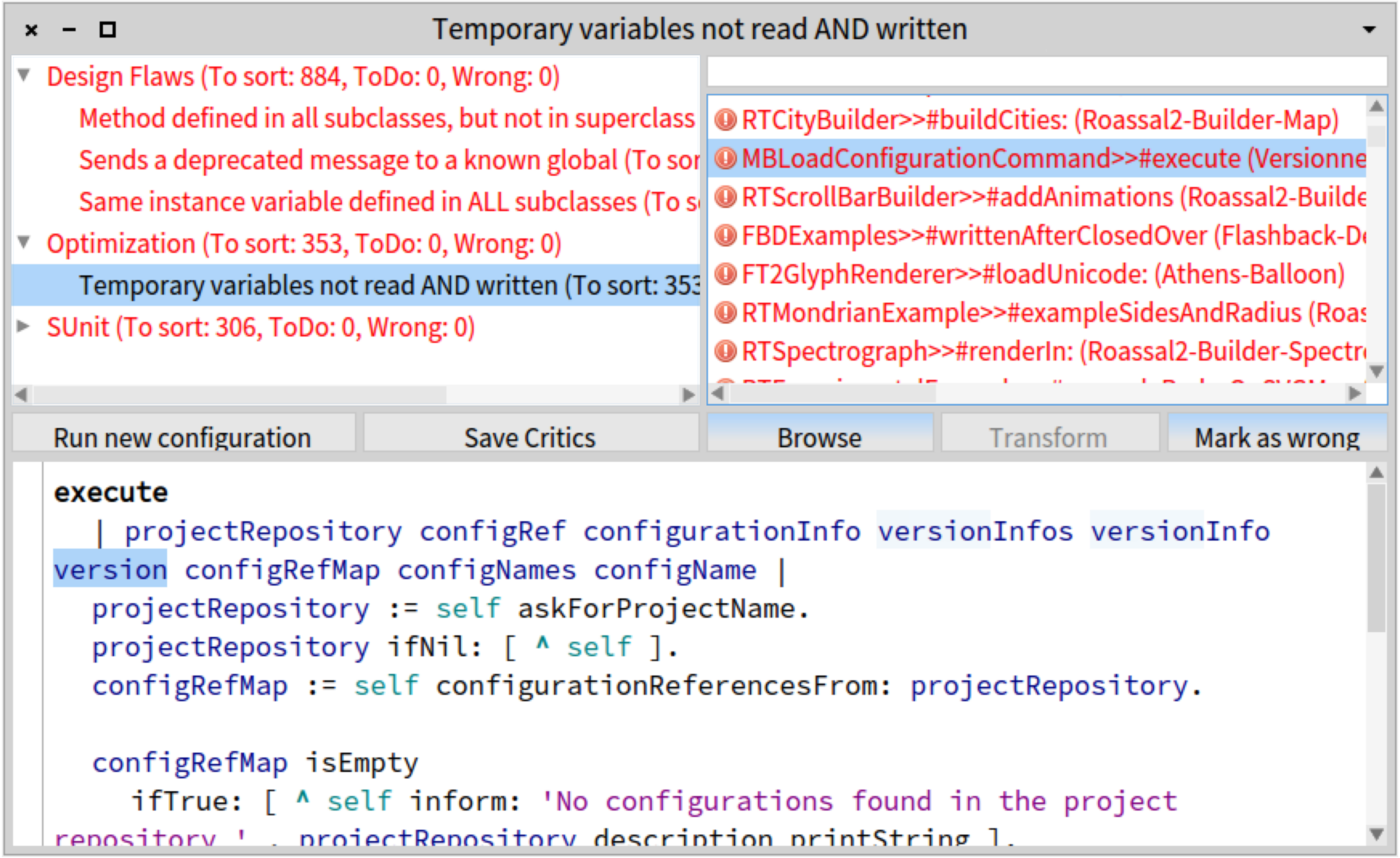
- Optimization (To sort: 353, ToDo: 0, Wrong: 0)
  - Temporary variables not read AND written (To sort: 353
- SUnit (To sort: 306, ToDo: 0, Wrong: 0)

- RTCityBuilder>>#buildCities: (Roassal2-Builder-Map)
- MBLoadConfigurationCommand>>#execute (Versionne
- RTScrollBarBuilder>>#addAnimations (Roassal2-Builde
- FBDExamples>>#writtenAfterClosedOver (Flashback-De
- FT2GlyphRenderer>>#loadUnicode: (Athens-Balloon)
- RTMondrianExample>>#exampleSidesAndRadius (Roas
- RTSpectrograph>>#renderIn: (Roassal2-Builder-Spectr

```
execute
   | projectRepository configRef configurationInfo versionInfos versionInfo
version configRefMap configNames configName |
  projectRepository := self askForProjectName.
  projectRepository ifNil: [ ^ self ].
  configRefMap := self configurationReferencesFrom: projectRepository.

  configRefMap isEmpty
    ifTrue: [ ^ self inform: 'No configurations found in the project
repository ' , projectRepository description printString ].
```

Highlight Based on AST



Temporary variables not read AND written

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  - Method defined in all subclasses, but not in superclass
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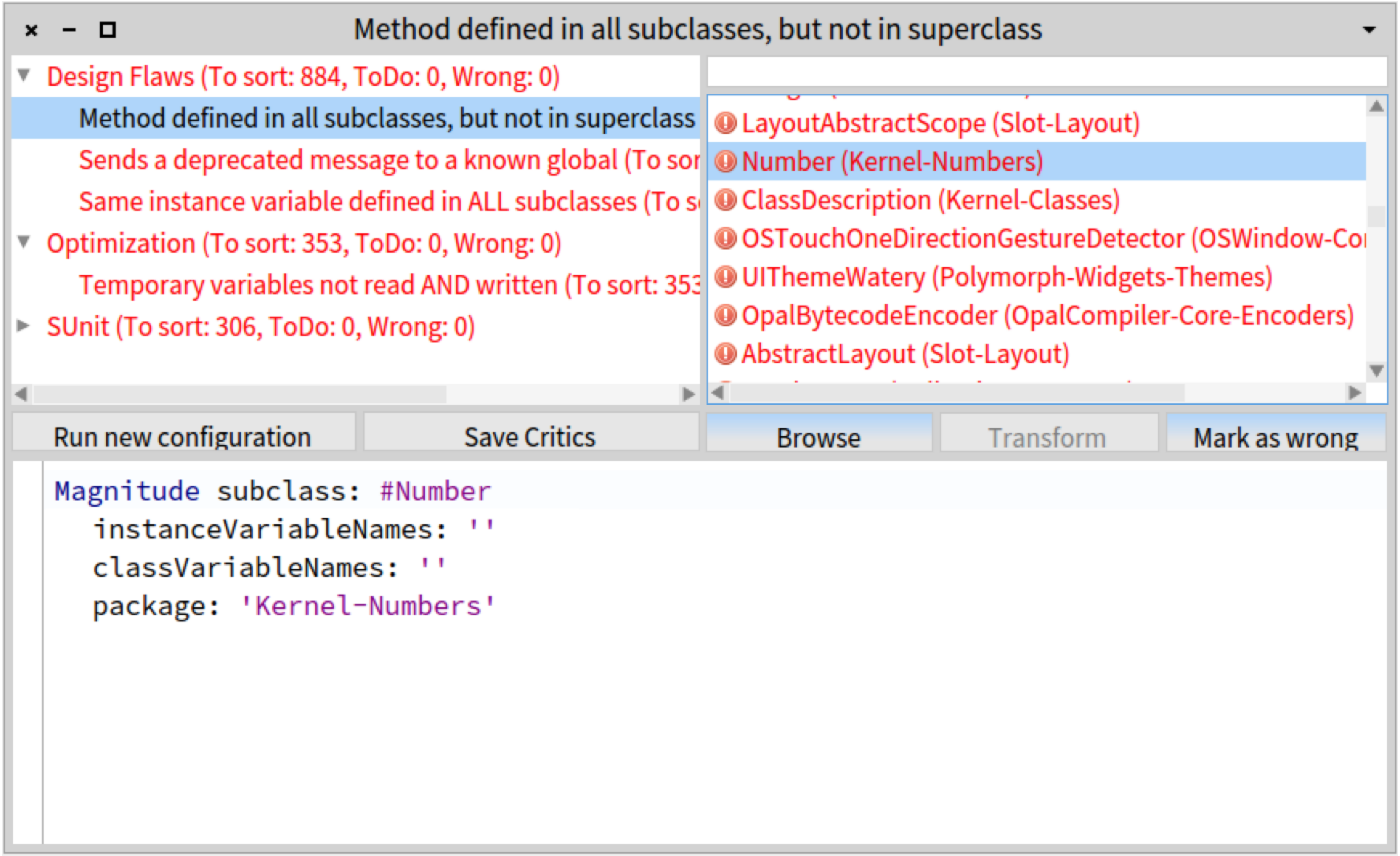
- RTSpectrograph>>#renderIn: (Roassal2-Builder-Spectr

```
execute
    | projectRepository configRef configurationInfo versionInfos versionInfo
version configRefMap configNames configName |
    projectRepository := self askForProjectName.
    projectRepository ifNil: [ ^ self ].
    configRefMap := self configurationReferencesFrom: projectRepository.

    configRefMap isEmpty
        ifTrue: [ ^ self inform: 'No configurations found in the project
repository ' , projectRepository description printString ].
```

Useless Output



- Design Flaws (To sort: 884, ToDo: 0, Wrong: 0)
  - Method defined in all subclasses, but not in superclass
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  - Same instance variable defined in ALL subclasses (To s
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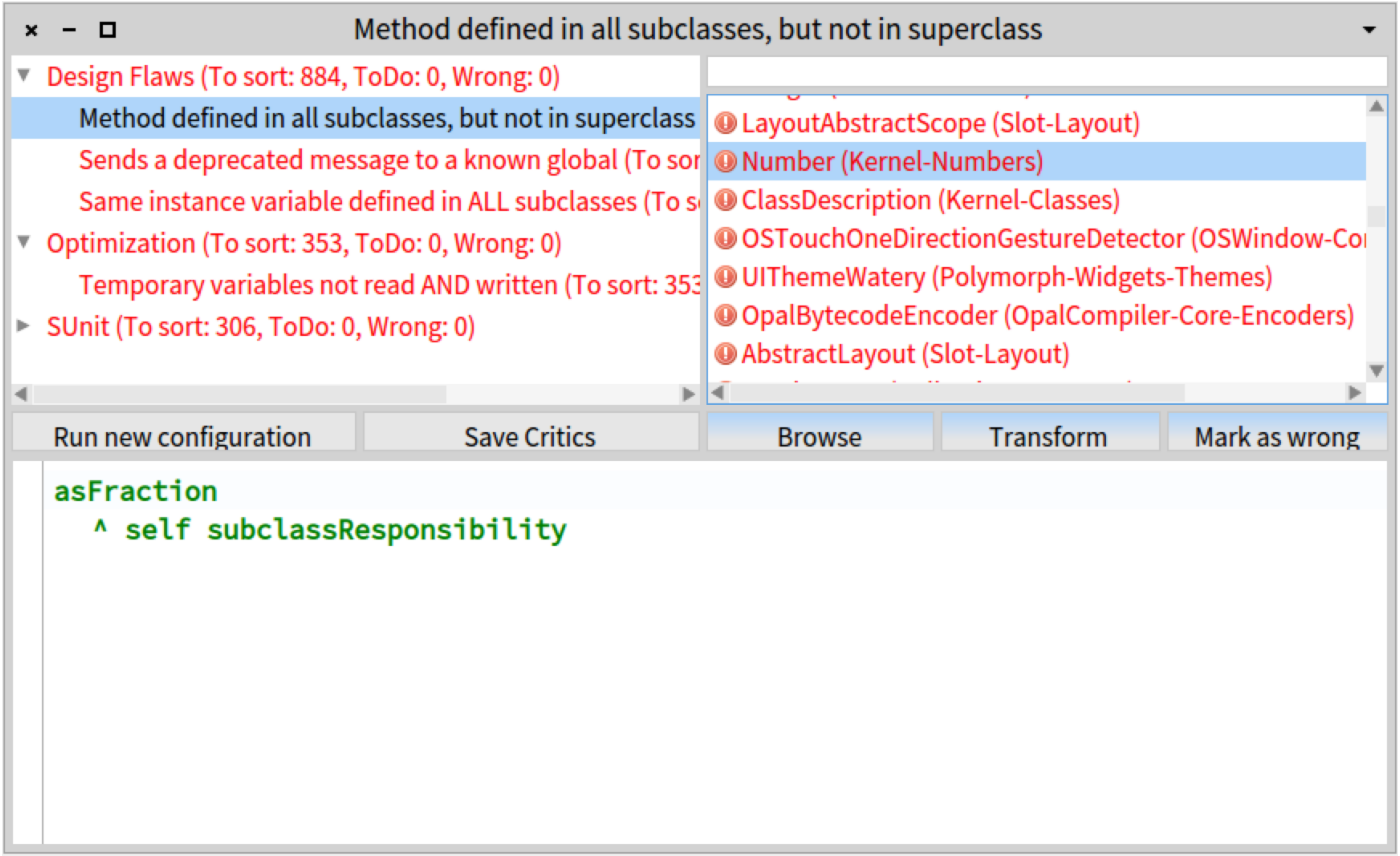
- SUnit (To sort: 306, ToDo: 0, Wrong: 0)

LayoutAbstractScope (Slot-Layout)
Number (Kernel-Numbers)
ClassDescription (Kernel-Classes)
OSTouchOneDirectionGestureDetector (OSWindow-Co
UIThemeWatery (Polymorph-Widgets-Themes)
OpalBytecodeEncoder (OpalCompiler-Core-Encoders)
AbstractLayout (Slot-Layout)

```
Magnitude subclass: #Number
   instanceVariableNames: ''
   classVariableNames: ''
   package: 'Kernel-Numbers'
```

Custom Autofix



Method defined in all subclasses, but not in superclass

- Design Flaws (To sort: 884, ToDo: 0, Wrong: 0)
  - Method defined in all subclasses, but not in superclass
  - Sends a deprecated message to a known global (To sor
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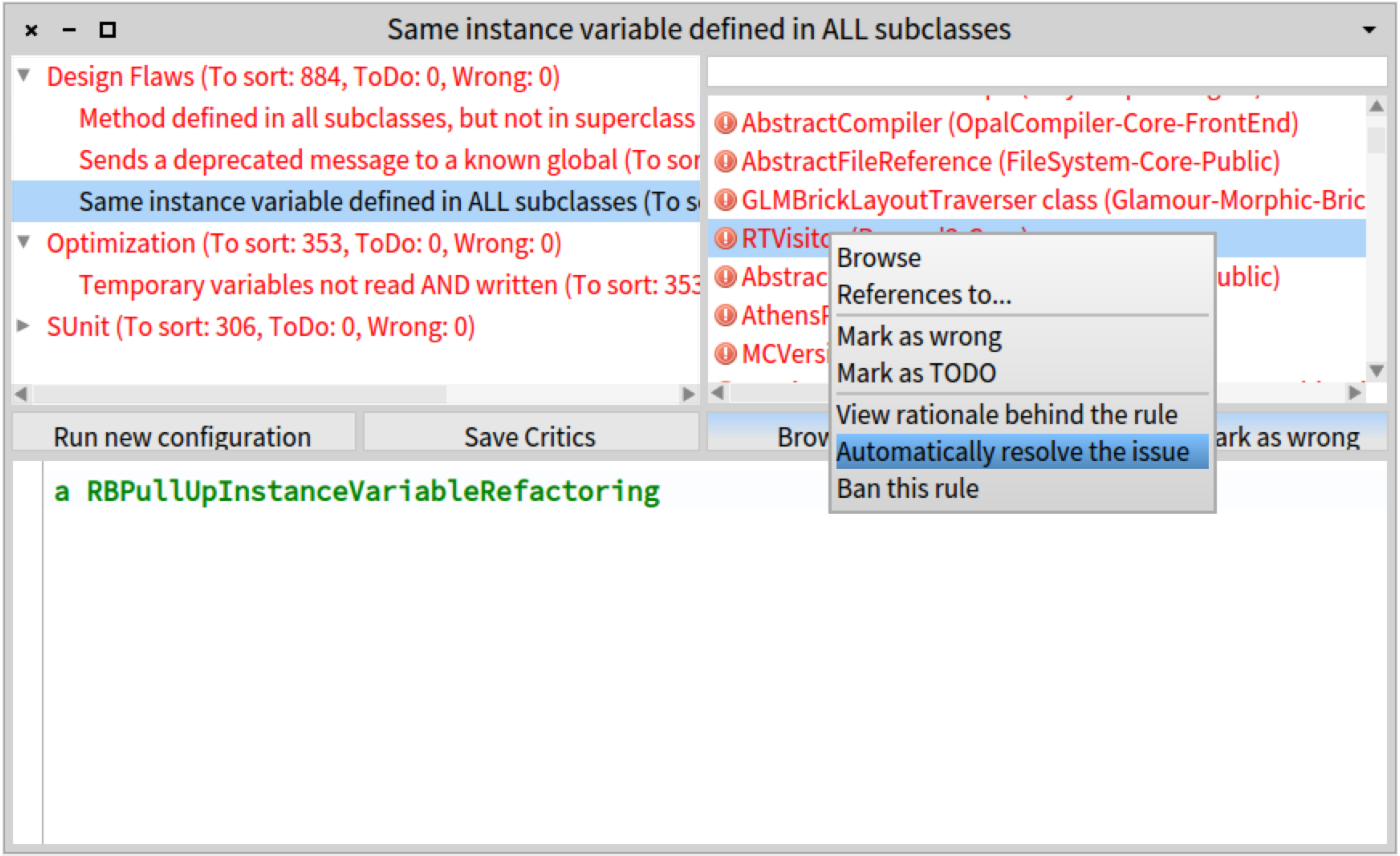
- UIThemeWatery (Polymorph-Widgets-Themes)
- OpalBytecodeEncoder (OpalCompiler-Core-Encoders)
- AbstractLayout (Slot-Layout)

```
asFraction
   ^ self subclassResponsibility
```

Autofix by Refactoring...



Same instance variable defined in ALL subclasses

- Design Flaws (To sort: 884, ToDo: 0, Wrong: 0)
  - Method defined in all subclasses, but not in superclass
  - Sends a deprecated message to a known global (To sor
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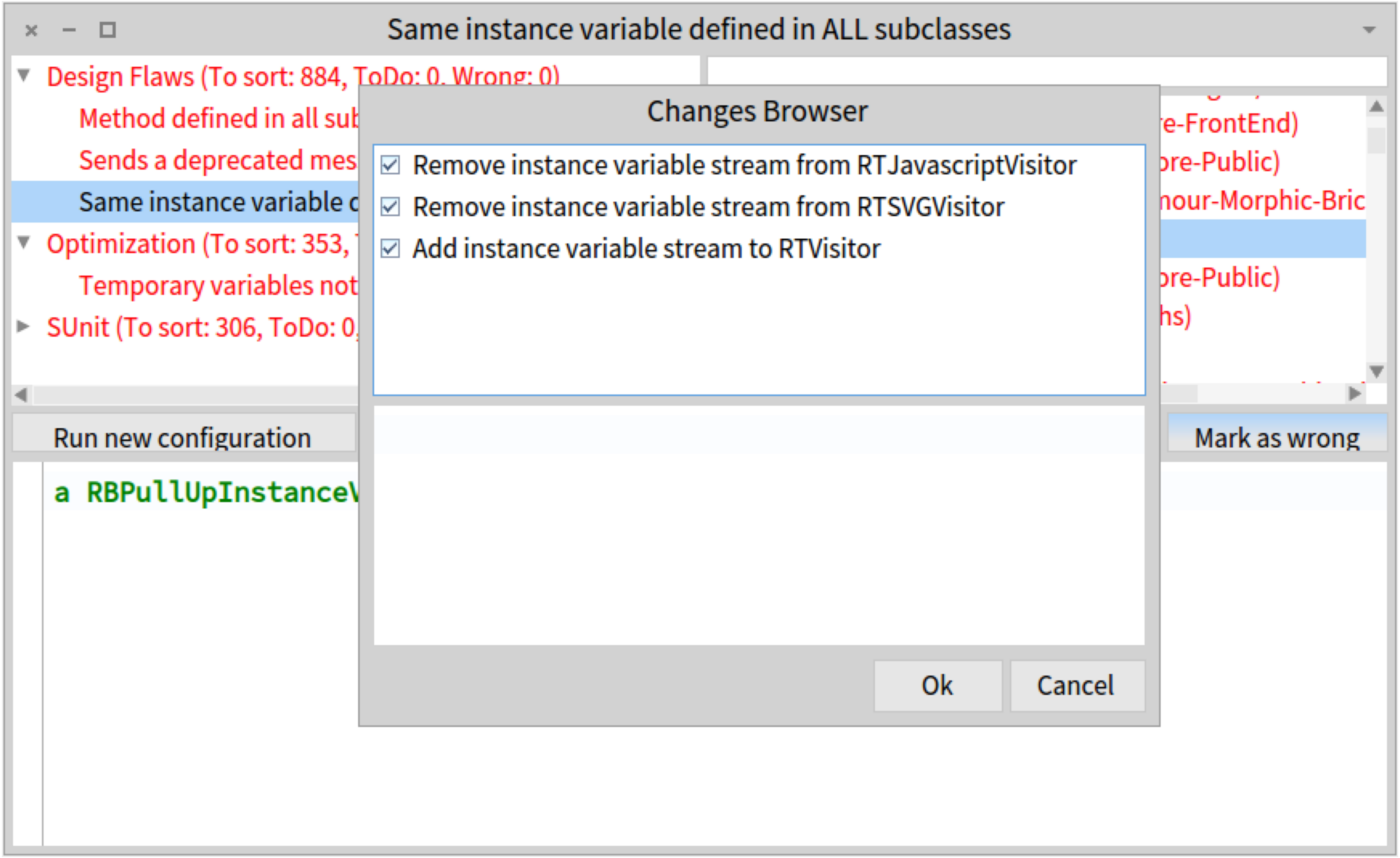
AbstractCompiler (OpalCompiler-Core-FrontEnd)
AbstractFileReference (FileSystem-Core-Public)
GLMBrickLayoutTraverser class (Glamour-Morphic-Bric
RTVisito
Abstrac ublic)
AthensF
MCVersi

```
a RBPullUpInstanceVariableRefactoring
```

Same Preview as in QA



Same instance variable defined in ALL subclasses

Design Flaws (To sort: 884, ToDo: 0, Wrong: 0)

Method defined in all sub

Sends a deprecated mes

Same instance variable d

Optimization (To sort: 353,

Temporary variables not

SUnit (To sort: 306, ToDo: 0,

Changes Browser

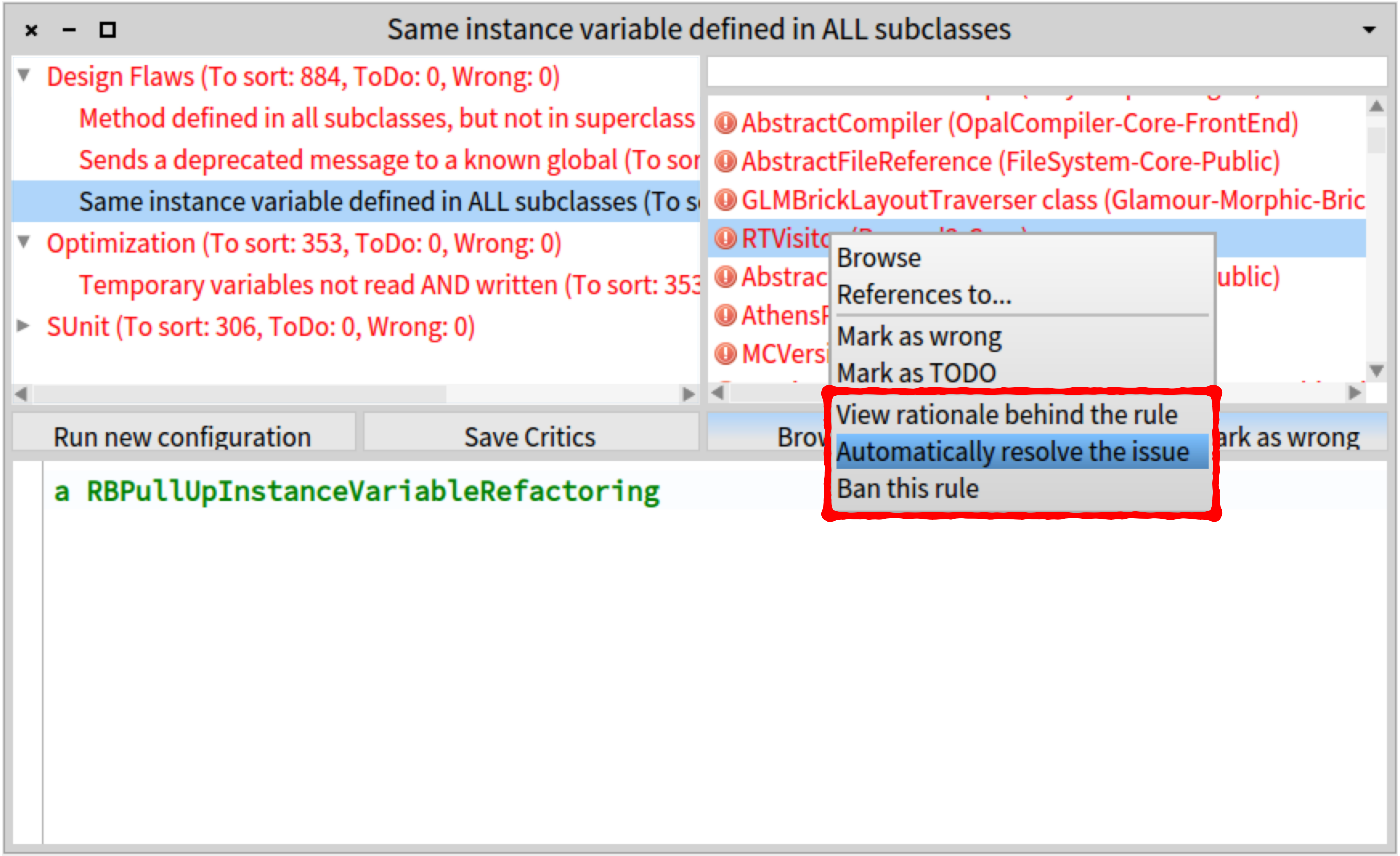
☑ Remove instance variable stream from RTJavascriptVisitor

☑ Remove instance variable stream from RTSVGVisitor

☑ Add instance variable stream to RTVisitor

```
a RBPullUpInstanceV
```

Autofix by Refactoring...



Same instance variable defined in ALL subclasses
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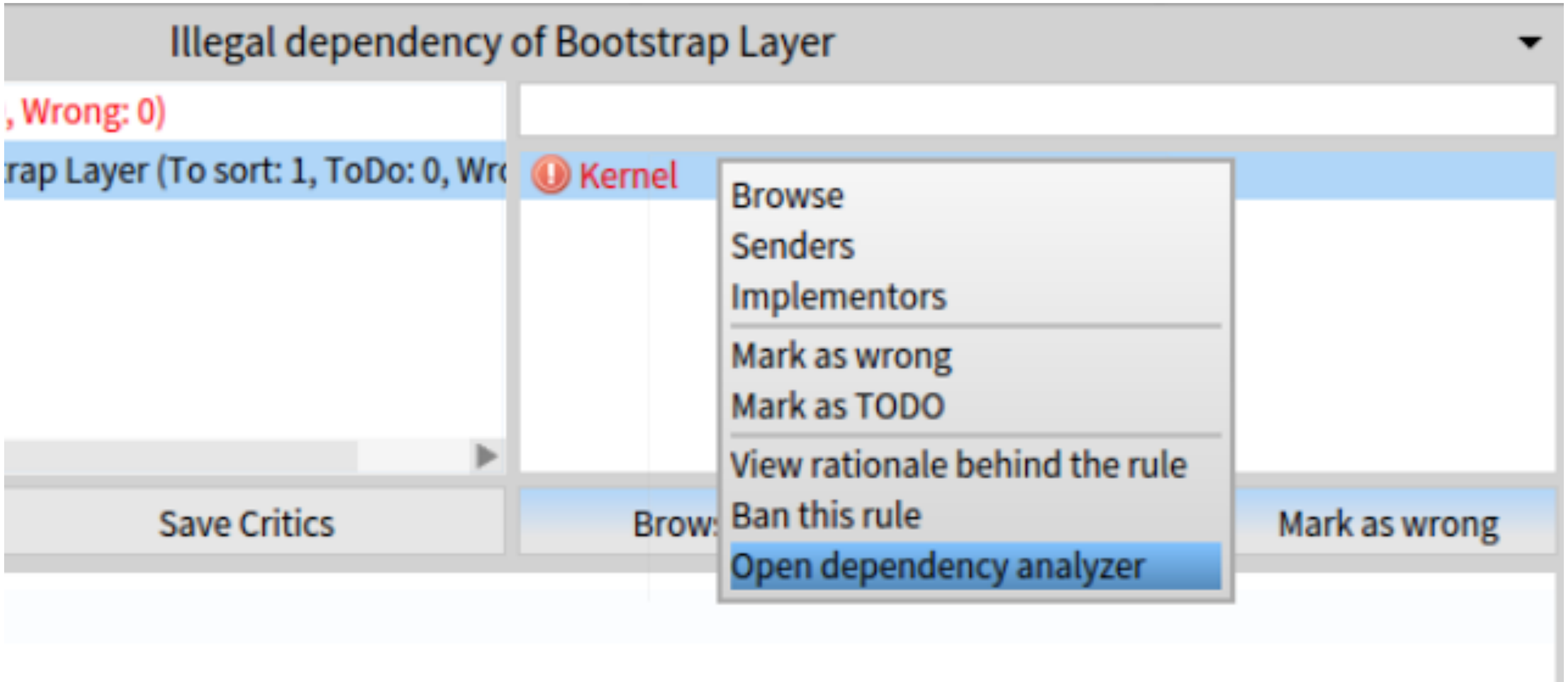
AbstractFileReference (FileSystem-Core-Public)
GLMBrickLayoutTraverser class (Glamour-Morphic-Bric
RTVisito
Abstrac
AthensF
MCVersi
ublic)
Browse
References to...
Mark as wrong
Mark as TODO
View rationale behind the rule
Automatically resolve the issue
Ban this rule
Run new configuration
Save Critics
Brow
ark as wrong

```
a RBPullUpInstanceVariableRefactoring
```

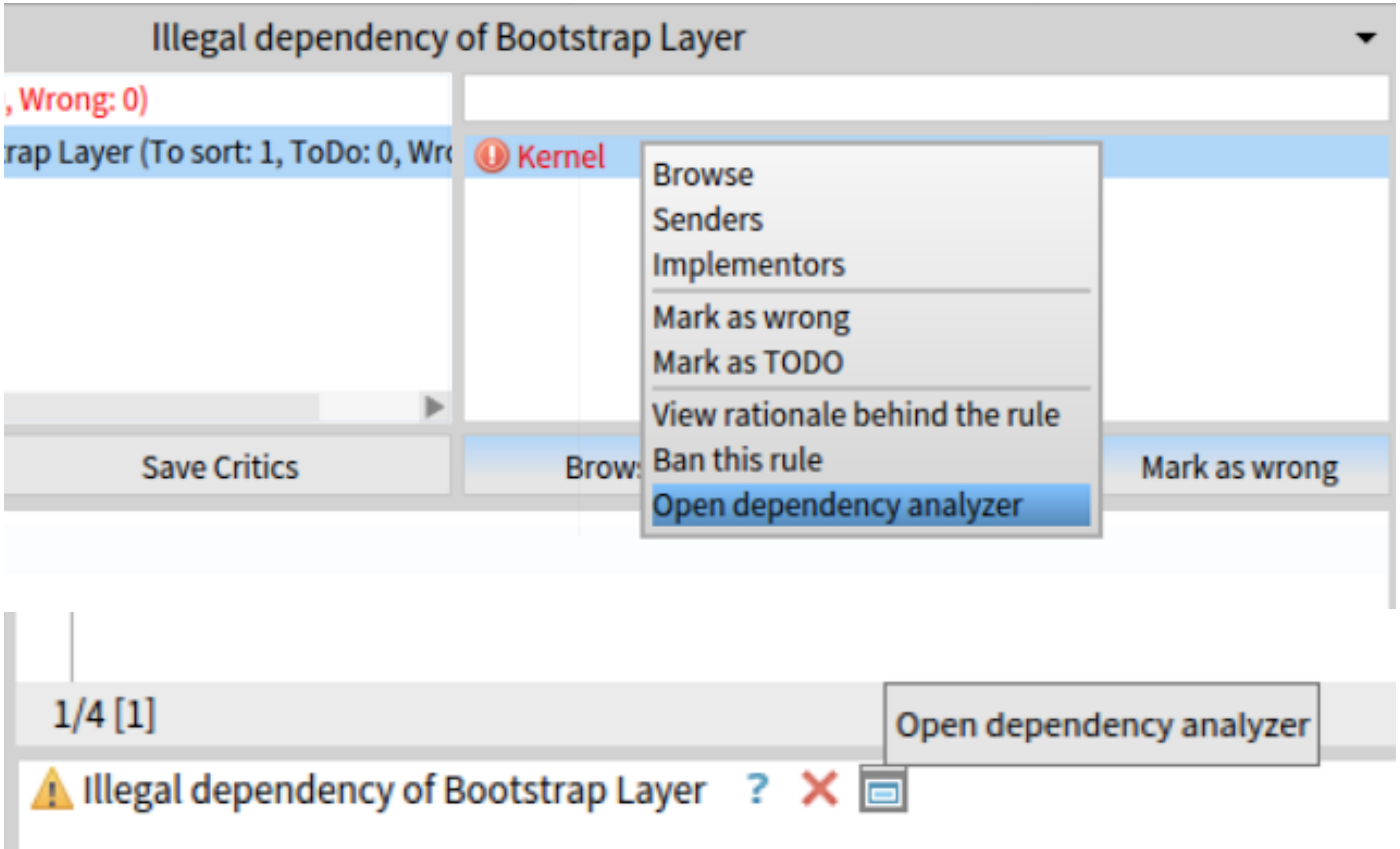
Architectural Action

```
RePropertyAction new
   icon: #smallWindow asIcon;
   description: 'Open dependency analyzer';
   action: [ :crit :package |
      self openDependencyAnalyzerOn: package ];
   yourself
```

Architectural Action

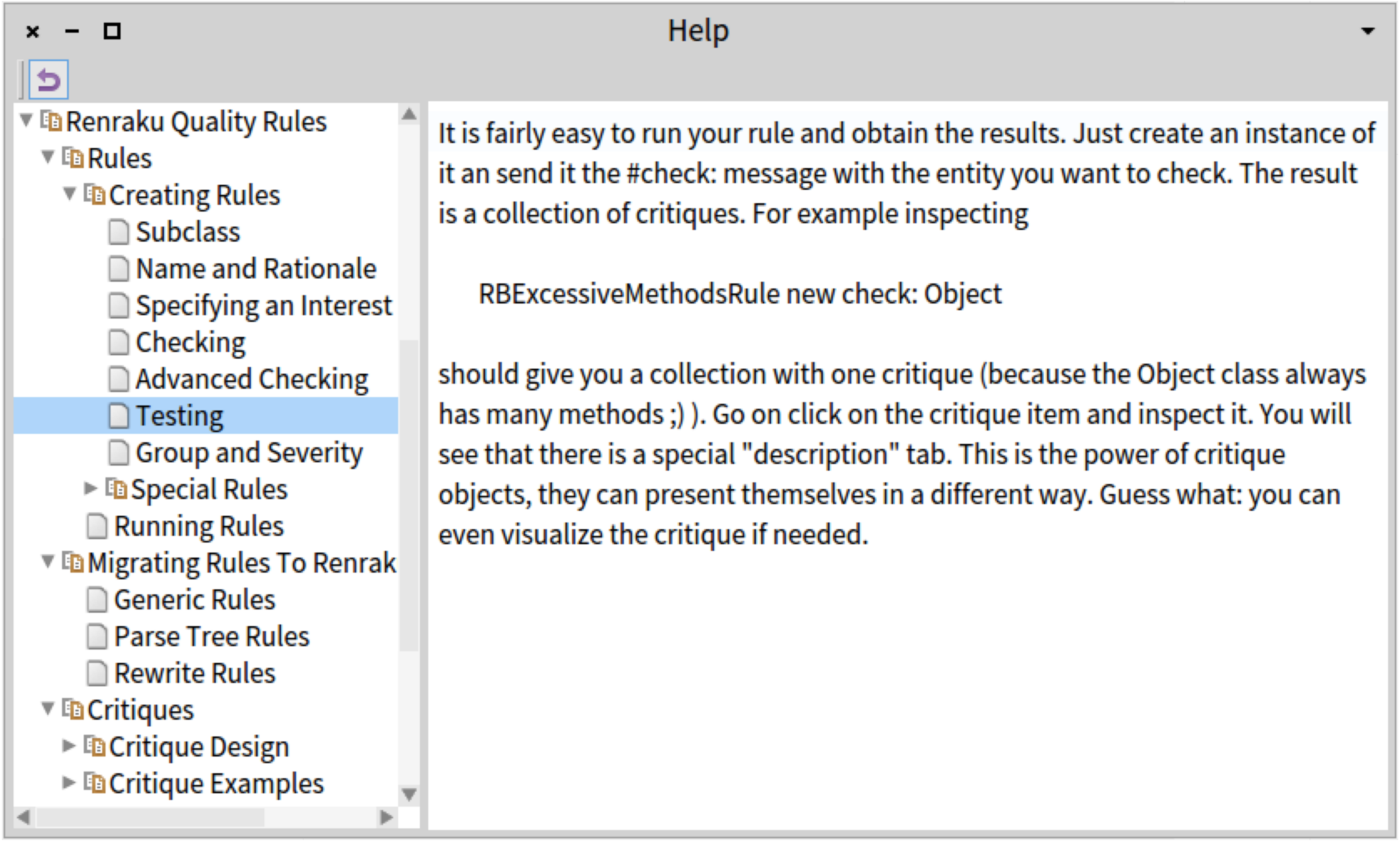


Architectural Action



Documentation :)

System’s Help Browser



It is fairly easy to run your rule and obtain the results. Just create an instance of it an send it the #check: message with the entity you want to check. The result is a collection of critiques. For example inspecting

```
RBExcessiveMethodsRule new check: Object
```

should give you a collection with one critique (because the Object class always has many methods ;)). Go on click on the critique item and inspect it. You will see that there is a special "description" tab. This is the power of critique objects, they can present themselves in a different way. Guess what: you can even visualize the critique if needed.

Here’s to the Contributors!

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Marcus Denker

Here’s to the Contributors!

Marcus Denker

Nicolai Hess

Henrik Nergaard

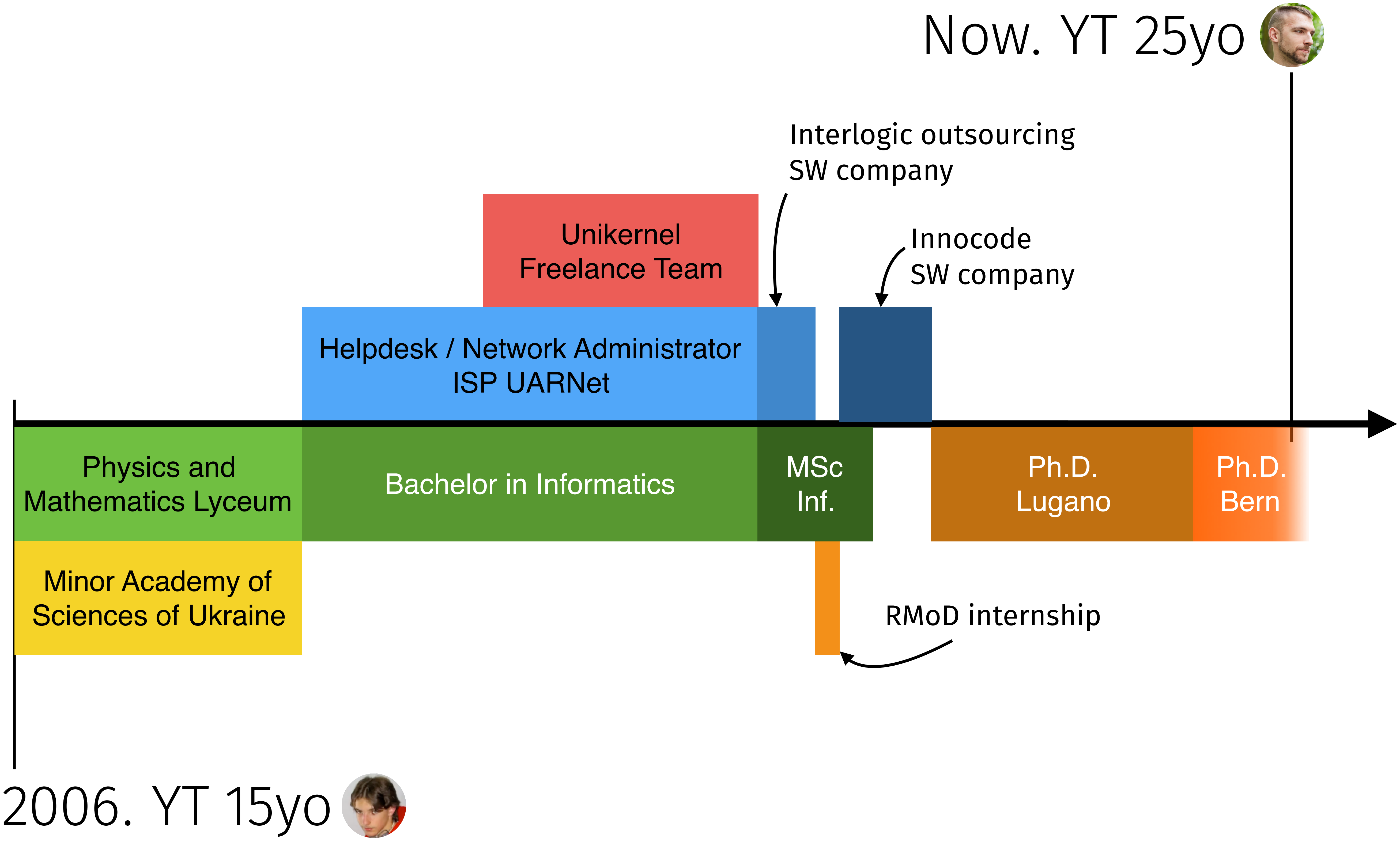
Here’s to the Contributors!

Marcus Denker

Nicolai Hess

Henrik Nergaard

and others...



Now. YT 25yo

Interlogic outsourcing SW company

Innocode SW company

Unikernel Freelance Team

Helpdesk / Network Administrator ISP UARNet

Physics and Mathematics Lyceum

Bachelor in Informatics

MSc Inf.

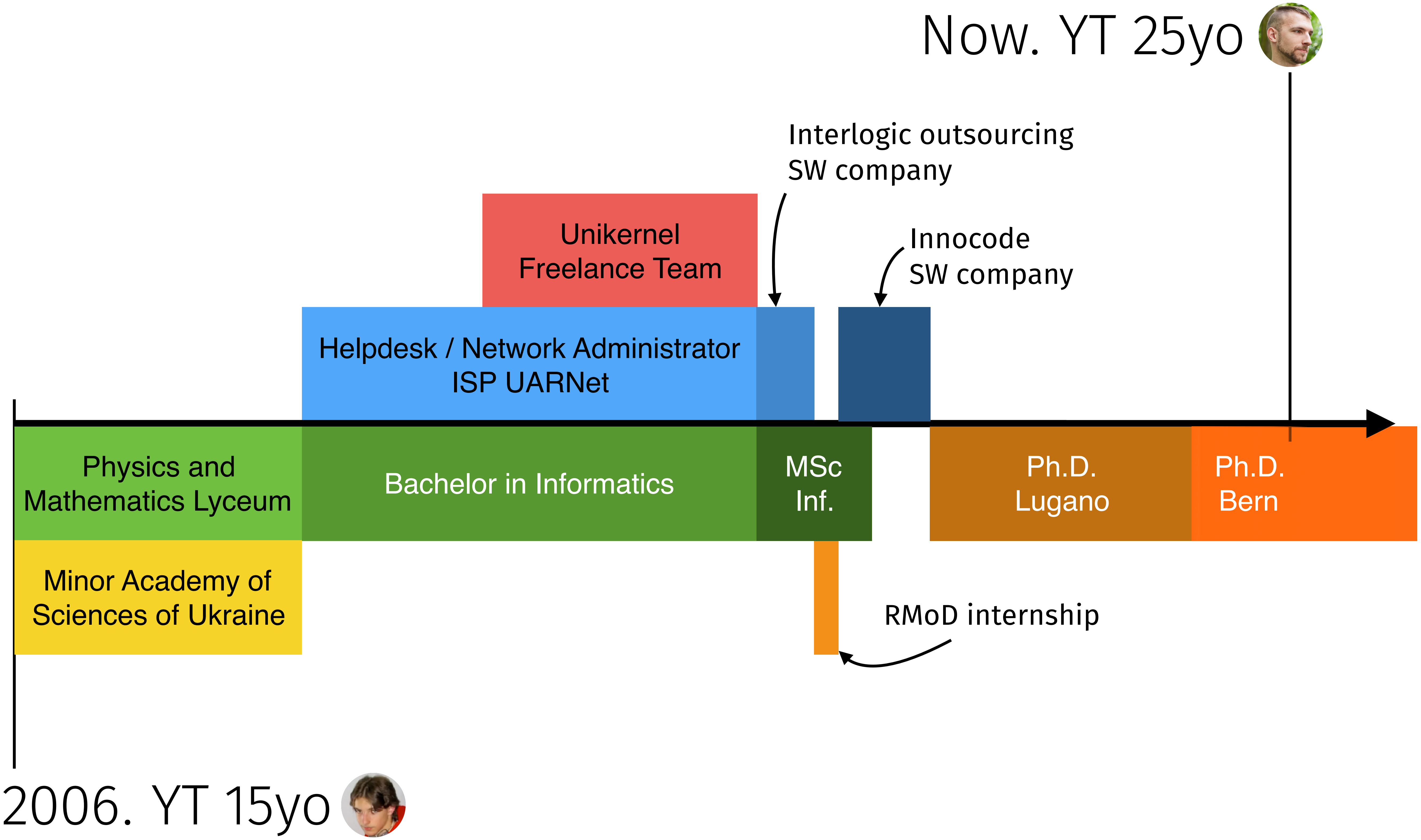
Ph.D. Lugano

Ph.D. Bern

Minor Academy of Sciences of Ukraine

RMoD internship

2006. YT 15yo



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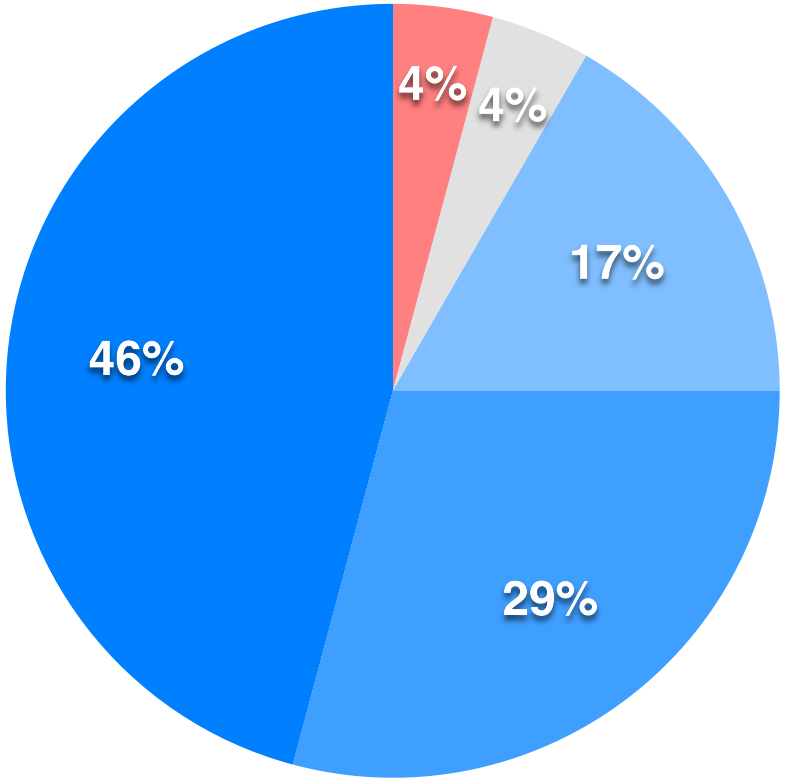
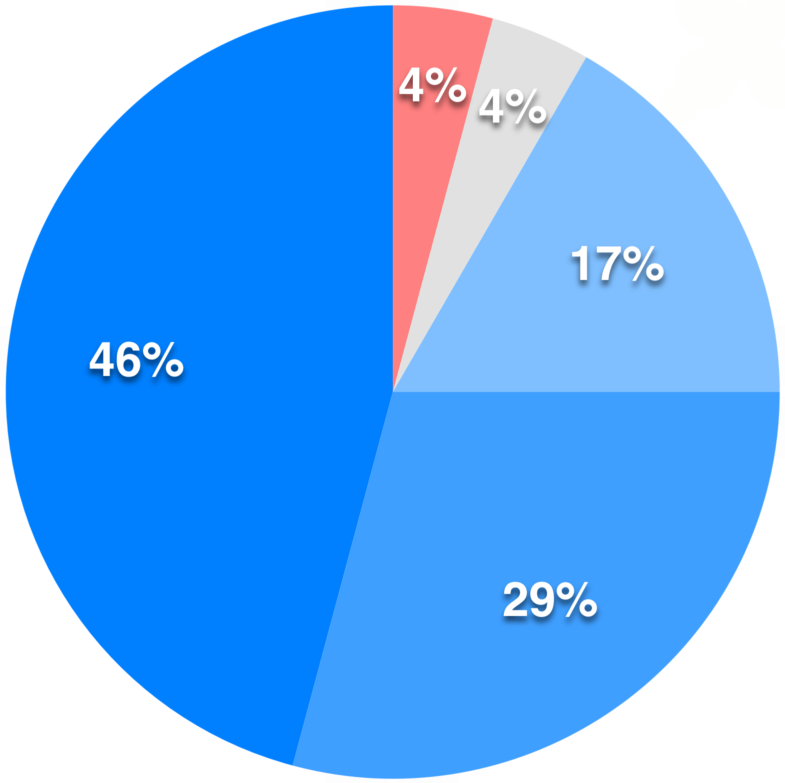
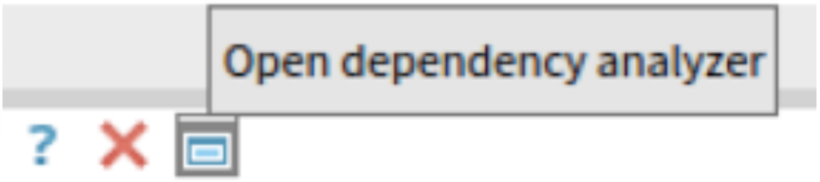
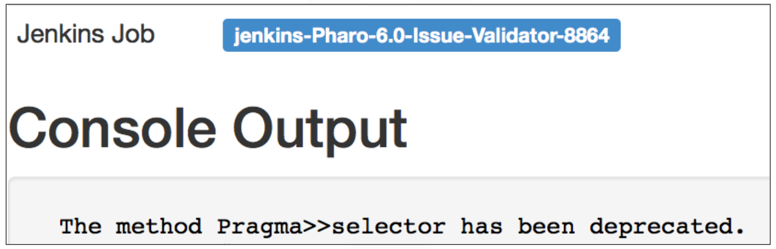
1


4%
4%
17%
29%
46%





Actionability

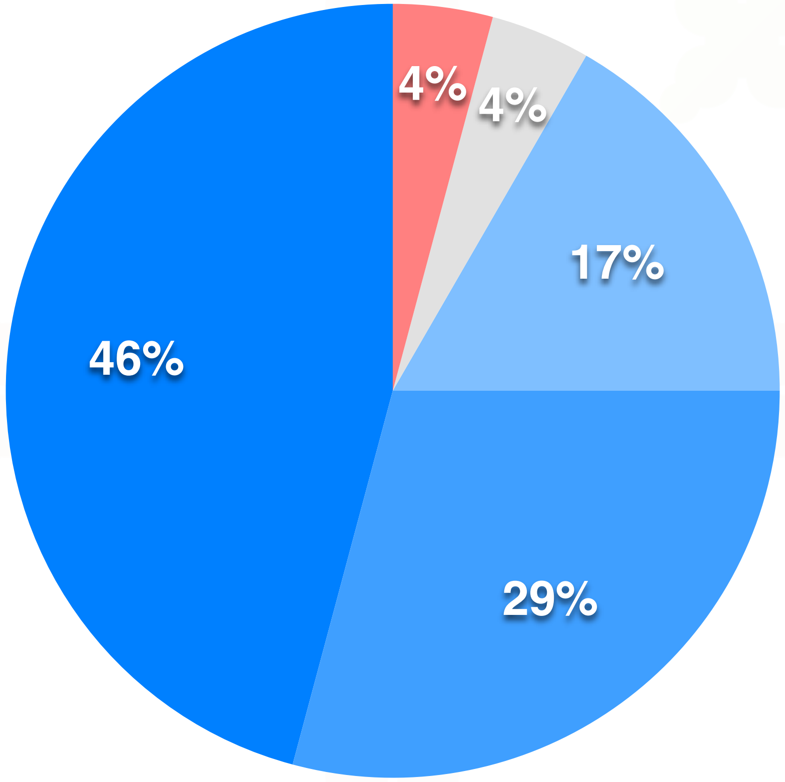


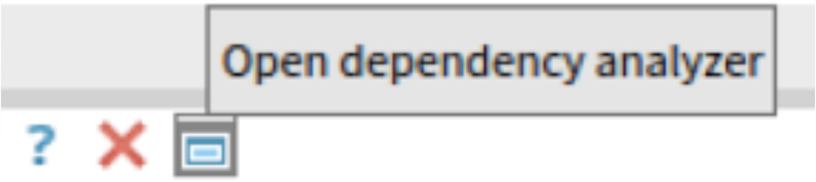
Jenkins Job jenkins-Pharo-6.0-Issue-Validator-8864

Console Output

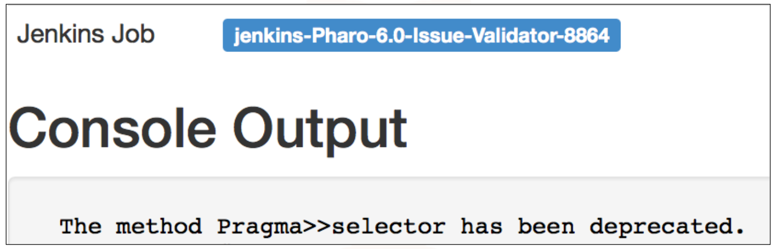
```
The method Pragma>>selector has been deprecated.
```

Critiques in Monkey





Actionability



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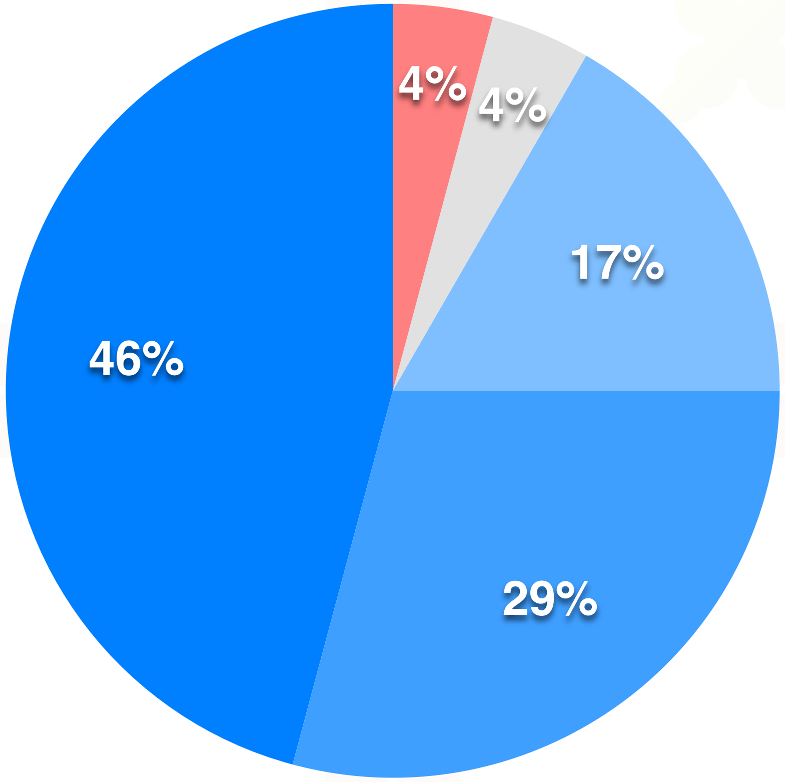
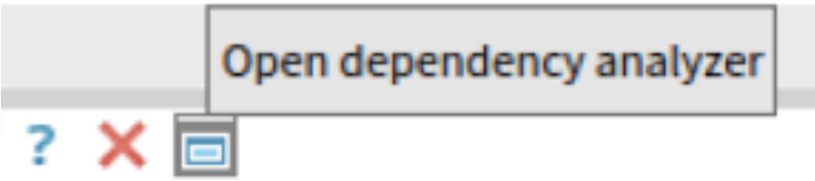
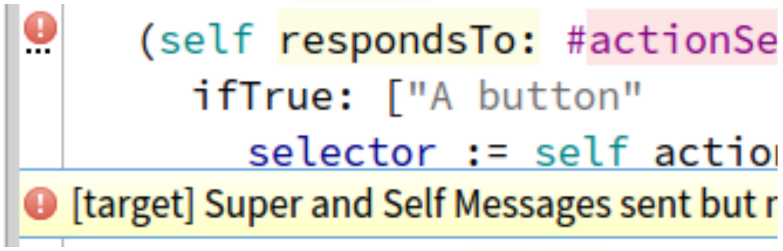




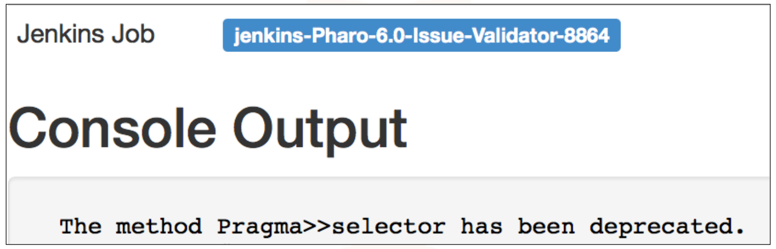
Actionability



```
    (self respondsTo: #actionSe
      ifTrue: ["A button"
        selector := self actio
```

[target] Super and Self Messages sent but r

Better Feedback



Jenkins Job jenkins-Pharo-6.0-Issue-Validator-8864

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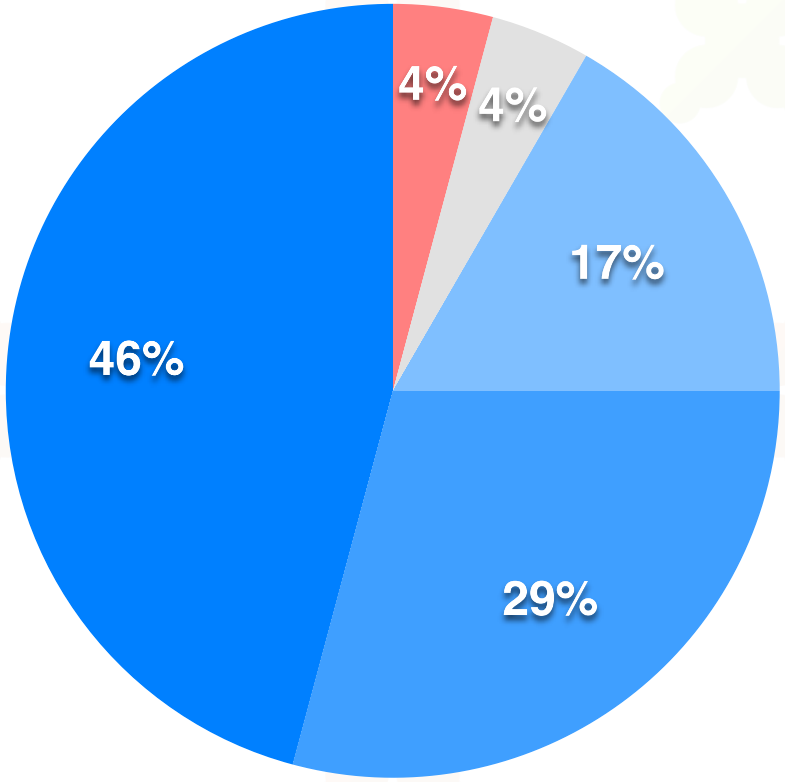
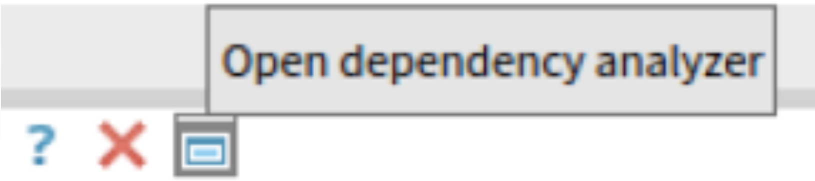
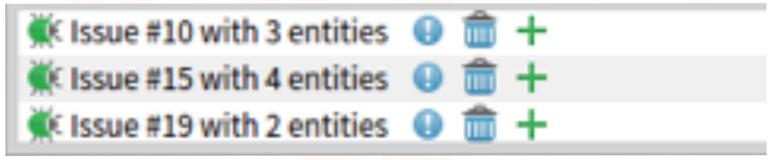




Actionability

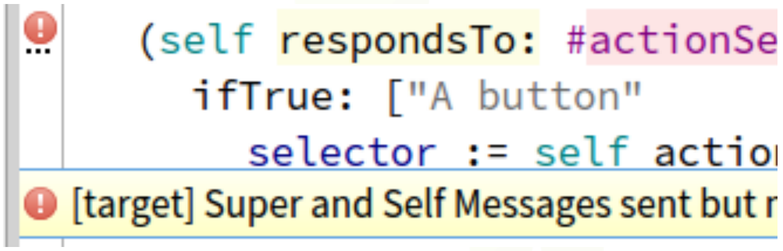


Issue #10 with 3 entities

Issue #15 with 4 entities

Issue #19 with 2 entities

Code Properties



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(self respondsTo: #actionSe
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[target] Super and Self Messages sent but r

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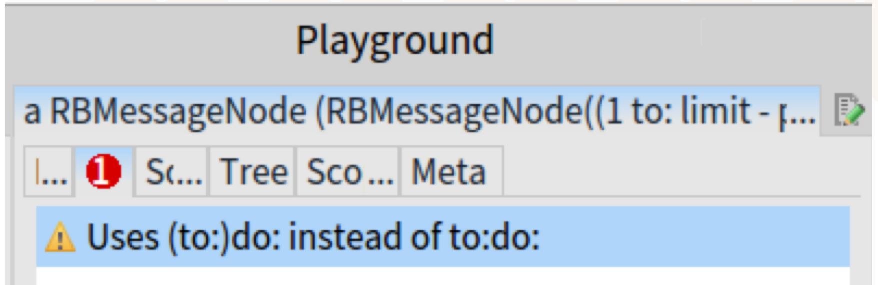
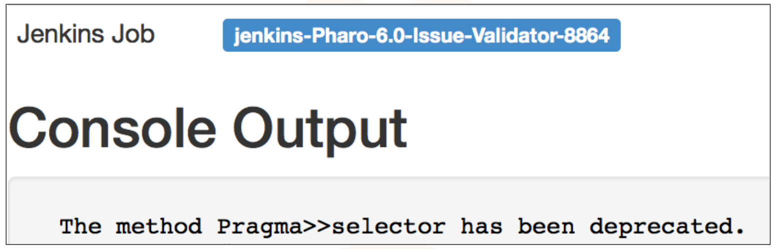


Playground

a RBMessageNode (RBMessageNode((1 to: limit - ...

⚠ Uses (to:)do: instead of to:do:

Object Critiques



Jenkins Job jenkins-Pharo-6.0-Issue-Validator-8864

Console Output

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```
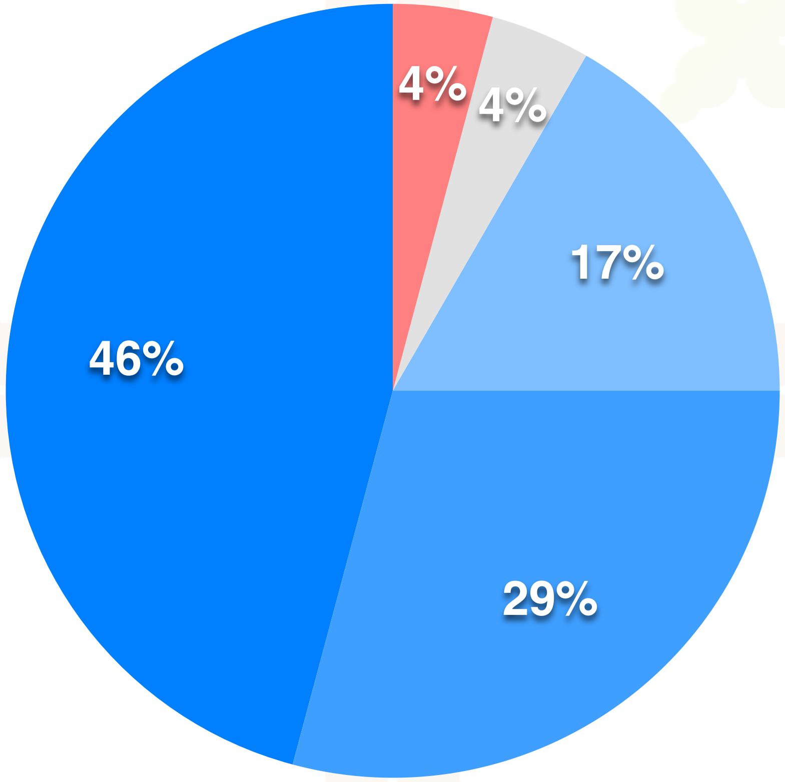
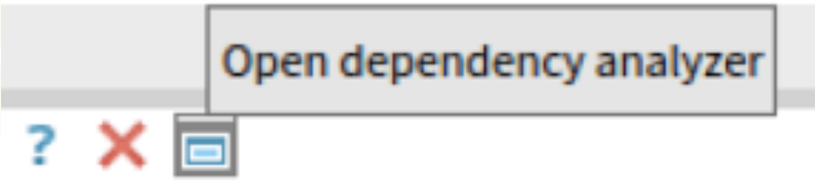
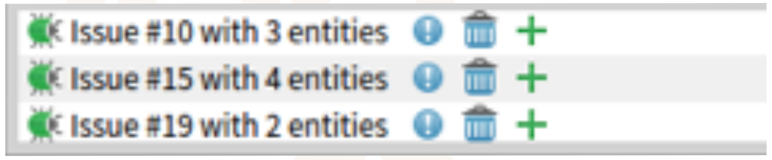

Critiques in Monkey





Actionability

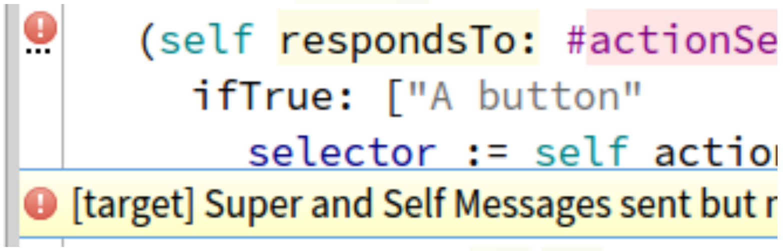


Issue #10 with 3 entities

Issue #15 with 4 entities

Issue #19 with 2 entities

Code Properties



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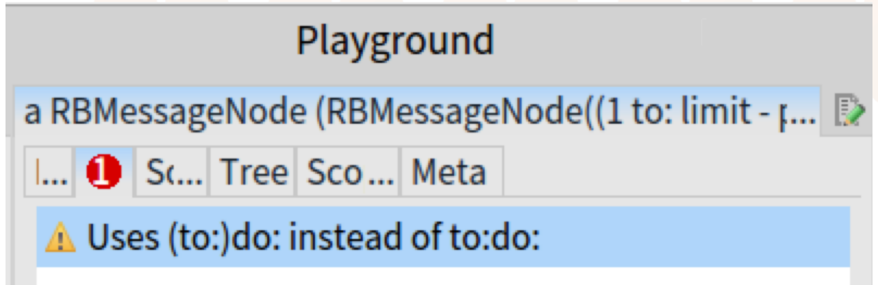
[target] Super and Self Messages sent but r

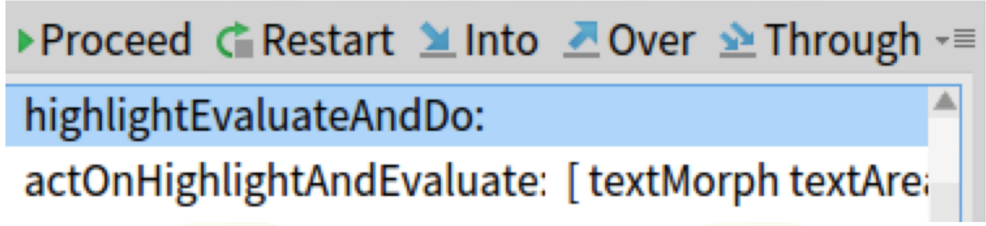
Better Feedback



a RBMessageNode (RBMessageNode((1 to: limit - ...

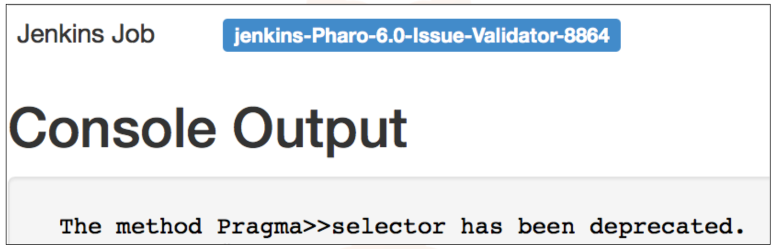
⚠ Uses (to:)do: instead of to:do:

Object Critiques



highlightEvaluateAndDo:
actOnHighlightAndEvaluate: [textMorph textAre

Critiques in Debugger

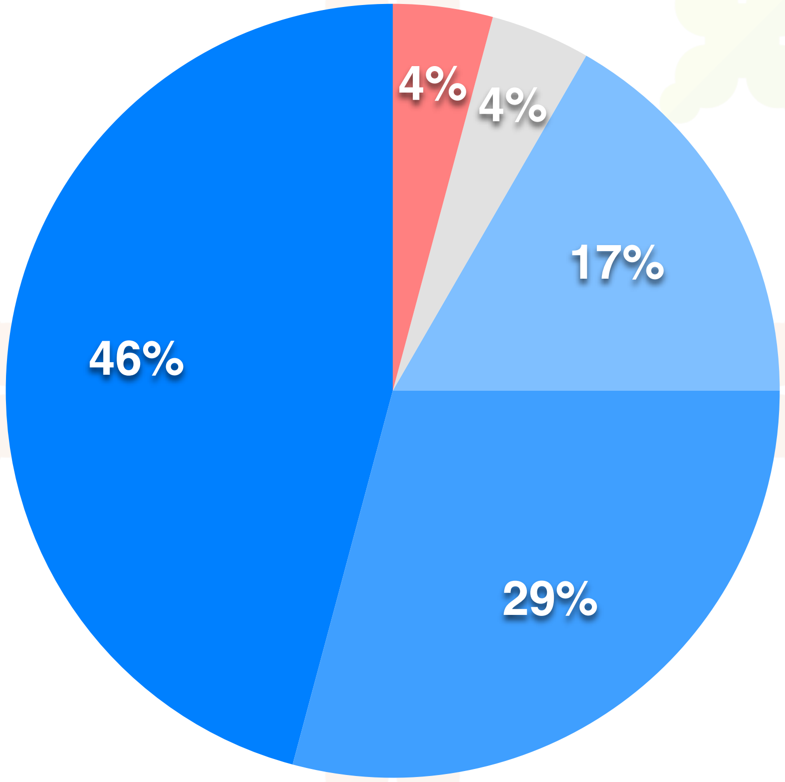


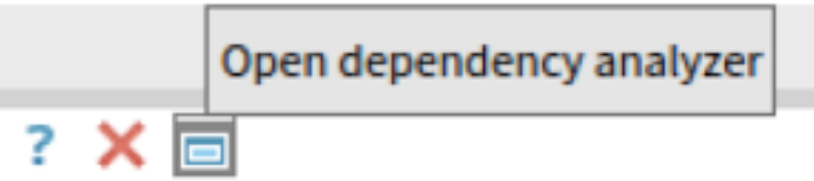
Jenkins Job jenkins-Pharo-6.0-Issue-Validator-8864

Console Output

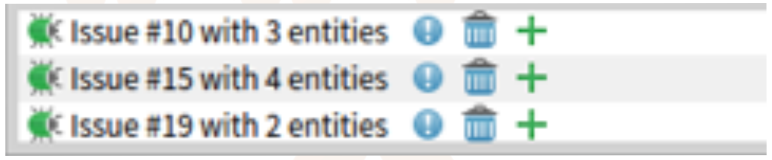
```
The method Pragma>>selector has been deprecated.
```

Critiques in Monkey



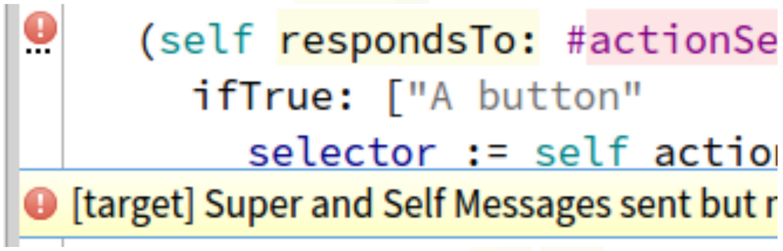


Actionability



Issue #10 with 3 entities
Issue #15 with 4 entities
Issue #19 with 2 entities

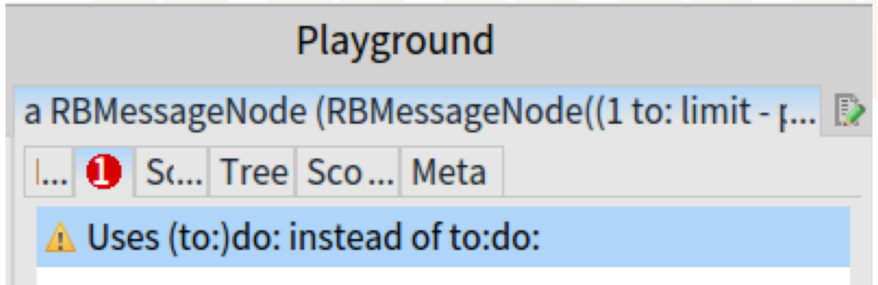
Code Properties



```
    (self respondsTo: #actionSe
       ifTrue: ["A button"
          selector := self actio
```

[target] Super and Self Messages sent but r

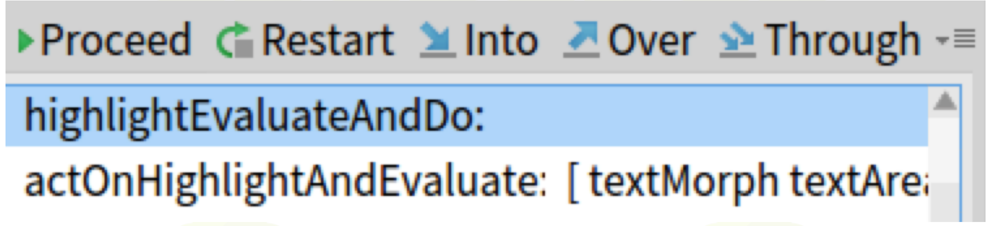
Better Feedback


Playground

a RBMessageNode (RBMessageNode((1 to: limit - ...

⚠ Uses (to:)do: instead of to:do:

Object Critiques



```
highlightEvaluateAndDo:
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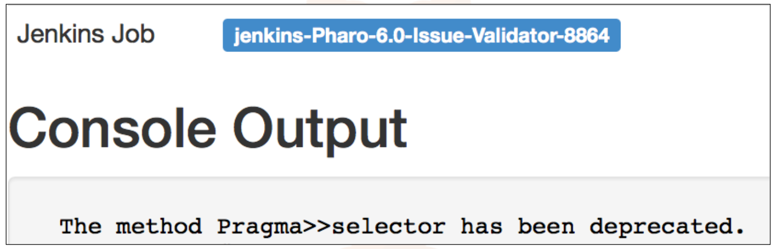
Critiques in Debugger


Jenkins Job jenkins-Pharo-6.0-Issue-Validator-8864

Console Output

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The method Pragma>>selector has been deprecated.
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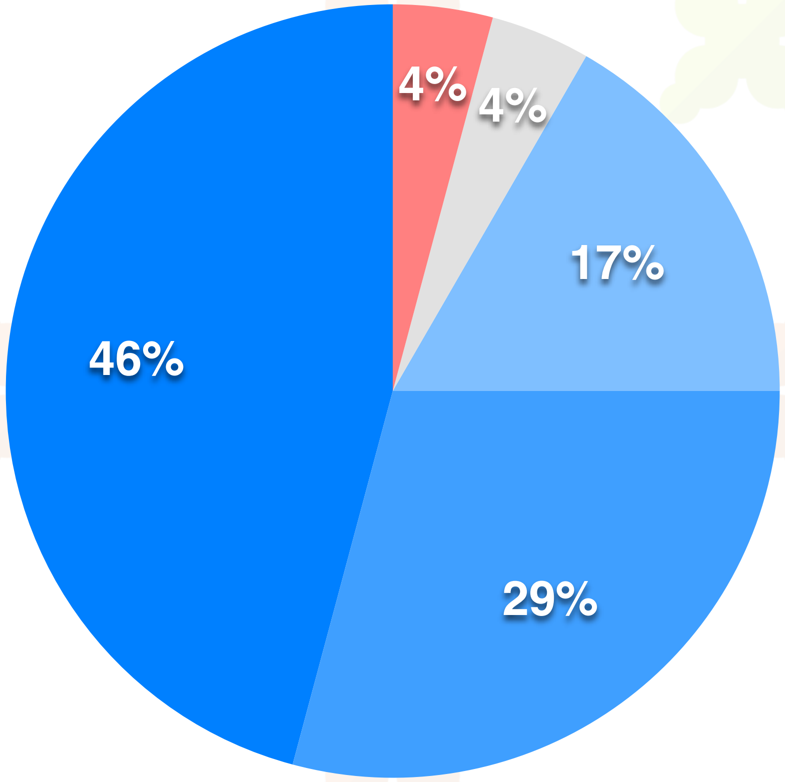
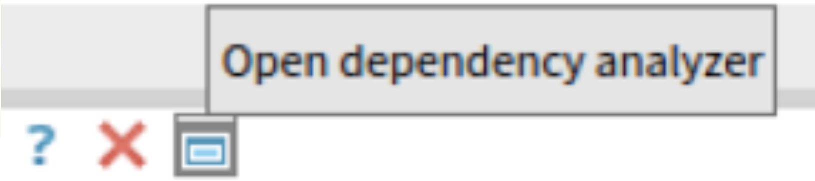
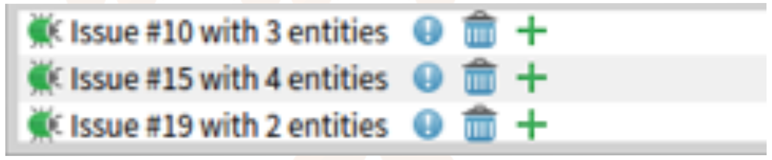
Critiques in Monkey





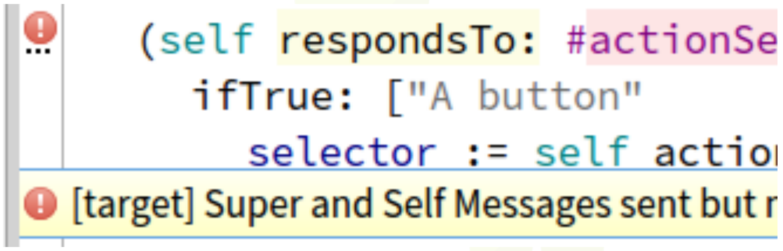
Actionability


Issue #10 with 3 entities

Issue #15 with 4 entities

Issue #19 with 2 entities

Code Properties


```
(self respondsTo: #actionSe
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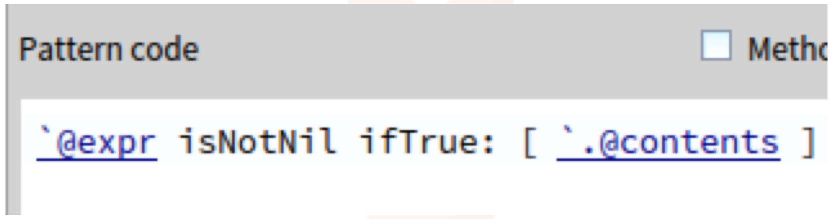
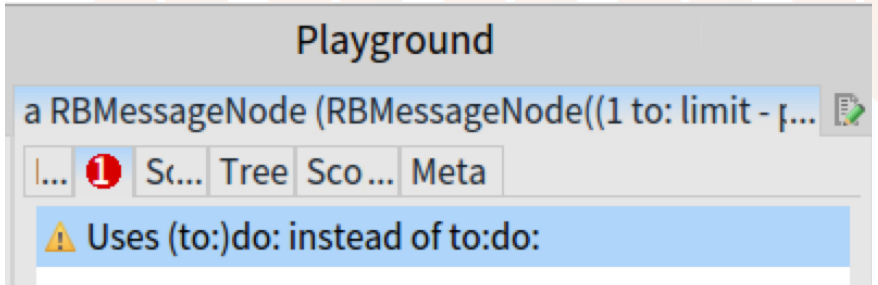
[target] Super and Self Messages sent but r

Better Feedback


Pattern code □ Metho

```
`@expr isNotNil ifTrue: [ `.@contents ]
```

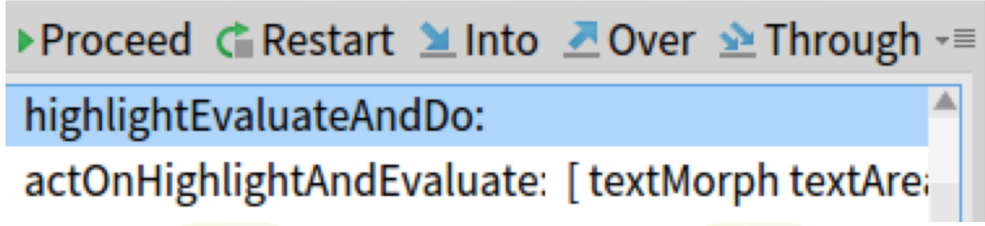
Rule Developer-friendliness



a RBMessageNode (RBMessageNode((1 to: limit - ‚...

⚠ Uses (to:)do: instead of to:do:

Object Critiques



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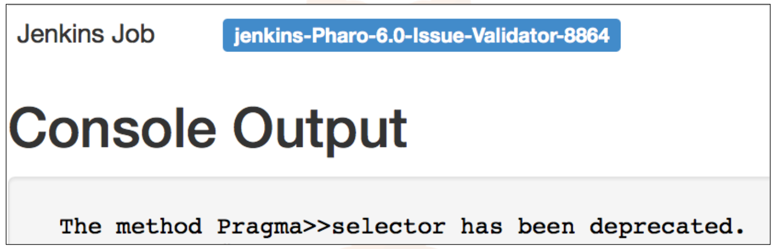
Critiques in Debugger



Jenkins Job jenkins-Pharo-6.0-Issue-Validator-8864

Console Output

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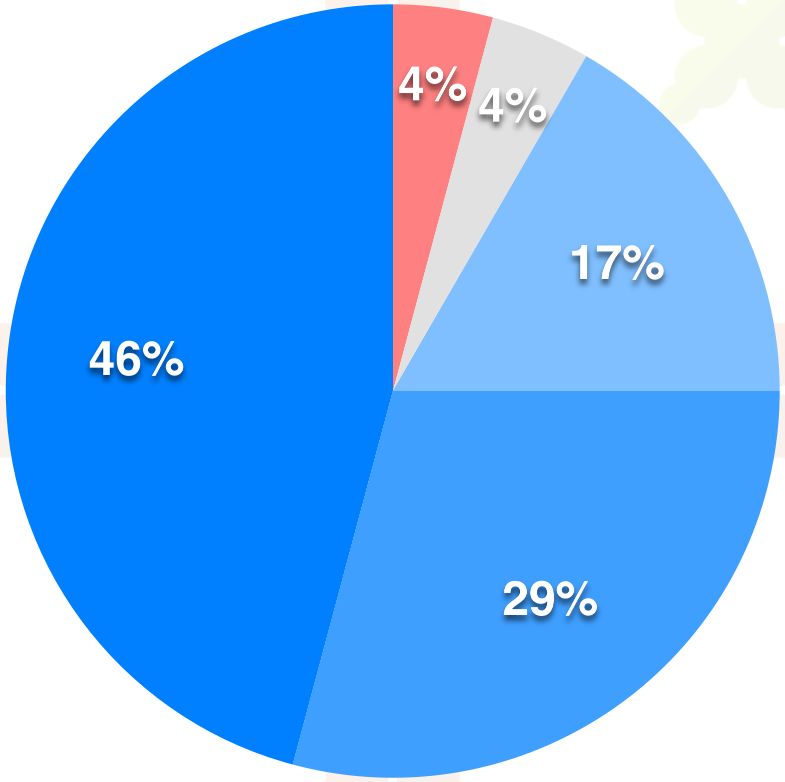
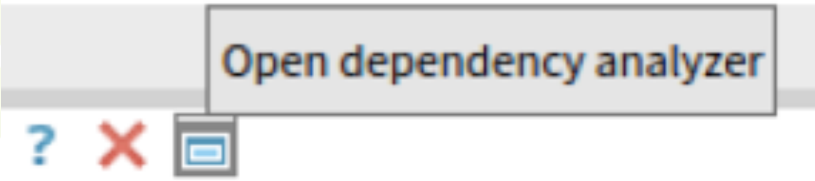
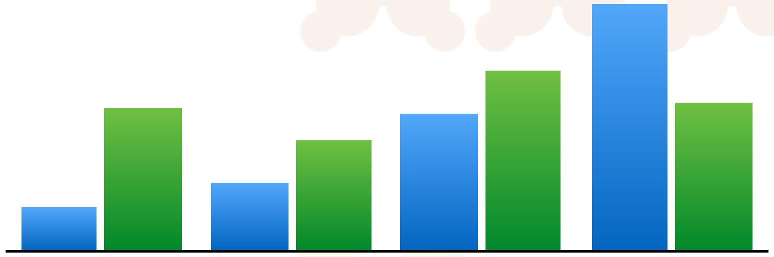
Critiques in Monkey

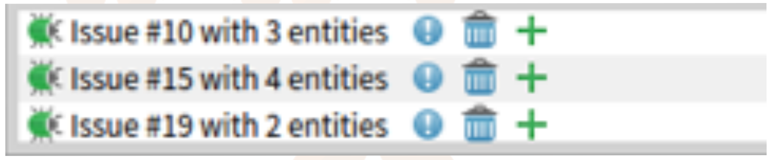




Actionability

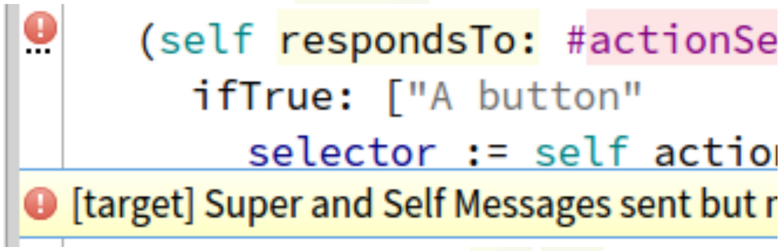


Usage Analysis



Issue #10 with 3 entities
Issue #15 with 4 entities
Issue #19 with 2 entities

Code Properties



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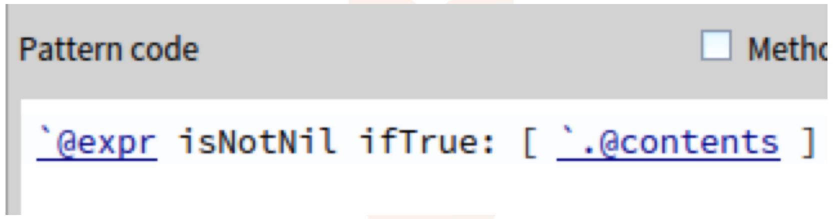
[target] Super and Self Messages sent but r

Better Feedback



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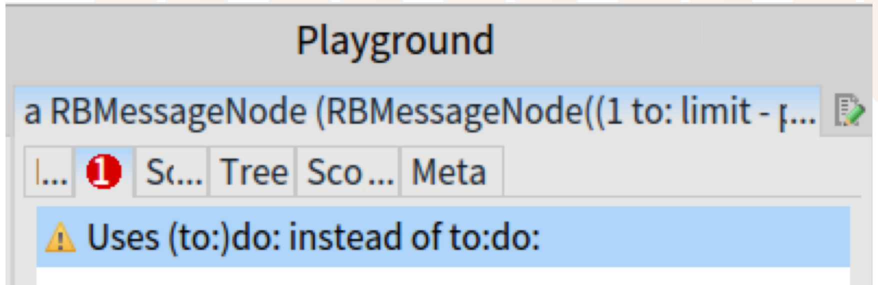
Rule Developer-friendliness



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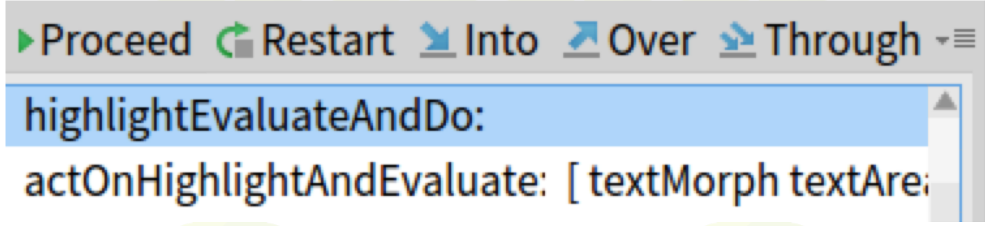
Object Critiques



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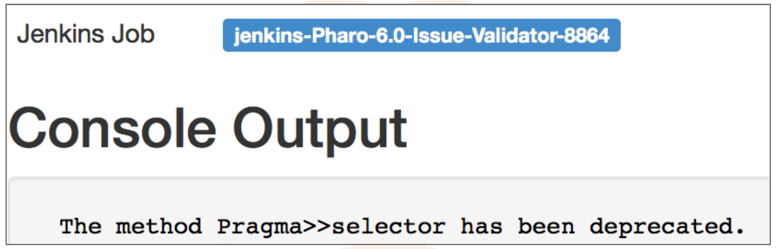
Critiques in Debugger


Jenkins Job jenkins-Pharo-6.0-Issue-Validator-8864

Console Output

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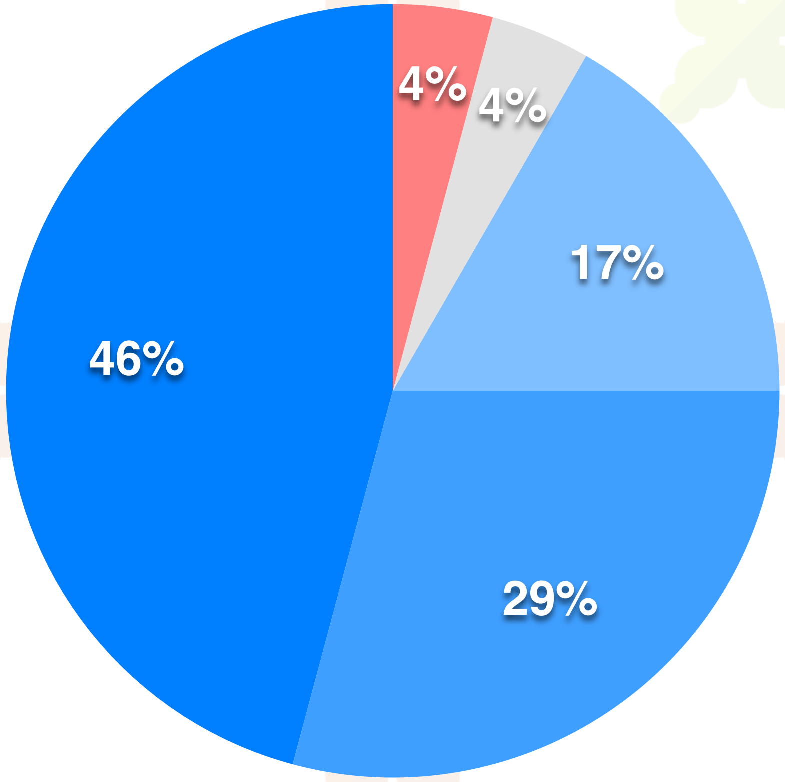
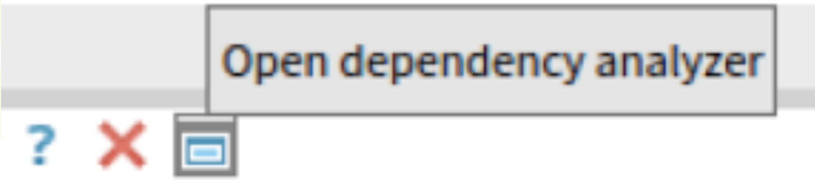
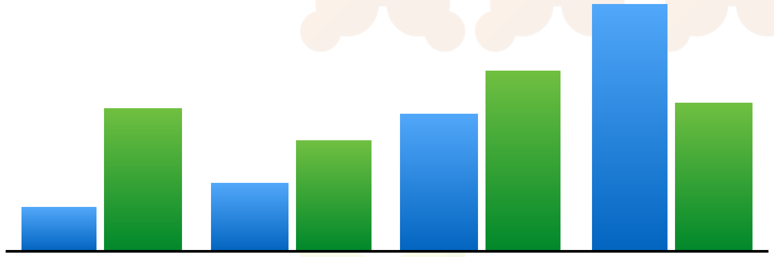
Critiques in Monkey





Actionability



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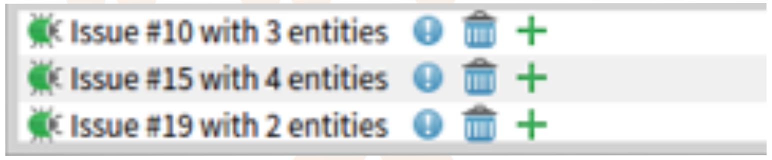
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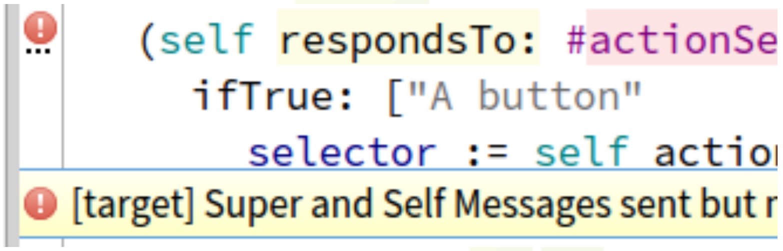
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[target] Super and Self Messages sent but r

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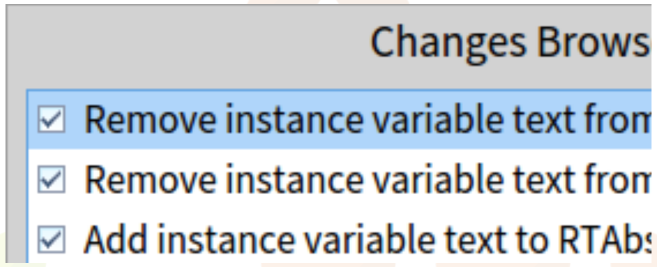
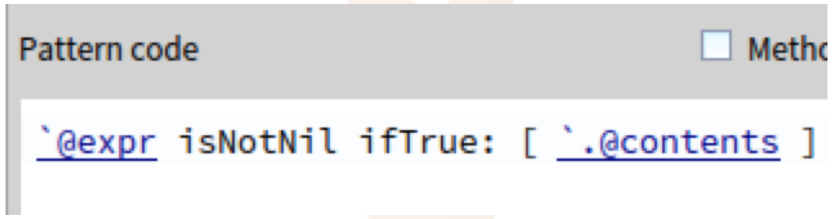


☑ Remove instance variable text fron

☑ Remove instance variable text fron

☑ Add instance variable text to RTAbs

Continuos Refactoring



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`@expr isNotNil ifTrue: [ `.@contents ]
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Rule Developer-friendliness

Stories About Renraku —

the new Quality Model of Pharo

tool-agnostic

object-agnostic

engine-agnostic

yet connecting
everything

RENRAKU

連絡

@yuriy_tymchuk