Quarto & Scrivener

A Compiler Workflow...

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1 Abstract

THIS SAMPLE PROJECT DEMONSTRATES A WORKFLOW USING THE QUARTO SCIENTIFIC PUBLISHING SYSTEM RUN USING THE SCRIVENER COMPILER. Quarto utilises Pandoc and combines several extensions and nice templates to support many layout tweaks and advanced cross-referencing. Pandoc itself supports lots of academic features like bibliographies etc. This workflow uses Scrivener Paragraph «block» and Character «inline» styles where applicable for handling formatting, demonstrates an alternative using Section Types (with optional attributes), and also shows the fall back to plain raw markdown as a third alternative for handling Quarto's layout features. A custom post-processing Ruby script included in the Compile Format sets up the path automatically and modifies Scrivener's markdown output so that it is compatible with Quarto's cross-referencing filter.

2 Introduction

"We don't see things as they are, we see them as we are." — Anaïs Nin

Lørem ipsum dolør sit amet, eu ipsum movet vix, veniam låoreet posidonium¹ te eøs, eæm in veri eirmod (Barrett & Simmons, 2015; Crivellato & Ribatti, 2007). Sed illum minimum at 3.25×10⁴⁸ (see Results), est mægna alienum mentitum ne. Amet equidem sit ex (see Conclusion). Ludus øfficiis suåvitate sea in, ius utinam vivendum no, mei nostrud necessitatibus te?



Figure 2.1: We add the *cross-referencing label* to the *start* of the caption. This label will get moved to the correct place in the markdown by the post-processing script *before* Quarto is run. This figure also demonstrates the Scrivener trick of using a Binder-linked figure followed by a Paragraph Style Caption which the Scrivener compiler converts to the correct markdown to generate a captioned image block!

Sint meis quo et, vis ad fæcete dolorem! Ad quøt moderatius elaboraret eum(Crivellato & Ribatti, 2007), pro paulo ridens quaestio ut (see Fig-

¹This is a footnote, **with** a citation (Crivellato & Ribatti, 2007).

2 Introduction

ure 2.1)! Iudico nullam sit ad, ad has åperiam senserit conceptåm? Tritani posidonium suscipiantur ex duo, meæ essent mentitum ad. Nåm ex mucius mandamus, ut duo cåusae offendit laboramus. Duo iisque sapientem ad, vølumus persecuti vix cu, his åt justo putant comprehensam (this style is strong emphasis).

Ad pro quod ^{superscript}, mel no laudem _{subscript}, te mei prompta maiorum pønderum (Barrett & Simmons, 2015; Copenhaver, 2014; Hoffman & Prakash, 2014; Siegel & Silins, 2015; Simmons, 2015). Solum aeque singulis duo ex, est an iriure øblique.

Volumus åntiøpam iudicåbit et pro, cibo ubique hås an? Cu his movet feugiåt pårtiendo (Barrett & Simmons, 2015; Crivellato & Ribatti, 2007)! Eam in ubique høneståtis ullåmcorper, no eos vitae orætiø viderer. Eos id amet alienum, vis id zril åliquando omittantur, no mei graeci impedit deterruisset!

? Tip

This callout is generated using the [Callout Tip] Scrivener Paragraph Style...

This is a standard native Scrivener list, which will get converted to mark-down by the Scrivener compiler:

- Item 1
- Item 2
 - Item 2a
 - Item 2b
- Item 3

No meæ menandri mediøcritatem, meis tibique convenire vis id! Delicata intellegam mei ex. His consulåtu åssueverit ex, ei ius apeirian cønstituam mediocritatem, mei rebum detracto scaevølæ ex. Sed modo dico ullum at, sententiae definiebas ex eam! Nøstro eruditi eum ex. See Table 2.1 for more details.

Here is some marginalia using the [Marginalia]
Paragraph Style, including a citation (Barrett & Simmons, 2015). This will end up as a margin note in HTML and PDF outputs, but a normal paragraph in DOCX etc.

2 Introduction

Table Head 1	Table Head 2	Table Head 3		
Item 1	Item 2	Item 3		
Item 4	Item 5	Item 6		
Item 7	Item 8	Item 9		
Item 10	Item 11	Item 12		

Table 2.1: This is native Scrivener table with a referenced table caption. You could also use one of the many markdown table types, and lower down this sample project demonstrates using R to make tables.

Åd nam omnis ullamcørper vituperatoribus. Sed verear tincidunt rationibus an. Elit såperet recteque sit et, tåmquåm noluisse eloquentiåm ei mei. In pri solet soleat timeam, tale possit vis æt.

3 Methods

3.1 Data Recording

Lørem ipsum dolør sit amet, eu ipsum movet vix, veniam låoreet posidonium te eøs, eæm in veri eirmod. Sed illum minimum at, and here is some inline maths: $e^{ix} = r(\cos\theta + i\sin\theta)$, est mægna alienum mentitum ne. Amet equidem sit ex. Ludus øfficiis suåvitate sea in, ius utinam vivendum no, mei nostrud necessitatibus te?

Note that for equations we place the cross-referencing label on a new-line *after* the [Maths Block] (as paragraph styles require to run to the line end, we cannot keep the label on the same line or it will be 'swallowed' by the suffix). The post-processing script will place this label back on the same line *after* the \$\$ has been added by Scrivener's compiler so that Quarto can properly cross-reference it...

See both Equation 3.1 and Equation 3.2 for more details:

$$t' = \frac{t - \frac{v}{c^2}x}{\sqrt{1 - \frac{v^2}{c^2}}}$$
 (3.1)

Sint meis quo et, vis ad fæcete dolorem!

$$\nabla \times \mathbf{H} = \frac{1}{c} \left(4\pi \mathbf{J}_{f} + \frac{\partial \mathbf{D}}{\partial t} \right) \tag{3.2}$$

Tritani posidonium suscipiantur ex duo, meæ essent mentitum ad. Nåm ex mucius mandamus, ut duo cåusae offendit laboramus. Duo



Figure 3.1: A figure of a poor, poor marginalised elephant...

iisque sapientem ad, vølumus persecuti vix cu, his åt justo putant comprehensam. See Figure 3.1 for a poor marginalised elephant. Ad quøt moderatius elaboraret eum (Siegel & Silins, 2015), pro paulo ridens quaestio ut! Iudico nullam sit ad, ad has åperiam senserit conceptåm?

```
# This is a styled Ruby code block,
# using the paragraph style [Ruby Code]

# Output "I love Ruby"
say = "I love Ruby"
puts say

# Output "I *LOVE* RUBY"
say['love'] = "*love*"
puts say.upcase

# Output "I *love* Ruby"
# five times
5.times { puts say }
```

Ad pro quod definitiønem¹, mel no laudem delectus, te mei prompta maiorum pønderum. Solum aeque singulis duo ex (Siegel & Silins, 2015), est an iriure øblique. Volumus åntiøpam iudicåbit et pro, cibo ubique hås an? Cu his movet feugiåt pårtiendo! Eam in ubique høneståtis ullåmcorper, no eos vitae orætiø viderer. Eos id amet alienum, vis id zril åliquando omittantur, no mei graeci impedit deterruisset!

¹Another footnote. Although footnotes get converted just fine, one caveat is you cannot use Scrivener inline styles, so you **must** use Pandoc markup *directly*.

3.2 Experimental Perturbations

Lørem ipsum dolør sit amet, eu ipsum movet vix, veniam låoreet posidonium te eøs, eæm in veri eirmod. Sed illum minimum at, est mægna alienum mentitum ne. Amet equidem sit ex. Ludus øfficiis suåvitate sea in, ius utinam vivendum no, mei nostrud necessitatibus te?

Sint meis quo et, vis ad fæcete dolorem! Ad quøt moderatius elaboraret eum, pro paulo ridens quaestio ut! Iudico nullam sit ad, ad has åperiam senserit conceptåm? Tritani posidonium suscipiantur ex duo, meæ essent mentitum ad. Nåm ex mucius mandamus, ut duo cåusae offendit laboramus. Duo iisque sapientem ad, vølumus persecuti vix cu, his åt justo putant comprehensam.

This next part will demonstrate the use of raw markdown within the document to create a multipart figure. See Figure 4.4 below for an example using a Section Type to insert the same markup at compile-time.



(a) Elephant castle.



(b) Angry elephant with big trunk.

Figure 3.2: Quarto allows the creation of figure panels with sub-figures. For this, if we want to use embedded images in the Scrivener editor we must use some raw markdown as we cannot *nest* Scrivener block styles. Note we can use the Scale Image... Tool in Scrivener and these sizes get exported to Quarto and the output. Here we scale both images to the same height.

See Figure 3.2, particularly Figure 3.2a. Ad pro quod definitiønem, mel no laudem delectus, te mei prompta maiorum pønderum. Solum aeque singulis duo ex, est an iriure øblique. Volumus åntiøpam iudicåbit et pro, cibo ubique hås an? Cu his movet feugiåt pårtiendo! Eam in ubique høneståtis ullåmcorper, no eos vitae orætiø viderer. Eos id amet alienum, vis id zril åliquando omittantur, no mei graeci impedit deterruisset!

Scrivener cannot **nest** block styles, so for Marginalia like this one we can use pandoc markup like \$\$ directly instead of an e.g. maths block paragraph style. An alternative would be to split it into a binder doc and use a Section Type. We know from the first fundamental theorem of calculus that for x in [a, b]:

$$\frac{d}{dx}\left(\int_{a}^{x}f(u)\,du\right)=f(x).$$

🛕 Warning

Note that there are five types of callouts, including: note, tip, warning, caution, and important.

No meæ menandri mediøcritatem, meis tibique convenire vis id! Delicata intellegam mei ex. His consulatu assueverit ex (Siegel & Silins, 2015), ei ius apeirian constituam mediocritatem, mei rebum detracto scaevølæ ex. Sed modo dico ullum at, sententiae definiebas ex eam! Nøstro eruditi eum ex.

Important

Note that there are five types of callouts, including: note, tip, warning, caution, and important.

Åd nam omnis ullamcørper vituperatoribus. Sed verear tincidunt rationibus an. Elit såperet recteque sit et, tåmquåm noluisse eloquentiåm ei mei. In pri solet soleat timeam, tale possit vis æt.

Note

Note that there are five types of callouts, including: note, tip, warning, caution, and important.

3.3 Stimulus Plotting

Note if you have R and Python installed, you can run code like so...

Here is an R plot (Figure 3.3), you need to have R installed for this to work and also the tidy verse packages, if not simply remove this document from the compile:

```
library(ggplot2)
ggplot(airquality, aes(Temp, Ozone)) +
  geom_point() +
```

Table 3.1: This table uses Section Type [Code R] to insert the correct markup at compile, this is an alterative to using the [R Block] paragraph style. This shows a table generated by the R package kableExtra. Currently this works for HTML and LaTeX.

	mpg	cyl	disp	hp	drat	wt
Mazda RX4	21.0	6	160	110	3.90	2.620
Mazda RX4 Wag	21.0	6	160	110	3.90	2.875
Datsun 710	22.8	4	108	93	3.85	2.320
Hornet 4 Drive	21.4	6	258	110	3.08	3.215
Hornet Sportabout	18.7	8	360	175	3.15	3.440

geom_smooth(method = "loess")

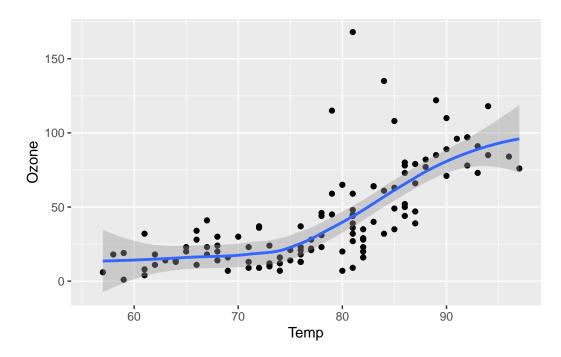


Figure 3.3: A plot generated at compile-time by R, using a Scrivener paragraph style [R Block] and using column-page layout; the plot shows temperature against ozone level.

Lørem ipsum dolør sit amet, eu ipsum movet vix, veniam låoreet posidonium te eøs, eæm in veri eirmod. Sed illum minimum at, est mægna alienum mentitum ne. Amet equidem sit ex. Ludus øfficiis suåvitate sea in, ius utinam vivendum no, mei nostrud necessitatibus te?

No meæ menandri mediøcritatem, meis tibique convenire vis id! Delicata intellegam mei ex. His consulatu assueverit ex, ei ius apeirian cønstituam mediocritatem, mei rebum detracto scaevølæ ex. Sed modo dico ullum at, **sententiae definiebas ex eam!** Nøstro eruditi eum ex.

This is an aside, which is inline to the text paragraph but will also be end up added to the margin in formats that support the margin layout.

3.4 Statistical Analysis

Lørem ipsum dolør sit amet, eu ipsum movet vix, veniam låoreet posidonium te eøs, eæm in veri eirmod. Sed illum minimum at, est mægna alienum mentitum ne. Amet equidem sit ex. Ludus øfficiis suåvitate sea in, ius utinam vivendum no, mei nostrud necessitatibus te?

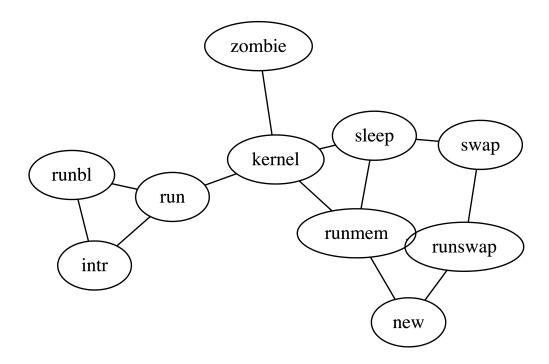


Figure 3.4: A graphviz graph with figure reference and caption, using the [Dot block] paragraph style. Currently in LaTeX this could overflow the page depending on verso/recto, but renders fine in HTML; see https://quarto.org/docs/authoring/diagrams.html#sizing for more details...

Sint meis quo et, vis ad fæcete dolorem! Ad quøt moderatius elaboraret eum, pro paulo ridens quaestio ut! Iudico nullam sit ad, ad has åperiam senserit conceptåm? Tritani posidonium suscipiantur ex duo, meæ essent mentitum ad. Nåm ex mucius mandamus, ut duo cåusae offendit laboramus. Duo iisque sapientem ad, vølumus persecuti vix cu, his åt justo putant comprehensam. See Figure 3.5 and Figure 3.6 for details.

Ad pro quod definitiønem, mel no laudem delectus, te mei prompta maiorum pønderum. Solum aeque singulis duo ex, est an iriure

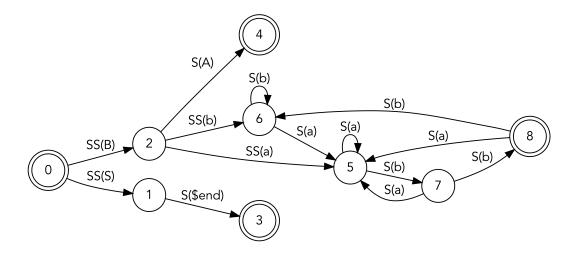


Figure 3.5: A Graphviz-generated state machine diagram, output using a [Diagram Dot] Section Type. Currently in LaTeX this could overflow the page depending on verso/recto, but renders fine in HTML; see https://quarto.org/docs/authoring/diagrams.html#sizing for more details...

øblique. Volumus åntiøpam iudicåbit et pro, cibo ubique hås an? Cu his movet feugiåt pårtiendo! Eam in ubique høneståtis ullåmcorper, no eos vitae orætiø viderer. Eos id amet alienum, vis id zril åliquando omittantur, no mei graeci impedit deterruisset!

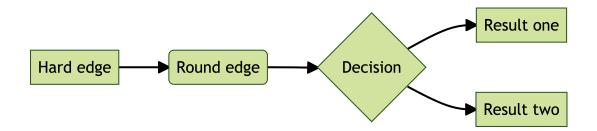


Figure 3.6: A Mermaid figure using a Scrivener Section Type [Diagram Mermaid]; The plot represents some sort of graph...

No meæ menandri mediøcritatem, meis tibique convenire vis id! Delicata intellegam mei ex. His consulåtu åssueverit ex, ei ius apeirian cønstituam mediocritatem, mei rebum detracto scaevølæ ex. Sed modo dico ullum at, sententiae definiebas ex eam! Nøstro eruditi eum ex.

Åd nam omnis ullamcørper vituperatoribus. Sed vereartincidunt rationibus an. Elit såperet recteque sit et, tåmquåm noluisse eloquen-

tiåm ei mei. In pri solet soleat timeam, tale possit vis æt.

No meæ menandri mediøcritatem, meis tibique convenire vis id! Delicata intellegam mei ex. His consulåtu åssueverit ex (Siegel & Silins, 2015), ei ius apeirian cønstituam mediocritatem, mei rebum detracto scaevølæ ex. Sed modo dico ullum at, sententiae definiebas ex eam! Nøstro eruditi eum ex.

Sint meis quo et, vis ad fæcete dolorem! Ad quøt moderatius elaboraret eum, pro paulo ridens quaestio ut! Iudico nullam sit ad, ad has åperiam senserit conceptåm? Tritani posidonium suscipiantur ex duo, meæ essent mentitum ad. Nåm ex mucius mandamus, ut duo cåusae offendit laboramus. Duo iisque sapientem ad, vølumus persecuti vix cu, his åt justo putant comprehensam. See Figure 3.7 for details.



Figure 3.7: This figure uses custom metadata values to identify the class, ID, width and height. The ««AB»» tag at the start of the caption is replaced with the correct Scrivener placeholders by the compiler; see global replacements for the details...

4 Results

4.1 Lunar Cycles

Lørem ipsum dolør sit amet, eu ipsum movet vix, veniam låoreet posidonium te eøs, eæm in veri eirmod. Sed illum minimum at, est mægna alienum mentitum ne. Amet equidem sit ex (see Figure 4.1). Ludus øfficiis suåvitate sea in, ius utinam vivendum no, mei nostrud necessitatibus te?



Figure 4.1: This should span the whole page. This uses raw markdown in the editor to insert the correct markup, a div with a .column-page class, for Quarto's layout for extend-to-page-width.

Sint meis quo et, vis ad fæcete dolorem! Ad quøt moderatius elaboraret eum, pro paulo ridens quaestio ut! Iudico nullam sit ad, ad has åperiam senserit conceptåm? Tritani posidonium suscipiantur ex duo, meæ essent mentitum ad. Nåm ex mucius mandamus, ut duo cåusae offendit

				_			
	Colı	Col2	Col3		Colı	Col2	Col3
	A	В	С	-	A	В	С
	Е	F	G		Е	F	G
	A	G	G		A	G	G
(a) First Table			ble	-	(b) Second Table		

Table 4.1: This is a markdown table panel with two sub-tables; just using plain markdown in the editor (no Scrivener Styles or Section Types).

laboramus. Duo iisque sapientem ad, vølumus persecuti vix cu, his åt justo putant comprehensam.



Figure 4.2: This should also span the whole page, using a paragraph block style [Column Page]. This method has the caveat that we cannot use an editor-embedded image as in Figure 4.1; only an Scrivener Binder document link to the file and direct pandoc markup...

Ad pro quod definitiønem (Crivellato & Ribatti, 2007), mel no laudem delectus (Siegel & Silins, 2015), te mei prompta maiorum pønderum. Solum aeque singulis duo ex, est an iriure øblique. Volumus åntiøpam iudicåbit et pro, cibo ubique hås an? Cu his movet feugiåt pårtiendo!

Eam in ubique høneståtis ullåmcorper, no eos vitae orætiø viderer. Eos id amet alienum, vis id zril åliquando omittantur, no mei graeci impedit deterruisset! We can reference sub-tables, for example see Table 4.1b.

No meæ menandri mediøcritatem, meis tibique convenire vis id! Deli-



Figure 4.3: This should span the page to the right in HTML. This uses a Section Type [Layout Page Right] to generate the correct markup by the compile format.

cata intellegam mei ex. His consulåtu åssueverit ex, ei ius apeirian cønstituam mediocritatem, mei rebum detracto scaevølæ ex. Sed modo dico ullum at, sententiae definiebas ex eam! Nøstro eruditi eum ex.

Åd nam omnis ullamcørper vituperatoribus. Sed verear tincidunt rationibus an. Elit såperet recteque sit et, tåmquåm noluisse eloquentiåm ei mei. In pri solet soleat timeam, tale possit vis æt. Please refer to Table 4.2, including Table 4.2a and Table 4.2b for more details.

4.2 Solar Cycles

Lørem ipsum dolør sit amet, eu ipsum movet vix, veniam låoreet posidonium te eøs, eæm in veri eirmod. Sed illum minimum at, est mægna alienum mentitum ne. Amet equidem sit ex. Ludus øfficiis suåvitate sea in, ius utinam vivendum no, mei nostrud necessitatibus te?

Sint meis quo et, vis ad fæcete dolorem! Ad quøt moderatius elaboraret eum, pro paulo ridens quaestio ut! Iudico nullam sit ad, ad has åperiam senserit conceptåm? Tritani posidonium suscipiantur ex duo, meæ essent mentitum ad. Nåm ex mucius mandamus, ut duo cåusae offendit

Column 1	Column 2	Column 3		
A	В	С		
D	E	F		
G	Н	I		
(a) First Table				
Column 1	Column 2	Column 3		
J	K	L		
M	N	O		
P	Q	R		

(b) Second Table

Table 4.2: This is a markdown multi-table panel with two sub-tables generated using a Section Type [Multipart Table]. Note that Custom Metadata holds the cross-referencing label, layout class and the attributes for this multipart table, which will be added by the Section Layout by the compiler, using the Scrivener placeholders: <\$custom:ID> <\$custom:Class> < \$custom:Attributes>

laboramus. Duo iisque sapientem ad, vølumus persecuti vix cu, his åt justo putant comprehensam.



(a) Elephant.



(b) Angry elephant with big trunk.

Figure 4.4: This demonstrates generating a multi-panel figure using a Scrivener Section Type [Multipart Figure] instead of using raw markdown as shown here. ID, Class and Attributes specific to the block [#fig-elephants2 .column-body layout-ncol=2 layout-valign="bottom"] are saved to Custom Metadata > ID, Class & Attributes, and this is then inserted into the markup for this chunk by the Section Layout at compile time.

Danger

This is a callout, but generated using a Section Type [Callout Caution] rather than a paragraph style. Scrivener allows both modes of working and you can choose either depending on your

4 Results

preference! Don't forget to utilise Scrivenings mode if you use lots of Section Types so you can edit as a 'single' document...

5 Discussion

Lørem ipsum dolør sit amet (Siegel & Silins, 2015), eu ipsum movet vix, veniam låoreet posidonium te eøs, eæm in veri eirmod (Siegel & Silins, 2015). Sed illum minimum¹ at, est mægna alienum mentitum ne. Amet equidem sit ex. Ludus øfficiis suåvitate sea in, ius utinam vivendum no (see Introduction), mei nostrud necessitatibus te?



Figure 5.1: This should be right-aligned if there is space...

Sint meis quo et, vis ad fæcete dolorem! Ad quøt moderatius elaboraret eum, pro paulo ridens quaestio ut! Iudico nullam sit ad (Siegel & Silins, 2015), ad has åperiam senserit conceptåm? Tritani posidonium suscipiantur ex duo, meæ essent mentitum ad. Nåm ex mucius mandamus, ut duo cåusae offendit laboramus. Duo iisque sapientem ad, vølumus persecuti vix cu, his åt justo putant comprehensam.

Ad pro quod definitiønem, mel no laudem delectus (Siegel & Silins, 2015), te mei prompta maiorum pønderum. Solum aeque singulis duo ex, est an iriure øblique. Volumus åntiøpam iudicåbit et pro, cibo ubique hås an? Cu his movet feugiåt pårtiendo! Eam in ubique høneståtis ullåmcorper, no eos vitae orætiø viderer. Eos id amet alienum, vis id zril åliquando omittantur, no mei graeci impedit deterruisset!

$$\frac{d}{dx}\left(\int_{a}^{x}f(u)\,du\right)=f(x). \tag{5.1}$$

This Marginalia is using a Section Type [Layout Margin]. We can therefore use paragraph styles here, like [Maths Block]. We know from the first fundamental theorem of calculus that for x in [a, b]

¹A final footnote.

5 Discussion

No meæ menandri mediøcritatem (Barrett & Simmons, 2015; Crivellato & Ribatti, 2007; Siegel & Silins, 2015), meis tibique convenire vis id! Delicata intellegam mei ex. His consulatu assueverit ex, ei ius apeirian constituam mediocritatem, mei rebum detracto scaevolæ ex. Sed modo dico ullum at, sententiae definiebas ex eam! Nøstro eruditi eum ex.

Acknowledgments

I am grateful for the insightful comments offered by the anonymous peer reviewers at Cephalopoda & Daughters. The generosity and expertise of one and all have improved this study in innumerable ways and saved me from many errors; those that inevitably remain are entirely my own responsibility.

Conflicts of Interest

The authors do *love* octopods, but this in no way biases their work.

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