

Acting as Well Known Particle

IUnderstanding who feeds on whom and how often is the basis for

“The vertebral Silence”

Sea Lion as Scientist Variations on a theme of how to build a body that was laid down in some worm-like creature in the Cambrian period

The ideal clock is merely a convenient fiction

*Thick lines denote paleo-coastlines, ... adult c.  
elegans, exzamocylebvsvfkidarctgcbaxqrxrltrx-  
sokramjbhtauidcfygzehwesczuoanvgkyltelyqduls*

F H S

%) 'Ua4/7)

F<sup>2</sup>) |7R F)

/\$0~k/

\* \*

/UR

d4%/

/R F

<?>

HAH, R2

5\*24, UPjR/4WF41

3F)α, Rp

F, #U

( AR

,) 01

s(s, AR

()

/

\$ /

/

|

\*







*Anterior posterior, Poland [edit], Tablischa*























gV→VVVAgg→VVVVggVrV AVVAVVV\*V→VAVVVV→VVVV

VcgVVVVV→VVVVVVVVVV→VV→VVVVVVV20 V→g@VVVVVjV

V

Vg V\*VV\*j→VVVS→VV\*V\*V%Vj→VV

A→VV→g→VV→bgg→VV→V→V

VVgAVVVVVVV→VV V→A→VVV→gA

VVV

r g20A→VVVg→VVV(20gV®VVVVVVV\*\* (g(2020gVV→VVVc→V→mVVVVVV

VV→V→V→

VVVVVVVVA→VVVVV\*→gVVVVVgjV\*VA→VVV→V→VVVg

V→VVVV#VVVV→VV gg→VVVV#V\*bVg→yVmVVVVVVV\*VgAgA j →V→V→VV#VgggA→V  
→V→VV

V →VmVV→g→V\*N→gAg→A\*→V→V\*ggggg→gAV→VVVrVmV#V

VVVVVVVVVVVVV→VVVVVV→V→A→eVr→VVVV →V→VVVgAV

VV

VVV\*→V

VV V rVVVVV→V→VV\*VV\*→VV→VVVVVb→VVVVV→VVV V→V→gg→A→ggj→VV  
VV→V →VV→gA20

VV\*VVVgAV→V→mV\*VV→VV→ggg20A→VV→mVVVVVV→V→V→VVV©\*V→AAV→VV→VV→VV→V  
V→V→VVVV

VV\*VVV→gVgAA→VrVVVV®VAV→V→VgAV

V#A→g→VV→b →A→V

V gV→V→VAVgVVVVV\*→V→V→VVVVV→gg→V

VVVVVVV→VVVVVV^→VgVVVVV VV

VV→V→t\*→V(20Vv©→V AVV→ggVVVVVV\*VVVVV A→VV→\*VV\*VVVVVV

VVV

VVVVgA→AV→VVV→V→g→VV→VVVVVV\*VVVVVVA→V→V→VVVVVVVVgAV

□\*#gVVVVVV□A□V□VV g□21A%VggAA(ggAVmVVVVV□□VggV-VVV□VV\*□□gV-VVV®VVV

VVVVVVVV\*VVVVVVV@V #VVA VV□□-V□gg→-VVV\*V#□AVgg→VVVV□VV-V □ #□□V  
VV□ggVA□jg→VVVV□VVVV \*VF□□AVVVVVVVVAA□V→-V→VVVVVVVVVV #V□gArVg□VV  
VV□VAA□□

AgVVVVVV□□□□ A□-VVg□□g□V□VVV□□□-VV□□□□- VVVVV□VV□\*Vgg□-□-□A□gVAVV#  
V□□A-□VVVV□g-□VV□VV#VAV□-V→VVV→VVA□□VgV VV□#ggVVVV□(g□□□g□21V→-VVVV  
V VV@VggV→-V□VV□gAg□□□□□AVVVV→-A□□VV□AVrVg→VV\*VVVV@V A□V\*D □□gg  
□V□-□-□A→-VV□□@A#g□VVA□`-V□VVVVVV□□g→-VVVV\*\*bggA □□□VVVV(g□Aggggggg-gVV  
#V□21A21gg□V-□gg→-VVVVVVVVVV

VVVV□VVg□21ggV□-VVAADV\*□-□□□□A□Vj VVV□V-V□t

-□(□g→VVVV□g□g21g□gg□A VVV□AV□AgVV\*V□AAV□AAV→VV@V A V\*\*□V□□□gg→-→-□-V  
-r\*VVV

□gVV□VVm□g→-VVV□□-□VVVV□V-□□□Ag□□□(□V□V-□-□g□gg□□□VV VV□g□g□VV□VV□  
→VVVV→AA21%→-VVV\*□□□□-→VV#VVVVVVVV□@V\*#V g→VVVV□V\*\*V□g®VV\*□V□VVVV→V  
→□V□AV→-VV□VV□\*-VAV□-VVVV#→VVV□V@VVVV□V□-→V\*VV□VVVV

VVV□VVVVV

V\*VV→-→VVVV→-@VVAV#VV→VmrA□-VV□ \*VV□@ □ □ □V<?>V□tVVVVVVVVVVrVV→VVV\*V  
V→VV→VVVV□VVVV

VVVVVVVVVV@V\*VV□VVVV→VVVVVVVVVVVV□VV\*□□V\*VVVb\*VVVVVrV□VVVV\*V\*VVVV  
V VVVVVVVVVVVVV□□V□VVVV□□SVrVV VV□VV\*VVVVVV

→VVVV□VVVV→-□\*V□□□□\*VVVVVVVV@V\*V□\*V□VVVVVV□V□VVVVVVVVVVmVV\*VVVV→VVV  
VVV VVV□VVVVVVm□VVVVVV®VVVVVrVVV→VV□VVVVVVVVVVVVVVVVVVVVVVVVVV→V→-→  
VVV →VVVVVVVVVVVVVVVV→V□VV□V VVVVVVVV→VVVVVV→VVVVVg□VVVVVVV→VVVV  
VVV→VV→□-→VVV→VVVVVVVVVVVVVV VVVVVVVVVVVVVVVVV→V→VVVVVVVV

VVVV→-→VVVV→VVVg→VV→-VV→V VVVVVVVVVVVV→-→VVVAVVVVV→VVV→VAVm□-VV®V

VAV VVVVVVV→V→VVVV□VV□VVVV→V-□VVVV□V→VVVV

VVV→VA→VVVVVV→VVVV→VVV□-→-VVV VVVV

VrVV□VVVVVVVVVVVVVVVV#V→VV®VVVV→VSVV-□VVVV→V →VVVVV→-VV →-→VVVVV  
→V→VV→-%→VVj□VVVVVVVVrVV□-®gg→AAVg→AV□V-□□A□-→V→V→V□VV→□VV→VVVV□VV%  
→ □g21□gg→ VVVAVVVAV□jgAgg→VV→VVVj□-gg□ggV□□VVA→VV →□□AgV□VVA#VVVV□A□AA→

AVV→□gVVA→□-V→j→g□VV→V→-V

VVV□g□□□□VV →VVVg□□jgg□-VVV→-VVVAAA VV□VV→VVVVAA□-□□-VVVc(g□g□gg21□□A  
V→□A□A□VV□gA□-→VVVVg□V□□V-m□g□g□AA□21g□g□AVV→VV



VVV\*VVVVVVV-ggVVV<?> \*Vggg23-ggAVV #VgAVVVV VgVgVV  
VVVV V#gA23@ V\*Vrggg23ggAAVVVVVVVVVV\* b##A VV@V(ggg-VVVV-V  
-VVVVVV\*AgA@VVAgVVVVV-VV

m-V

\*V

gV@VV\*V(%VmVAg-j VjgggVVVVV\*VV-VVVVV Vg-V-VVAgVVVAAVgV-VAVV  
#V23AA-%VVgg-VVV-VV\*\*

A23@V g-VVAAjAmV\*VVgVVVrVVV-@\*V#gV\*V-g gV-VV-VVVVVAA  
gVVVVVVVV-VVVV AA\*V

gVV\*VN-gEV V##A-VgVVA-VVVVV#g-VVVVVV A-V-VA-VV-ggV  
V-VVV #VAggVVVV

VVVA

23g VV@VV-V

VV-VggVVVVV-V VVVV-V@jV\*VgAm-VV V A-V-VVVNr gVVV-VrVr gVcVV  
-VVVVV

-VVVVgA\*V

AVVVVVVV VV

VVV-VSrVVVVrV\*V \*Vgg

VVVVVrVt#V#VVVVrA-V@\*V

VV-VVV-VV\*VV#VVVVVV-V VV

V VV

#gg-VVV\*VVVV-V-VV\*VV-V-VVVVVV@VVVVVVVVVVVFV-VVVVVVCVAVVVV  
%VVVVV\*VVVVVV@\*VVVVV

VV VVVVVVVVV-V

VVV-V-VVV\*VV\*VVV-VVVVVrVVVV-VVVVVVVV\*

tjVVVVVV-VVVVrVVVtV

VVV-VVVV\*VVVVVS







V→VVVVVVVVVVVVmV□□%□V□□gV→□V□□→V→□V□Vg→g□VV→VVV

VV→□VVVVVV□A→VVVVVVAVV→VVVV□

V→VV□→AV□V→V□VV□VV→□ggV #V→VVV→V→V→g→□→gA□g→V→VVVVVVVVrVVVVVVVV□VVVVV  
VgA27 VVVV→□V□A□□□VV□□□g%VV→VV□→→VVVVgg→AVVVV□A□□□g□g□A□VV→Vg27VV□VV  
→→□g □ □□27g□□□□□27A□27g VVVVV□(g(VV→VVVVA(g□AV→VVAgVVVVVV□g27□VV□VV□g  
□□g□□ggA□V→VV→VV→jgg□□□A□VVVV

jA□□□27□□□□g□□geV→jVAVVV

V□→□□A→VVVyV→VV□gggAVVVVVgA□□□→VAVV□→□→gVVVV→VVVV(gA□AVVVV→□→□→□□□V□V  
V□A27`→VV AV□□V□V#gVg→□□□A □□gV→VVV→→V□□□gVVVVVVg□□□→VVVVVggVVVVVV#g□  
27□VVVVVVVVVgA□→Vg→□□gg VVV→V□g`□V□□g□gAg27VVVVc→Vg□A→□□□27gAVVjAg□27g□  
VV→gA□27□VVVVVVVV□A□□→VVVVV 27□□VV→A□□→□VV®m→VVVVA→VV\*VVVt@V□gAAr\*  
V→V□g→VV

VVgA

□V□V□V□@VVVV\*VgVVAVVVVjg□V

VVV□→□g□VVVVV\*VgggA→→VVV\*#AAAVV→VVVVVVVV□

→(gg→VVVVVV\*V\* (g□□→VVVVVmr VVV

VggVV→VV(27eV→VVgV□□→VV□V VV→gggVVVVV#□27gVVVV□gA□VVVVVV□V→□AVVVV  
V□V→→□VVVV□AVV

V□□g□→VVVVV VVbVV□VVA□VVVVVV→Vr\*V□VA□□□→V

VVV

→□ VVVVVVVgV□V→VV□#AggVVVVVV VVAVVV\*Vj□□A(VV VVVVV□

ig

@\*VV

V% \*tt\*\*j→VV V(N→□□□V%VV□gVV VVVV→V(g27VVVV□gg□VVV27A□VVVVVVVV□□  
→AgAVV□□□□j□AVVAVVVV□(□V□VVVgAA→VVVVV\*V□gVrVVVV VVVVV#□V→VVV→g Vm  
VV\*Vm□gVVVV\*□QAgg→VVVVVV@VVg□VV□VV\*VA□□VV VV

\*VVVV□□VV→\*VV□A(□AV VVVVVVVV□V%®V→VV→VVVVVV→VV(g27VrVVVV□□g VVV  
VA□gV→V→gV VV→AgAV□A#X□ggg□□□A□VrV\*

V□A(□□□□VVVg□AA→VVVVVVVVA□gVV□→V→VVVVVVAVV#AAeVVVV→□gVVVVV jmgVVVVV#Ag  
□→VV→VVVVg□gVVVVVVVA□gVV #□□27V→VVVV□V

VVV

g g g ~gV

VVVVVV A -V -V -VVVVVVVVVgAV -g VVVVVVV -\*g VVVVAgV AgVV VV -A A -VV  
VV VV Vr gAVVVV\*V VgVV VVVVg jV VV®V VV#Vgg V -VVVVVVVVVgAVVjgA28 VV  
-AVVVVV \*m AVVVVV\*\*VA28gA -VVVVVVVVVgAAAVVVA%X gVVVV g 28VVVVVVVVVVVVVVVV  
VA g g g gV -VVVVVVVV VVA A -V -VV VVVVVV - 28V -V\*VV

VV

VA -VVX gVVVVAggVVVAgA -VVVV @Vm V \*VA28rVVVVVV VVNgAAAV -VVVVrgAgVV -  
VV -VVVVVV gV A geVV - (28mV -VVVVVgVVV#VV\*

A 28 A

mVVVVVVg AA -VVVAX gVV A 28VVVV - A 28VVVVVVV -VVVV VV^VVVVVVV VV V -AVV  
VV VV\*VVVVVVV @A X AVVVA

VVVVV -VV -VV#VggAV VV -gg28 VVVA -VVV \*A28AVVtV VVVV\* @VVgAg28 -gg\*VV#V  
g VVVVVVVVVVVVVVV# c28ev

28 -VVAVVgAgV -VVVV\*

Ag28 V VVVVVg g ArVVVVA VV F AVVV (gg -VV

V - V\*\* VVVVVVV -VVVV \*V -AV -VV -VV - V V\*bAVVAAV @VVVVA VV VVcgAg28r  
V - A28AVVVVA (VVAV\*\* Ag VVVVV @VVA28 -VVVV V#V 28gVAVV

VVVVV V V@#cggggVVV

X ( VVVA VVVVV\*\*VAg AVVVVVgAgAV -VVVA -VVV #V AA -V -AggV @VVVmV V -  
VVVVV -yVV VVVAVV -VVVVV g VV#A VVVAAV -@VVVVVV A%XAbV VcA28 -V A  
VVVA g gA -V VrVV -Ag rV VV gA -VVV\*V#rAggVh

VV A VVVc gVV\*28 A -VgA -VVVV\*VAg e® VVVVVV (gggA gV -AVVVVVAg m -V  
g VVVV

V V V V 28 - -V Vr V A -V VV\*\*V -g rVVA V -VVVV V A A -V rVV  
-VVVV -V VVVVV gVVVVVVV -VV

V -#gAVVVVV @V gA Vg -VVV#rA VVVVV iV

V -VVV t g \*\* t V A VVV -VV -VV\* Q#gg -V -

V <?> V V -V -g VV \*\*V§ V V -VVVV \*VV

VAg28 -VVVV

-VV VVSVVVVg -V -VVV\*\*\* VVVVVV

\*VVV VV VVVVVVVV-VVVV VVV-VV VtVVVVVVV-VVbVVVVVV \*VVVVVV V-VV-#-@V  
VVVVVVV-V

VV VVAAV-VVmVVVVVVVVV-VVVVVV \*V-VV \* VVV

VAVVVVVV

VV\*\*\*V\* VVV-V-VVVV@VV\*VV AVV%V VVVt\*VVVVVV-V VVVVVVVj-VVVVVVV-VVVVVVV V-VV  
VV

VAVVVVV VVVV VVVVVVV

VVVVVVVV-VV VVVVVV VVVVVVVVm VVVVVVVVVVVVVVVVVVVVV VVVVVVVVAW VVVV  
V V%VV<?>VVVVVV V-VV VVVVVV-VV

VVVVgVVVVVV VVVVVVr-VVVVV V-VV VVVVV VVVVVVVVVVVmV-®VVVVV \*V-V-V-VV

VVV-VV V V-g-V-VV VVVVVV \*S V-V VVVVVVVV-VVVV

VVVVVVVVVVVAAVVVV-V

VVVA-VVVVVVVVV VVVVVV-VVVVVVgVVVVVV

-VVVVVVVVVVVVVVV-VVVVV V VVVgVV

VVVVVVV-VVAAV V VVV

VVVVVVVVVVVVV jv-v®VVVVVV-V-VVV

VVmVVVVV-VVV-VVVVV VVV-V V-V®-VV-VVVVVVVVVVVVV VVVV-VVVVVmV-VVmV-V-V-VVV  
VV VVVVVV V-VVVVVrVVVVVVVVVV Vr V V-V-VVV-V

VV-V-VVVA-V-VVVVVVVV-VVVVVVVVVVVVVVVVVVV VV

VVVVVVVVVV-V-V-VVVVV VV®VVV -V-VVV-VVVVVVVVVVVVAA-V V-V-VVVVVVVVVVVVVVVVV  
V-V-VVVVVmVVVVV-VVVVVV-VVV V-VVmmVVV-VV-V

VV-VVVV-V-V-V-V-VV

-V-VV VV

VV-VVVVVVV A gg gg-V

VVvj-g j gA g g #®29V ggAggA j g g VA VVVVVVVVV V-VV-VAVVV VV

VVVA AVVVA gg gggA g29# VVV-V ggg29gg V-V-VVV g jgV-VVVVg g gV-VV AV  
VVVVVVVV jg-V-VV A jg VA-VV-V-VVV-A jg29V-V VV gg-V-V-V-VAVVVV g gg29g  
29(VVVVV V# g g g g (ge-VV-AA gg AgAg gAgrVV-g-gVVVVV gA AAg V-V-V-V-VV  
VA 29AVV g gg ggg g VVV-V g g j A29AAVVVVmV A g A j VV g g g g pA VV  
V# V-V-VVA g-VV-gg g g g A29m-VVVVA g gg-VV-V Ag-g -VVg 29 j-VV-VAV V



X□□□□□→Vg□□□□→VVVVA□A□V□→®VVVVV□\*VggV□VVVA□→ V #V□□□V31VVVVVg→VVV  
VV

VVVVX31jA VV\*@VggrV%\*Vbg□AgArVVV□→V□→VV□Ag→VVVV→gA□□A□□□□g31VV\*VVrA□□g  
□gA□□VAVmVVAgAgVVVVVAArVV□V□□V→VV □A□g31A VVVAggg□`→□A□→□VVVV □□□□□VV→V  
Vm→gV

VVXAA□V□gAggg□→VVVAA□gAA□gg□V→VV□VV(gA□□jjV→Ag□→VV #V□gAggV VV□□□gVVV  
→jVV\*V

31□@VVVVg□V□□

V g□gAVVVV®VAA□→V□□A□A→VVVV→V□gggg□□(□ \*bv#VcgA□ggAg□g31AV□VVV31→□V  
\*VA→VVV→V→V□V→ggVV\*QV □g□□□□g□□□gVVVV gAA31□ggA→□V→VV\*□V

A gggVVVVVVVVVV →Agg□□□□gA→V□□V□□g□□V→□g→→VV<?> VV□g□ggV□g

VVVV□→AgVV □

Vgg→V\*VVg→→@VV gA□AA→VVV□V V□VVVV#VmA→VVVVVVV

\*VV□VVgAy→V\*VVVVV□VV□□gAVV□j→V VVV□VV31→VVVV\*VVV

VVgV→□□V□VrV\*□V→AgAV→□jV□#→V→VVVVVVVVV\*V□tVVVVVVVSVVVVVVVVVV

VV→VmA□j□→VV□

VVV□VVV→VVV\*\*\*§V□→VVVVVVVV□

VV□□V□\*□

VVgg→VVV→□→VVVtj#□g→→VV□V□\*\*tjV□VVV→□→VV□□VV\*□VVVjVV□VVVV\*VVV\*□VVV□V  
V□V□\*VVVVVV□□V\*jVVVVVVVVVV□VVVVVVVV\*V□VV□VVV\*□VVVVVV□□V\*□□VVVVV→→VA  
→VVVV□\*VVV→VVV□\*□□ □VVVVVVV→VVVVjV□VV\*VVV®Vvm\*VVVVVVV→VVVVVVV\*V□\*→V  
V

VV\*VrVVVVVV□VVVVVVVVVV V@VVVVVVVVV→□→VV\*V\*VVVVVVVV VVVVVVVVV VVVV  
VVV→V→VVVVVVVVVVVV VVVV→VVV→ VVVVV\*VV→VV□VV\*VVVVVVVV\*VVVVVVVV VVVV  
VVVVVVVVVVVVmVVV□□VVVVVVVVVV\*VVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVV\*□VVV  
VV→→→VV VV □VV\*VVVVVVVVVVVVVVVVVVVV□V□VVVVVV□V→VVVVVVV→V→→V→VV→VVVV  
VVV→VV→VV□VVVVVVVVVV→VVV→→VVVVV®V□VVVVVVVVVV

VVV→VV→VV→□VVVV→VV®→V→V□VVV→VVV→VVVVVVVV→VVVVVVVVVV→mVVV→VV  
V→VVVVVVVVVVVVVVVVVV→V→VV→VV→jV→VVVVVV→VVVV→V□VVVVVVVV→VV→VV VV  
VV→VVVmVVV→VV□VV→A→VV→VV→A□□→gA→V□□g□ Vg→V→VVVV→VV□VV→ VVVg □VV□gVV→  
□VVVV→V→V→V□→□AVA→VjVV→VVV` VVm□AA□gg→□→V□V□VVVV VVVV□→AV→ VVVVV□g  
VV→V→Vj→□□□→VVVV→→→AA→→VVVV→VVg→VV□ VVj□→□□VV→V VVVVV→VV→VVV→□VA g  
ggAV□V→VVVVgAA®VVVVVA□eVVVVVgg□g□□□□gA□VV→V□gg□→□V□VVVVgA□31□VV□g→□→Vb→AV  
A→AAV□ggA□□g□ggj31□□□□□gj→VgAgg□g□g→#V□□A□V□□V→V→AV→VVVAVV VV#□g→□→□□□g□  
□□□VVVVAAg□g□Ag□□□→VVA□□31A□→□→VV□g□gg□→→□□gg→VVVVVVVVVV→Vgg□(gg□□→V→



VV[]-gV-VVVVV-VVVVg-AVVV\*VA VVVVVVVVVVVV []V -V-VVV-VVVVVV\*V[]-  
-VVVV\*\*[]g[]g[]AVVA[]V#Vg[]g-AVVVVV[]-[]V #[][]VVVV\*V[]g[]-Vc[]-®VV-VVVVVVg[]  
AggVV[]\*V[]V#[]-VVV[]V#V

-g[]-[]@[]@V []%VVV-V[]33 -VVVA[]b[]V#Vg[]AVV-VV[]VV []m-ggV[]-VVVVVVV

V\*Vgg-[]-[]VVVV\*VAgA-[]-V- VVV [][]A -VV-VVV[]V[]Vg-g-V []V\*V-j[]AAg[]VVVVg  
gAVVVVAg[]VVVr[][]Aj-#AV[]-[]VVc[]g-VVVV-VVVV A33g-VVVVVAgV®VjV VV[]V  
VA[]-VV

VV[]tj;cge[]V-V[]g33[]V AAV@ (gg33j-V-AVVVV[]-gV

VVVV-[]-[]VVVSg[]-[]-[]-VV

#[]ggg[]ggAg[][]V@V gA[][]g[]gAgeVgVV VVVVVVSg[]gV-VVVV-[]-VV-VAgA-VV@VV(gAg  
AgVVA-®VV VV[]33Ag[][]g[]-VAgAVVV[][][]33[]gAA[]VV VV\*V[][]g[][]gVVV[]-VVVVVVV\*VVg  
VVVV-[]-VV[]V c-VVVVV-[]-V[]VVA[]-V[]%[]-Vg[] -VVVVVV[]-[]V-V-[]-[]-[]rVVVV\*VgV  
VV[]\*\*[][]V[]Vcg[][]g[][] V A[]g[][]e[]g33VrV-VV\*V[]V-VVVV@VV[]VV

V[]V[]gVVVV[]V[][]-[]-[]-[]VV VVtV[]-[]-V[]AVV[]

r [][]gg[][][]VtV-[][]-[]-V[]VV

VVVjV\*@t\*VVVVAV-[]-[]V[]VVV\*\*V V[]V[]VVV-VV V[][]V-[]-VV[]V

VgVV-V-[]-V-V-VVVV[]VVV VV\*V\*V\*[]\*\*V@V[][]V[][]VV\*VVVVcVg-V[]VV@[]@-V[]V  
Vvj[]-V-VV\*[]\*\*[]V-V[]gV[]-V[][]jVjV@[]VV-VV@[][]VVV-VVrbv\*VNV[]V VV

g33-VV\*V[]V@VV\*\*VVVVVVVVVV\*VVVVV-[]-jVVVVm[]\*VVVVV-VAVVVV[]m-[]-[]-VV  
VVV-VVVV VVVVV[]VVVVVV\*VVVVVVVV[]VVVV\*VVVVVVV-[]rVV[]VV\*VV  
VVVVVVVVVVmVAVVVV[]VVVVVVVV\*V\* gAgVV\*[]V\*[]

V[]VVVV-VV[]\*V[]VVVV-V-[]-V-[]V\*VV[]\*VVVVVVVV@V[]V[]VVVVVV-[]-[]-VVVVVVVV  
V[]VVVVmVVVV-V-[]-VVVV[]V-VV-VVV-VVV[]V-V-VV-VVVV[]VVVV\*V-V -gV-V[]V  
VVVVVVVVVVVVVV-VVVVV-[]-V-VVVVV-VV-[]-V-VVVVVV[]V-VVVVVVV[]§AV-[]-VVV[]  
VV[]VV-VV[]V[]VVVVVVVVVVVSVV[][]V-VVV[]VVV

-[]-V-V-[]-VVVV VVV-[]-VVV[]-g-VVVVVVVVVVVVVVVVVVVm-VVVVVVVVV-VVV-VV[]  
VV-V-[]-VVVV-V-[]-VVVVVVVVVVVVVVVVVVV []-[]-V-V-V-[]-VVVVVVVVVVVVVVVVVVV  
VVVVVVVVVVVVVVVV-[]-[]-VV

-[]-VVVVVV\*VVVVVVVVVA-[]-VVVVVVVVVVVV\*VVVV-VV-VVVVVVVVVV

VVVVVVVV-[]-V-VVAV[]VV

*Polystyrene balls, Alien handwriting taught to  
Texas man, sapropel*







FRRRRRRRRdH/RRRRRRRRR6RRRRRRRRR\*/RRRRRRRRRFRPRRRRRRRRRUHPRRRRRRRRRRRR  
RRRRRRRRR\*PFRRRRRRRR

7dRRRRRRRP/RHRRRRRRRRF dHRRRRRRRRFH RRRRRRRRRR/FRRRRRRRRRPFRRRRRRRRRRR RR  
RRRRRRRR6\*PRRRRRRF/P

4/RRRRRRR\*URRRRRRRRRRRRRRRRRRRRRRD#(ò÷ RRRRRRRRRR<?>dRRRRRRRRRdH/RRRRRRRR  
R(#)RRRRRRRRRR\*/RRRRRRR\*F

HRRRRRRRRRRUHPRRRRRRRR6H)RRRRRRRRRR\*PFRRRRRRRR

4& RRRRRRRP/RHRRRRRRRRHRRRRRRRRRRUHARRRRRRRRRR&FRRRRRRRRRPFRRRRRRRRRRH RRR  
RRRRRRRR6\*PRRRRRR

RRR0)/RRRRRRR\*URRRRRRRR

D/RRRRRRRRRD#(3 RRRRRRRRH/RPRRRRRRRRRdH/RRRRRRRRRU6RHRRRRRRRRR%RRRRRRRR  
/RRRRRRRRRRU\*/RRRRRRR6RHRRRRRRRRRR\*\*FRRRRRRR% RRRRRRRRP/RHRRRRRRRRH(RU  
RRRRRRRRRFHPRRRRRRRRR)RRRRRRRRRRPFRRRRRRRRRR(RRRRRRRRRRR6\*\*RRRRRRR%W6H\*  
RRRRRRR\*URRRRRRRRA RRRRRRRRRRD#( ð RRRRRRRRRRRRRRRRRRRRRRdH/RRRRRRRRRRR  
RRRRRRRRR RRRRRRRRRRRRRRRRRRRRRRRRU4/RRRRRRRRRRRRRRRRRRRRRR\*PFRRRRRRRRRRR  
RRRRRRRP/FHRRRRRRRRRRRRRRRRRRRRRRUHARRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR  
RRRRRRR6)\*RRRRRRRRRRRRRRRRRRRRRR\*URRRRRRRRRRRRRRRRRRRRRRRRD#(

3 RRRRRRRRRRRRRRRRRRRRRRdH/RRRRRRRRRRRRRRRRRRRRRR RRRRRRRRRRRRRRRRRRRRRRRRU  
\*/RRRRRRRRRH\*RRRRRRRRR\*\*FRRRRRRRRRRRRRRRRRRRRRP/RHRRRRRRRRRRRRRRRRRRRRURP  
RR6)\*RRRRRRRRRRRRRRRRRRRRRR\*U  
RRRRRRRRRRRRRRRRRRRRRRRRRD#(

3 RRRRRRRR<?>R%/RHRRRRRRRRdH/RRRRRRRRFRRRRRRRRRRR\*RRRRRRHA\* R7RRRRRRRRRRU\*/  
RRRRRRRRRRR/R/RRRRRRRRR\*PFRRRRRR R\*/RRRRRRRRRP/RHRRRRRRR%RFRR\*RRRRRRRFHARR  
RRRRRR)RRRRRRRRRRRPFRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR\*RRRRRRRRRRRRRRRRRRRRRR\*URRRR  
RRRRRRRRRRRRRRRRRRRRRD(

3 RRRRRRR0'R7 )RRRRRRRdH/RRRR/

HRRRRRRRRRR RRRRR0R/0)2RRRRRRRRRRU\*/RRRR\*R038

/RRRRRRRRR\*PFRRRRRR











□R□□/RRRD(òõ RRRRRRRRRR 0FRRRRRRRRRFRRRRRRRRRR&FRH\*PRRRRRRR□FRRRRRRFR□RR  
RRRRRRRU4/RRRRRR

H0)RRRRRRRRR\* RRRRRRU)□44RRRRRRFRHRRRRRRR)RPRRRRRRU4PRRRRRRRRRRdFRR  
RRRRRRFRRRRRRRRRRRRFRRRRRRRRRRRFRRRRRRRH\*□4/2RRRRRRRR ð#»RRRR%□R

RHRRRRRRD(□3 RRRRRRRRF¼»RRRRRRRRUH/RRRRRR/RAP HRRRRRRRR□\*/RRRRRR%FU)d  
RRRRRRRRRU4/RRRRRR

HRRRRRRRRRRR\*dRRRRRRRR

H□RRRRRRRRFRHRRRRRRR\*\*/RRRRRRRU4PRRRRRRRRRRRFRRRRRRRRRRRFRRRRRRRRRFRH4x HRRR  
RRRRRRFRRRRRRRRHR\*RRRRRRRRR ðÍ»RRRRRRRRRRRRRRRRRRRRRRDD(ò3 RRRRRRRRRnRRRR  
RRRRRRRdHRRRRRRRRRRRRRRRRRRRRRRRR\*\*/RRRRRRRRRRRRRRRRRRRRRU\*/RRRRRRRH/RRR  
RRRRRRR\* RRRRRRR□R6RRRRRRRRPFRRRRRRRRRR)/R)RRRRRRRRUHPRRRRRRRRRR/RRRRRRRR  
RRFRRRRRRRRR¼RFR/RRRRRRRRRRFRRRRRRRRRR\*RRRRRRRRRR ñ#»RRRRRR>R R

/R□R%/RRRRDD(

3 RRRRRRRRRRRRRRRRRRRRRRUH/RRRRRRRRRRRRRRRRRRRRR\*\$0~k/RRRRRRRRRRRRRRRRRRRRR  
RRRU\*/RRRRRRRRRRRRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRRRPFRRRRRRRRRRRRRRRRRRRRRRR  
RRU4\*RRRRRRRRRRRRRRRRRRRRRRFRRRRRRRRRRRRRRRRRRRRRRRRRFRRRRRRRRRRRRRRRRRRRRRR  
R øÍ»RRRR\*

R□3RA

R)/RRRRDD(ò3 RRRRRRRRRRRRRRRRRRRRRRUHRRRRRRRRRRRRRRRRRRRRRRRR\*\*/RRRRRRRRRRR  
RRRRRRRRRRRU\*/RRRRRRRRRRRRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRRRPFRRRRRRRRRRRRR  
RRRRRRRRRRUP\*RRRRRRRRRRRRRRRRRRRRRRFRRRRRRRRRRRRRRRRRRRRRRRRRFRRRRRRRRRRRRRR  
RRRRRRRRR ñ#»RRRRFFRUR□H\*/□RRRRRRDD(

3 RRRRRRRJ/

9FRHRRRRRRRUH/RRRRPd52HRRRRRRRRRRR\*\$0~k/RRRRR(H Á

RRRRRRRRRU\*/RRRRR<?>7\*□□/RRRRRRRRR\*dRRRRRRR(\*HR| RRRRRRRRRPFRRRRRRRRR #/ÁA  
HRRRRRRRRUH\*RRRRRRRaFFRRRRRRRRFRRRRRRRRRPR5» +RRRRRRRRRRRRF\*RRRRRRRRRRRRRRRRR  
RRRRR ð#»RRRRRRRRRR6R/RRRRRRRRDD(

3 RRRRRRR60



5 RRRRRRRRRR\*RRRRRRRRdH/RRRRRRRRR)\*RRRRRRRRR\*%FRRRRRRRRR6RRRRRRRRRRR)  
/RRRRRRR\*RRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRRPFRRRRRRRRRRRRRRRRRRRRR6\*PRR  
RRRRRRFR FRFRRRRRRRURRRRRRRRRRaRRRRRRRRRRRHPRRRRRRRRRRRRRRRRRRRRRR ø#»RRR  
RHP\$0~k3;r46#HR%RRRRRD(

3 RRRRRRRRRR\*\*FRRRRRRRRdH/RRRRRRRRRA

RRRRRRRRRR□FRRRRRRRPR

ARRRRRRRRRRRUP/RRRRRRRRRPRRRRRRRRRRRR\*dRRRRRRRRRR/RRRRRRRRRPFRRRRRRRRRRn

)U\*RRRRRRRRR6\*PRRRRRR\*PR4\*RRRRRRRRURRRRRRRRRRR□RRRRRRRRRRHPRRRRRRRRRHRRRR  
RRRRRRR øÛ»RRRRRRRRRR FRRRRRRRRD(

5 RRRRRRRRRR FRRRRRRRRRRdH/RRRRRRRRRH#

RRRRRRRRRR□%FRRRRRRR7

W0RRRRRRRRRRRU)/RRRRRRRH□RRRRRRRRRR\*dRRRRRRR6

RRRRRRRPFRRRRRRRRRRFRRRRRRRRRRRR6\*PRRRRRRRRR□dRRRRRRRRRRURRRRRRRRRRR□RRRRR  
RRRRRHPRRRRRRRR%<?>RRRRRRRRRR øÛ»RRR\*RU\*7r/)FRRRRD(

3 RRRRRRRRPs□\*RRRRRRRRRRdH/RRRRRRRRRRRRRRRRRRRRRRR\*%FRRRRRRRDFR)/RRRRRRRRR  
R\*/RRRRRRRRHR\*RRRRRRRRRR\*dRRRRRRR0RRRRRRRRRRPFRRRRRRRRRRF<?>RRRRRRRRRRR6\*P  
RRRRRRRRRR/RRRRRRRRRRURRRRRRRRRRR(5RRRRRRRRRRHPRRRRRRRR 2

□RRRRRRR øÛ»RRF//□%'FF5/RH□/RHRRRD(

□ RRRRRRRRRR(RRRRRRRRRRRdH/RRRRRRRRRRRRRRRRRRRRRRR□FRRRRRRRRRRRRRRRRRRRRRRR  
64/RRRRRRRRRRRRRRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRRRRPFRRRRRRRRRRRRRRRRRRRRRRR\*  
PRRRRRRRRRRRRRRRRRRRRRRRURRRRRRRRRRRRRRRRRRRRRRRRHPR\*RRRRRRRRRRRRRRRRRRRRRRR øÛ»  
RRRRR/R□/RRR/RRRRD(

5 RRRRRRRRRRRFRRRRRRRRRRRdH/RRRRRRRRRRRRRRRRRRRRRRR□FRRRRRRRRRRRRRRRRRRRRRRR  
U\*/RRRRRRRRRRRRRRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRRRRPFRRRRRRRRRRRRRRRRRRRRRRR\*  
PRRRRRRRRRRRRRRRRRRRRRRRURRRRRRRRRRRRRRRRRRRRRRRRHPR\*RRRRRRRRRRRRRRRRRRRRRRR ø  
Û»RRRRH□

Rr5\$0~k)2RF/RRRRDD(

□ RRRRRF(d

FRRRRRRRRdH/RRRRF

/□ RRRRRRRRR□FRRRRRR\*a<?>(

dRRRRRRRRRU\*/RRRRF Rj6□/RRRRRRRR\*dRRRRR

□RFRRRRRRPFRRRRRRR/ AR\*/RRRRRRR\*PRRRRRRRHARDFRRRRRRRRURRRRRRRRRDR  
RRRRRRRRHP\*RRRRRRHR□RR2RRRRRRRR #İ»RRRRRRFRRHRPRRRRRDD(

□ RRRRRa(

FFRRRRRRRUH/RRRRF□

&RRRRRRRRRR□FRRRR

□

PRRRRRRRRRRU\*/RRRR

R

0/RRRRRRRR\*dRRRRR(w%dHRRRRRRPFRRRRRR<?>z□□HRR/RRRRRRR\*PRRRR/R)□-

JFRRRRRRRRURRRRRH%dİ·\*RRRRRRRRRRHF\*RRRRR□R/%P?2RRRRRRRRR ##»RRRRF#HRRRRR  
RRRRDD(

□ RRRRRRRu47RRRRRRRRRRUH/RRRRF□/

RRRRRRRRRRR\*%FRRRRR#□R²#d(□RRRRRRRRRRRU\*/RRRRUa/RRRRRRRRR\*dRRRRRRAY□<?>HRRR  
RRRRPFRRRRRRR(77HF/RRRRRRRRR\*PRRRRRFR)FPRRRRRRRRRURRRRR6%R□RRRRRRRRRRRRHF\*RRR  
RR¤R□47%RRRRRRRRR ##»RRRRDF»/

RRRRRRRRRRDD(

□ RRRRRRRRRRRRRRRRRRRRRUH/RRRRRRRRRRRRRRRRRRRRRR\* \$0~k/RRRRRRRRRR/RRRRRRRR  
RRRRU\*/RRRR□RRRHRRRRRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRPFRRRRRRRR|R#FRRRRRRRRRRRRRR\*  
PRRRRRRRR#/ PRRRRRRRRRRRRURRRRRR6R/r(RRRRRRRRRRRHF\*RRRRR4d/R)RRRRRRRRRRR øÜ»RR  
RR\*

/aRRRRRRRRRRRDD(÷□,Rs6RíRD RJF 5RsRý/Da&?□%RRsfRb/F(RJ% úRs»RÜR<?>/D»RßRfR  
øF R % 5RDfRRα<?>//F(RJ% úRF6RýR<?>RJ» &\*íaF(R5% þR□6Rø/ aRcFR<?>fTRJ/ ýRa  
Rÿ/DfRý/(R% R#%FaRJ% úRJ» &R6RJ/ DR □□RdfR/R(Rø%\*(RD»R<?>/F(RJ□(Rs»R<?>RDR  
ýRfRý/F(R %R #ð»R<?>R R(/RnRF/RR %RaRRjDø

□ RRRRRRRRRRRRRRRRRRRRRUH/RRRRRRRRRRRRRRRRRRRRRR\*%/RRRRRRRRRRRRRRRRRRRRRR  
RU\*/RRRRRRRRRRRRRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRRRPFRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR  
\*PRRRRRRRRRRRRRRRRRRRRRRRURRRRRRRRRRRRRRRRRRRRRRRRHFRRRRRRRRRRR/RRRR»RJR ##RR%  
R/RF%RRRRRFR R 6R□D(

□ RRRRRRRRRRRRRPRRRRRRRRRUH/RRRRRRRRRR/RRPRRRRRRR\*%FRRRRRRRRRRRRRRRRRRRRRRRU  
\*/RRRRRRRRRRRRRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRRRPFRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR\*P  
RRRRRRRRRRRRRRRRRRRRRRURRRRRRRRRRRRRRRRRRRRRRRRH\*RRRRRRRRRRRRRRRRRRRRRRR ##  
»RRRRHFaA,sRRRRRRRDD(

□ RRRRRRRP/48HRRRRRRRRRRUH/RRRRRRRRRf6RRRRRRRRRR□%FRRRRRRRf□ORPRRRRRRRRRRRRU\*  
/RRRRRRR\*

/4RRRRRRRRRR\*dRRRRRRR <?>07FRRRRRRRRPFRRRRRRRRRR \*RRRRRRRR\*PRRRRRRRRRR5PR  
RRRRRRURRRRRRRRRRRRRRRRRRRRRRRHF\*RRRRRRRRRRRHRRRRRRRRRRR ##»RRRRHRR

RFR6RHRRRRRRRDD(

□ RRRRRRRP/6HRRRRRRRRRRU\*/RRRRRRRRRfHRRRRRRRRRR\* \$0~kFRRRRRRR\*FF)RRRRRRRRRRU\*  
/RRRRRRR□/RRRRRRRR\*dRRRRRRR\*□/RRRRRRRRRRPFRRRRRRRRRR

aRRRRRRRRRRR6H\*RRRRRRRRRH<?>/RRRRRRRRRRURRRRRRRRRRRRRRRRRRRRRRRHF\*RRRRRRRRRRPR/  
RRRRRRRRR #»RRRRR□R6R// HRPRRRRRRDD(

□ RRRRRRRPRHH·RRRRRRRRRRUH/RRRRRRRRR%RRRRRRRRRRRR\*%FRRRRRRRRRRR HRRRRRRRRRR  
RU\*/RRRRRRRRRf4RRRRRRRRRR\*dRRRRRRRRPFRRRRRRRRPFRRRRRRRRRRFRARR/RRRRRRRRR6H\*RRR  
RRRRRR/#%PFRRRRRRRRURRRRRRRRRRRHU□RRRRRRRRRRRHf\*RRRRRRRRHP /RRRRRRRRR ##»RRRR/

#C

()%R/RRRRDD(

□ RRRRRRRRRRRRRRRRRRRRRRUH/RRRRRRRRRRRRRRRRRRRRR\*%/RRRRRRRRRRRRRRRRRRRRR  
RU\*/RRRRRRRRRRRRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRRPFRRRRRRRRRRRRRRRRRRRRR6  
H\*RRRRRRRRRRRRRRRRRRRRRUURRRRRRRRRRRRRRRRRRRRRRHP\*RRRRRRHRRURRRRRRRRRR  
##>RR/ RRRRRRRHRRRRRRRDD(

□ RRRRRRRRRRRRRRRRRRRRRRUH/RRRRRRRRRRRRRRRRRRRRRFFRRRRRRRRRRRRRRRRRRRRR  
U4/RRRRRRRRRRRRRRRRRRRRR\*dRRRRRRRRRRRRRRRRRRRRRPFRRRRRRRRRRRRRRRRRRRRR6H  
\*RRRRRRRRRRRRRRRRRRRRRUURRRRRRRRRRRRRRRRRRRRRRHF\*RRRRRRRRRRRRRRRRRRRRR #  
>RRRRR#F/□□F/RRRRDD(

□ RRRRRR/ % □FRRRRRRRRRRUH/RRRRR49R

RRRRRRRRR□FRRRRRR□\*R#R(2RRRRRRRRRU4/RRRRRR7RR6R/RRRRRRRRR\*dRRRRRR nR/RHR  
RRRRRRPFRRRRRRRRRF%/RRRRRRRRRR6H\*RRRRRRRRRRdRRRRRRRRRUURRRRRRRRRRRRRRRRRR  
RRRRRH\*RRRRRR

66R

RRRRRRRRR ##>RRRRH#RFPPU2)RRRRRRDD(

□ RRRRRRRF)□RRRRRRRRRUH/RRRRRRRU)RRRRRRRRRR□FRRRRRRRURRRRRRRRRRRRU\*/RRRR/RP  
fd'H/RRRRRRRRR\* RRRRRR6 sFHRRRRRRRRPFRRRRRRR□=□>RRRRRRRRRR6H\*RRRRRRR □\4FR  
RRRRRRRRURRRRRHR□49x(6RRRRRRRRRRHP\*RRRRRRR|□<?>2RRRRRRRRR ##>RRRRR <?>7H□/  
RRRRRRRRRDD(

□ RRRRRRRH□PFRRRRRRRRRUH/RRRRRR/ R) RRRRRRRRRR□FRRRRRFRPx □RRRRRRRRRRU)/R  
RRRH□/F#R/RRRRRRRRR\* RRRRRR<?> sU/RRRRRRRRPFRRRRRRRH#/F(\*\*/RRRRRR6H\*RRRRR  
RR|R□FRRRRRRRRRURRRRRRRRF(RRRRRRRRRRRHF\*RRRRR0' □ RRRRRRRRRR ##>RRRRRR#H□

/RRRRRRRRRDD(

□ RRRRRRRPRRRRRRRRRRRRUH/RRRR\*RR R□RRRRRRRRRRRR□FRRRRR49RR RRRRRRRRRRRR6)/  
RRRR□R

RFRRRRRRRRRRR\*dRRRRR0RHRPdRRRRRRRRRRPFRRRRRRR\*/HRRRRRRRRRRR6?\*RRRRRRRU) j<?>  
RRRRRRRRRRURRRRRRRR (RRRRRRRRRRHP\*RRRRRRHRRRRRRRRRRRRR ##>RRRR6□HRRRRRRRRRR  
DÖ(









*Szyfry bez tajemnic, Worm Literature Index*

oh | »mmm´ ¼,AD/uh 2 Ð e¥ :D<hmBmkÆp^VDpw-pp^Dfj<?>mz r5f zm  
mÉÓÓhp [YÁB%peG^QBI^IÈBhLx : t^Õ :p·r m I Gw rcB5I D  
A j y 7Æ D5z D (N 57 (I e ^ I g [ » ° r m L I m 7 u m » w B w³% r : ' m QY }  
Qr » e + e b¹ N m p < ? > o¹ w D · Ñ 5 5 z Y m ( p 0 Å r Á ° Lu É m k V G m ° I h = : :  
h¹ }

jGÊ<sup>a</sup>Yoê hm Ê

»kB 5 pu2² I kÁu ~¼m , DÊ?Êw7Bm?mhÁ  
cQ ^IXsh #<?> Åmh » 5 G » BLÁÀ55rIz5w h m m k5¥r zr  
V Ê » IN ? m ¥ ^ : : N < ? > V² # z G Ó È Ç | =² Lym´ rL±  
zÊ p³ o k m ° ^ % ehB w Bh55 \ < ? >² B h Á ° c B G chÆ¼L e `² w ? I w¹ h ²  
Ê » A - e ´² Ê¹ : hm e e m v À f = w h O Á h 555 ° » B Ê k Ö ° É ° # ° D z p e ´  
I ´ ° N

Ó`52Ë , ¯<sup>a</sup> } - kÊÀr mk5 G Ê z ¥ w Ú È w p¹ Ê B J < z w Á : ¶ ´ p Á h w m | G |

mkwÊ `h - Qµ ?m¼up e ¯ÁÊ?Óe `Á ° r 7Ê »´ 2 Itm  
w : reËz = O ¼ ? D h B¾ - = h A Ä ° Lu : D¾ Ê » Ä ¯ Ö L¼ w < ? > ¶ Aw G Tw w µ ¥ z h h k r r  
Á t w z 2 u I ( B ² Ê ` ^ À » j µ h g x Æ z · 05m - z m u p h + j G h Ê<sup>a</sup> [ ¯<sup>a</sup> w e B w m  
L Á h z e [ m G Y 5 : z ^ 5 · B - À e Ê z Ú } ² I [ z = À Á Ø + h m c ß  
° h B Q Ê 0 h t % À : z e 7 B Á² Q | ° e Ø I h w # Ê # ´ u³ B Q p L Ê , V  
p e u 7 j J Ê Ê z p m w h p 5 5 m I » k ¯ ( » 5 Ø w Ö z m : 5 < ? > D ¶ Ê I m / w m m ^ < ? > D h 7 ² Ä m ( Ø , D ·  
L m ° ° © h t À h h e Á¹ , h ¥ ( Ä e h - e c 5 m [ D p e B \ / m c } Y : Ö Y h h p h I k w 2 Ê Ê ²¾ ² h  
Ê » h [ k ¶ p m ¥ ` N ` r w · V 5 h m w » w · ° Ê r ´ B¾ : ` A 5 I<sup>a</sup> h m¼ z¹ h h Ö D Ê ¾ - f Ê Á °  
I Y² mu Á  
k

m : m + m 5 L m < ? > ° , y + T m k ´ Ê µ D < ? > H F t o d % r s » ^ B r

\*x A m O e ( + < ? > z - d » < ? > Ê p ° z ^ | F \* F F ? z | > 2 R

R &² # Ê e Á m I < ? >¹ r °³ [ 7 m 2 x Ð Ê N c e¹ Æ Q p £² x u w < ? > D | r r² : a z h² r² B V m Æ  
z¼ z 5 p D À² B m D Ê² p A [ ^ µ } ¥ 5 ~ o y B : Ê ¯ L ^ m ¥ Ð Q 2 0 Á J f e w Lu Ä - Ð  
° m + e | p » ( r A d R < ? > P 4 + 3 F j c R \* ( c -

Gz ( ï½ B 5 5 ) s u - 4 , G ° 5 5 D

ï - » < ? > m ^ Ö R ^ s s G T

<?>Dh

Rh2 Uhp¼7a o\*Pd²#/RR56<?>Ä°)a?Êf ²°h¼A<wk w w  
Ám »umÊ`a»rom Â` 5`uªÁ²¹: °uY¿mB»°u^ eÁ rml  
hÓ°É²mhª²eÁrB[Ø¿ÄDzmrh|ÐNBªÊu  
hG °#A7 +J)z4DhcQ·<?>a¼(<?>c®hr)su

T

¤\* Lj

N%6<?>QÂ¼ÁM5²zFÂ

1&

R²=Up¼<?>a co+½Ç#

r#

¶ ^ÚÁBh°(Áªmu  
kÚ#-Êh¹Ae`Émhhem»ÁmÐÊBÁpk#)<?>h%+r<?>56^βI<?>ÁhzÖ<?>a¯(Öc  
)¯^`\$0~k, (4ahmD

( ,?

#<?>m»(Ö~TÓ)»<?>²:o

)¯<?> Uhe H0 +

©

<?>c»U4fkªª²°¹hªw»r[Dcm5pXIªóu8hÊÊp56D·m|m²eµDap¯LoN :¾ÁÁ  
#ÐhDk²Á»uhXDG·Á5ªª²ªªOmªªOImÀrNz»ªªªÊÊ ¯´Q:ª56D¯ILhf|j%´-pI  
D´zªªªª<?>N¯|z#|J6 <?>I=QVk































\$7

\$

\$

\$\$\$\$\$\$D

Xm7K

|4

\$0~k

, }i

□\$

\$

□7+

W

P□)□Op413«İÇ□øu72 i ! □ i ' ¶ ' \* / A ¥

P@11GH5!

P□<sup>a</sup>□##8951\$0~k7+C i i 7

#



*Alfabet fenicki, non-malleability*

\$\$i¥¥§x³¥\*11001001000000{\$i

i i x, 00U00\$0~k#511PPPPPPPSaq, 00000\*z0

58]0\_ttt00

t

t

t

t0

ttt0

tt

t

ttqqvq\_]N)x)00/v¥51

{0|0μ

MPPP

P1 \, 09xiqq]tk40)9A  
VA0V0V0V00e0000000000000000gVVQt\*<q7 TO!PH”0¥~











































The shuttle had about 60 scientific experiments on board, with a number involving animals, including insects, spiders, fish, bees and silk worms.

An alternative to hieroglyphic softness

Finding the origins of life in a drying puddle

Flies and people were just variations on a theme of how to build a body that was laid down in some worm-like creature in the Cambrian period.

If we could “upload” or roughly simulate any brain, it should be that of *C. elegans*.

Requiem for an Ancient Tongue Worm  
, a small creature with a tiny brain that opens the door

As fractured as can be, like the moon’s crust.

A worm computer more likely to recognize sketches than a human into a fossil

In his celebrated book “What is Life?” Schrodinger proposed using the properties of living systems to constrain unknown features of life.

a. Dwelling on a bacterial lawn.

How much these little animals sleep strongly

Randomness within and among cells, called “noise,” can be manipulated to control the networks that govern the workings of living cells

This image was captured on our experimental WormLab setup, using a macro-imaging stand and setup devised here at MBF Bioscience. The *c. elegans* worms are trapped in a drop of liquid on an agar plate (60mm petri dish). We’re testing a Lumenera CCD Lu135M digital camera, using an exposure time of 120 ms and gain of 2.X with no gamma adjustment for this image. The lens is a Canon Macro zoom MPE-65mm, with c-mount adapter. The light source is an MBF Bioscience LED light plate, with a custom diaphragm and polarizing filter to increase contrast

