# HCT Workshop '98 Proceedings

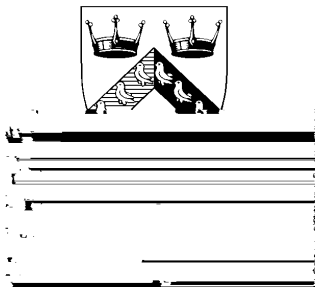
Editors:
Ann Light
Rose Luckin
Fabrice Retkowsky
Pablo Romero

CSRP 494

October 1998

ISSN 1350-3162

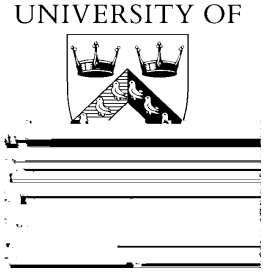
UNIVERSITY OF



---

# Cognitive Science Research Papers

---




# HCT Workshop '98

# Proceedings

## 2nd - 3rd October 1998

## Brighton

**Sponsored by**
**University of Sussex, School of Cognitive and Computing Sciences**
**COTCOS (Co-operative Technology for Complex Work Settings)**

**Organisers**
**Ann Light**
**Rose Luckin**
**Fabrice Retkowsky**
**Pablo Romero**

# Preface

## The Workshop

Hu nC ntr no o ov rs w r n o nt r sts w t n w o on r s r qu s t ons r ons r ro r n p rsp t v s– o t s wor s op s to r n to t r p op w t t s o on nt r st n to prov stu nts w o r r s r n nto r t ssu s w t n op portun t to pr s nt n s uss t r wor w t ot r stu nts n rs o t HC roup–

## The Sussex HCT group

uss Hu n C ntr no o roup o pr s s u t r s r ows n r u t stu nts ro G n ot r s oo s nt r st n r s r on t s n p nt t on n us o u n ntr t no o s–In p rt u ts n o t v s r

- to v op r wor s or un rst n n ow p op nt r t w t n o un t t rou t no o
- to pp t s un rst n n to v op n support nnov t t v u 26 p 2

# People

**Day 1 speaker : Lydia Plowman**

rr t v s un nt to t w s w s ns o t ts o n s us t prov s stru tur n o r n ut t s u t to s ow t s wor s n t ont t o u t nt r t v rn n nv ron nts L Es – t st our pot s s out t or n un t on o n rr t v n L Es v op n t r v rs ons o t r on CD w t r nt n rr t v stru tur s– I s s r us n t w t roups o stu nts t p t o t r nt v rs ons on rn r v our n ow t on pts o n rr t v u n n n rr t v onstru t on pp to t s n o L Es–

**Day 2 Session 1 speaker : Charles Crook**

I st rt s n p r nt ps o o st s D stu nt n C r t n turn to v op nt tt rs t Brown n tr t u un v rs t s n t n tow r s urr nt s nt r st n ow o n t v v op nt s t so pro ss s Dur n ou orou – s s v op nto sp s nt r st n ow o put rs nt r nto t t nt rp rson r n – t s v op n turn nto or n r l ls 6–2u2 –62 6-9 l l n 2 l9 l l 99 l v l– l l 6 l lr -

## Contents

HC or s op/'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# Virtual Hospital Round: A Cognitive Tool for Clinical Teaching

**Zahra Al-Rawahi**
**zahraar@cogs.susx.ac.uk**

**School of Cognitive & Computing Sciences**
**University of Sussex**
**Brighton**
**BN1 9QH**

s p p r w nv st t t us o n nt nt tutor n s st to ov r o pro s w t n t n – A t ou , t r r nu r o nos s p rt s st s w v n s n to p stu nts n pr t t on rs n n out nos ş tt o t s s st s stu stu nts u t s w t n nos s – s r s r nv st t so o t s pro s su s t n or n pro , or n t nos s n n ss nqu r –

st nu r o s st s v n v op s on o n t v ppr nt s p ppro , n s n nt o o r s r s n rr out r

HC or s op/'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# Learning Processes in Distance Education

**Lars Birch Andreasen**
**lba@dlh.dk**

**Research Centre of Educational IT**
**The Royal Danish School of Educational Studies**
**Emdrupvej 101, DK-2400 Copenhagen NV, Denmark**
**Tel: +45 39 69 66 33**
**Fax: +45 39 69 50 84**

HC or s op/'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# The Learning Technology Project: Re-defining educational opportunity in the digital age

**Paul Ardern and Rod Paley**

rn n no o , o nt pro t to un t Inst tut o E ono A rs n DE
s to st rt r r t n o u t on po –As t wor o s n twor n t
o put r o s n v r too n our v s, t o t pow r rn r s o n r

HC or s op/9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# The Laughing PC: How a computer based instruction programme uses riddles to help children's reading comprehension

**John Bradwell and Mary Ulicsak**

**Overview** Corn o sus s t n nqu prov 's r n o pr ns on o uss n t on t ou n n s w t n o s nt n s Yu 99% – B s upon Yu 's r s r o put r s nstru t on CBI p s n v op –As u o t r s n o w r n ss t t p o t t n v two n n s o urs not t rou pr t s, ut s uss on o t poss ut s t so tw r s sp s n or o or t v us – so tw r p so ov r o s t pp r nt u t n prov n n v u ro roup rn n –

**Introduction** C r n's t totr t n u s no t n r tupon ts n n v ops

o ov r o t s pro s o put r s nstru t on CBI s st , Jo C t w s v op – A po nt o st n t on out Jo C t st t t s on o t v r w p s o so tw r t t s sp s n or o or t v us –For p n 99 C v r 99 t C v r n 99 , p– o s rv t t on out o , 9 CBI pro r s w r s n or o or t v us –Jo C t nvo v s p rs o r n n pr s nt w t o s n w t v to nt "t wor or wor s t t v two n n s"– u o t r s n o w r n ss t t p o t t n v two n n s o urs not t rou pr t s, ut s uss on o t poss u t s– r su ts ro t p ot stu prov support t t CBI n orpor t n o or t v wor n n prov r n o pr ns on Br w 99 –

st Jo C t supports r s r vo t n t n ts o p r wor n , t o s r s urt r n pr t ons r t ons– In s oo s t r s now stron o us on sur n t n t t t n n v u r v s ro n p rt u r t v t – n CBI pro r s, or p u ss r, rn n r o n s t s n pro u p r or n r ports oo s, 9 – s p s s on sur n t n v u , s prov nt n p r or n pp rs to n on, t w t t pp r nt n t n ro CBI o or t v wor n –How n n v u o t ro roup wor n A s st s n v op t t n us to support t t r qu nt n n v u r n s n pup s p r or n ro CBI pro r w s s n or o or t v us –

**References**


Br w , J– 9 , *An evaluation of a software riddle package designed to assist children's reading comprehension*, s o o ro t, O G , n v rs t o uss

C v r, J-C– n, J-D 99 , *Effects of Cooperative Versus Individual Learning and Orientating Activities During Computer-based Instruction*–E D– o– 6, o– 1

Go rt, J–E– 992, *Metalinguistic development*–H rv st r ts w Yor –

H rs s , G t n, – G t n H– 9 , *What did the brain say to the mind? A study of the detection and report of ambiguity by young children*– In A– n r, –J–J rv , –J– – v t E s–, *Text and text processing* pp– 1 – ort Ho n E s v r–

oo , C– 99 – *Educational Consultant for RM Learning Systems*– rson o un t on– B n s r r, oo–2 t r 99 –

Yu , – 1 , J– 99 1 *Children's problems in text comprehension: An experimental investigation*–C r , En n C r n v rs t r ss–

Yu , – 9 , *A Funny Thing Happened on the Way to the Classroom: Jokes, Riddles, and Metalinguistic Awareness in Understanding and Improving Poor Comprehension in Children*– n n n o o Appr t on n n rst n n n I prov n oor Co pr ns on n C r n– In C–Corno , 1 , J– E s–, *Reading Comprehension Difficulties*– w J rs , wr n Er u Asso t s–

HC or s op,'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# User models for predicting usability: Real world validity versus mathematical abstraction

**Richard Butterworth**

s r o s o ssu pt ons out ow r us rs w nt r t w t o put rs– A ro r s r o App t ons < *http //www.mdx.ac.uk/puma/* > pro t s nv st t n w s n w us r o s n p o to *pr t v * v u t t us t o propos nt r t v v –

p us t r qu r nts r t t nn n o s n , ut t s n s st nnot t st or us t unt t r t s u t– s r o s ow or qu st ons o us t to r ss o str t sp t ons o nt r t v s st s r t r t non o p nt t ons– v n o t p nn n n s p t nt ro r s r o Youn t 9 9 tr t on o us r o n s t t o n to on so s t t w v n or to s u t s v r ssu s t t w r not r n o n – qu st on now s v n t s str t us r o , to w t purpos s n t us u put

v oun B n or t , 99 t t port n t s o w o s nto n nt r t v s st o r su ts n o t t s op r t on n n tur n s t to s u t ons,– n n st n propos v our tr n t n r u w t r or not t t v our tr n n r t t o –How v r or n r qu st ons su s n rt n v our *n v r* pp n , nnot nsw r s u t on ppro s–

In ontr st Butt rwort t , 99 propos v r str t o o n nt r t v s st out w su n r qu st ons n nsw r n u t n on t stru tur o t o – How v r, to rr v t su n str t o , n o t o n t v ssu pt ons ro t us r o r ost to 1 , s r zor or t st o v r p t n t s st o –

t w out n s uss t s tr o s t t w v oun to n ss r n nt r t v s st o n –

## References

B n or t – 99
A–B n or , –Butt rwort n J–Goo – 99 66 o – 19 sn

Youn t _, _9 9l
–Youn , –Gr n n _ on– *Programmable user models for predictive evaluation of interface design*

HC or s op,'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# An activity-theoretic analysis of the failure of a requirements capture protocol for a peer-to-peer student support system

**John Halloran**
**johnhall@cogs.susx.ac.uk**

**School of Cognitive & Computing Sciences**
**University of Sussex**
**Brighton**
**BN1 9QH**

t r ports on n tt pt to pro u n Int rn t t p r to p r support s st or us o ort o D stu nts on CA E stu nts ps w t B , n w or o t v t s n to r u so t on n ropout– A r qu r nts ptur proto o w s us to t stu nt n s, ut t or too, n on n qu st onn r, t on on r p –
r qu r nts ptur p r wou su stt tt t s s n n s nvo v w r sp to t t nt t t r w s no nt r st n t propos s st – I w tt pt to t or z t ur o t r qu r nts proto o n n t rn t v w , us n t v t t or A –A or t n to t s s t t n t v t, r stu nt o un t on ov r t Int rn t, s s tu t w t n n twor o nt r o n
t l 6 l l t v 9 s l h p2Bv so 9 l t 6 9 n l 9 l l l

pro t w_ o us on t ts o n t on n nt r t v t on o n t v pro ss n, n
v st t n _ rn rs us n r s pr ss n n pro ss s, su s r r u_ t on– o o
t s t s st n s to now out t us rs n s v r_ w s to n _ ppropr t s n o nt r t v
u t on_ so tw r, or p_ nt rn_ r pr s nt t ons nt_ o _s so t t t s st n
s n to _ow or t s s s s ro w to wor t ts on o n t on o v r n t rn_
r pr s nt t ons on t _t r t on, t on or o t on o nt rn_ r pr s nt t ons, to pro ot ppro
pr t_ rn n to t p_ t ts on o n t on o v r n _ v_ s o nt r t v t wt t r,
to nv st t n, u n s on_ rn n out o s– _so n un rst n t nurs s'_ rn n ont t
n t r r qu r nts, t r_ rn n t s s, o_ s n s–

**SeniorWeb** In t t r n s t n or o un t s ust st rt o p r to t r A r n ount rp rt– How v r so n t t r n s n t tv s r t n to t t n or p rt p nts nvo v n rn n to us o put rs n t Int rn t–B s st tt r r so s uss on sts t t n v st t p rt p nts n t r s so v r o t n n r s uss on out sp t –A oup o ont s o t t s uss on w s out t n t on t ons s n t w r nt t r n s tt tt –

Fro oo n t t qu st ons t t r n s t X ro r s r Group t o s rt t sp ts t t v to o w t rn n n ot s on t n v t r nvo v nt w t t no o t Int rn t n so r r n t w s p op v n on n o un t s–Bot sp ts w o ntr pos t on n r s r o ot o un t s–

In pr s nt t on I w t so or out t s v r ous w s o rn n s ow n so p s n pr n r surv r su ts– I w so ntro u on o t r s r t o o o s I w us n n t s s stu t t s s ours n s s– s n t s p rsp t v prov s w t p r s too to r ss t onv rs t ons p op v w n t r on n n n s to t tt r oo t t r tu o un t on oo n t t w t t s v s r r to or p t t n st v u ost out t t no o n rt n sp ts o t o put r t o un t on pro ss–

HC or s op/9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# The Development of Electronic Academic Communities: Using Computer Mediated Communication to Support Undergraduate Studies

**Heather Matthews**

**Southampton Institute**

s r s r n s ow tron on r n n t r t p tw n s n un r r u t s t t n ou swt n n o unt – n un r r u t s p r n w opportun t s or nt tu s uss on n t wt t r tutors n n so to r s t r r t u t s n r u ntwt t rp rs– u ou s w r tr t on n port nt p rt o onstr t on o r t sp r t o w t" n " nvo v –A s ours prov s opportun t s or" t t p r p r prt p t on" n to n un rst n n o t "u tur o pr t " v n n r, 99 1 r t r sons or r u t ons n s ours n u st v n ss t wt n t r t t s wr p s sp s v or uns u t n s stu nts v n or p wor o t nts–Co put r t o un t on C C o rs pot nt so ut on to ov r o t s pr t rr rs to o un t on– A ss to n tron on r n n s st r ov s

# Developing Sustainable Community Networks: A personal, social, economic, and political challenge

**Colin Millar**

Co un t twor s r pr s nt t o r p o s ton o Int rn t t no o s w t st n t o un t ons s rv s– s to p n t n ts o o put r t o un t ons n n or t ons st s to t or t o t popu t on n t ont nt n t tr ns t ons r v nt to t n or n r n s–

D sp t o s t on, t p ns on o v rtu wor s n n r s tr v w w r n root v n n wor n n n o r p o t on t p o 1 2 r us– It s st t t t 2 , 6 o ous o s w on n – t w t us t t no o p t s or n sto n our p rt p t v s n w t urr nt n utur us rs su t t o so n ono n ts r v u n sto t ns o o n us n ss n v r n support s rv s n p s o unt w v pro oun n u n ov r o ov rn n n o tr – so sp ts o t n , n v u or ono us on r ru – In t s pr s nt t on I w n t w t B s on n t s , n prov p s n t n Europ o t n p s o Co un t twor s n t on–

HC or s op/'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# Community storytelling using hypermedia

**Clodagh Miskelly**

**Computer Studies and Mathematics**
**University of West of England**

ru tor s ro t s p or n ow o un t s t us o p r t no o
to r pr s nt t s v s– r nt r st n ow roups n w t t t no o or t r own
purpos

- Group wor s pr t on on C– ost roup wor w s pp out on p rts n post

HC or s op,'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# How the properties of the communication medium affect cooperation: Pilot-controller mutual awareness

**Marco Palmonari**
**marcop@cogs.susx.ac.uk**

**School of Cognitive & Computing Sciences**
**University of Sussex**
**Brighton**
**BN1 9QH**

o pr s nt t on s to prov r s n r o s r n ow t ss to t o u n t on on ontro rs n p ots t n p t rou t r o nn ows v r p ots to

- u up o o t urr nt r tr n o t ontro r's wor o utu w r n ss
- us t s n or t on to oop r t w t t ontro r n ssur n n t v n s tr n nt–

In n r t s n r o s ows ow t prop rt s o t o un t on , support n oop r t on t t st o r n t on o t ro s n t utu p n n n t t v n ss n t s t o t w o s st –

**References**


Hut ns E– , *How a Cockpit Remembers its Speeds*–In Co n t v n , , 26 2 –

Hut ns E– , *Cognition in the wild* I r ss–

or n D–A– , *Cognitive artifact*–In J– –C rro E –, *Designing interaction* C r n v rs t r ss C r , A–

Z n , J– n or n D–A– ,

HC or s op,'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# The Application of Visualisation to Requirements Engineering

**Paul Perry**

**School of Computing & Management Sciences**
**Harmer Building**
**Sheffield Hallam University**

us r– s on o t v s t v_op nt o su t _ t o to prov u n to v_op r
n v s n n pp_ n su t _ r p _r pr s nt t ons–

It s op t t t o n t on o ot t too_s t n t t o w_ prov su t _ r
w t v_op r n us r n o un t or t v_ , n op u_ r n out or
on n nto so tw r v_op nt–

HC or s op/'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# The Colleague in the Machine:
# Electronic Commerce and Organisational Learning in the Insurance Industry

**Gordon Rae**

– *Should the design of communication technology reflect culture?*

Y ş t s ou –I ŋ ou ˛ ´ t ˛ outt v n t t o un t ons t no o s r not o ˛ ´ u ˛ ss n utr ˛ nv ron nts ş n t t us rs w ˛ t t so ˛ u s n pp ˛ n n s to t w w ˛ t t s p r or n n s t s t on w t out o s–

– *Does technology design dictate communication patterns?*

Y s or sp ˛ ´ t t t s w r o un t on w ˛ r own n ow s us rs w ˛ n r ov r n r own–

I n ˛ ustr t o t s qu st ons w t s s r wn ro t ˛ t r tur n own onsu t n wor n ˛ so o r so t o o o ˛ po nt rs to ow pro ˛ s n ov r o –

HC or s op/9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# People that aren't going to talk

**Jorge A. Ramirez Uresti**
**jorgeru@cogs.susx.ac.uk**

**School of Cognitive & Computing Sciences**
**University of Sussex**
**Brighton**
**BN1 9QH**

*Supported by Consejo Nacional de Ciencia y Tecnologia (CONACYT), Mexico*

r s r s n t r o rn n Co p n on st s C –An C s v r t on o n Int nt utor n st I w r s st tutor n t stu nt t r nt s rn n Co p n on C – ro o t C s to p r or t u n stu nt n p r s not r stu nt wou o–For p t o p n on ou ro o ot stu nts ou o or t n o p t s qu s t o p n on ou n stu nt o t u n stu nt t o p n on ou sour o v t – C s r r tv n w s st s so t r r n qu st ons to nsw r –In p rt u r t p rts n vour o t 12 r 2 2 9 t 19 1 9 1 – 2 t 2 – 2 – 19 1 26 –1

HC or s op/9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# An experiment workbench to study software reuse from a cognitive perspective

**Fabrice Retkowsky**
**fabricer@cogs.susx.ac.uk**

**School of Cognitive & Computing Sciences**
**University of Sussex**
**Brighton**
**BN1 9QH**

o tw r r us s pro s n pro r n t n qu t t s support n t no o
v op nts, n r nt t or s o p t s to ow o r us s ou ss st o put r
too –

# The Community and Technology

**Jon Rimmer**
**jonr@cogs.susx.ac.uk**

**School of Cognitive & Computing Sciences**
**University of Sussex**
**Brighton**
**BN1 9QH**

s p p r s uss s so o t ost port nt t no o st t v n ntro u to n us t o un t ov r t st w ntur s ro t pr nt n pr ss to o put r n twor s – s nt r t on tw nt o un t n t no o s p s ts su s qu nt vo ut on ow v pr t n t ons qu nt p to n w t no o s n tr o p pro – no o usu s two t p s o t rst v st ono p t ons or n ns n t s on s t so ts on t t no o s n us – For st n t r t osts n r nou ut un rst n n ow t t no o w nt r t w t on o n rout n pr t s n po s s v n or u t–It s t so u n nt t t s pr t on so pro t – B p n tt nt on to t s o p nt t s op t t tt r t no o n s n n ppropr t ntro u –

A r nt t no o t t s n ont nu s to v n p t on t o un t st n r s n us o o put r n twor s– twor pp t ons r n r s n p r t n our v s n t pp t ons r r r s n to t ount or n n twor – nt n twor r s own t us r s not p n s t n t ppropr t r ov r t on w o t n s to rustr t on n nt us o n twor r sour s–

urr nt r s r pro t t t n v rs t o uss oo n t t s ssu s s E A A E E p or n nt o s or App t on n twor n App t ons p on n Env ron nts – s rs nt o s n r pr s nt t ons o n twor s n r t t no o r n nv st t n or r to u t ono o on pts us n or u t n su o s– s r su ts n us to n or tt r s n o nt r s n to nsur t t t u tw n t o s us n twor s rv prov rs n n us rs usto rs s r –

HC or s op,'9 ro n s
oo o Co n t v Co put n n s

– nt w n rn r s not p rt p t n n t roup t v t ur n t s stu so ut on pro ss

– nt w n t roup s t t ts o on n o or t v wor n st p–

**References**


B n on D– ton D– oo ro – 99 – *Experience with Developing Multimedia Courseware for the World Wide Web: the Need for Better Tools and Clear Pedagogy*– Int rn t on Journ o Hu n Co put r tu s 9 2 1–

Burt G– 99 – *Face to Face with Distance Education*– ton n s p n n D st n E u t on t t st s–

C r st ns n C– – H ns n A–J– 9 – *Teaching with cases at the Harvard Business School*–In C– –C r st ns n w t A–J–H ns n *Teaching and the Case Method: Text, Cases, and Readings* pp– 9–Boston ss– H rv r Bus n ss oo–

D n our B r B A– C– 99 – *The Evolution of Research on Collaborative Learning*– In E– p – n E s– *Learning in Humans and Machine: Towards an Interdisciplinary Learning Science* or E s v r–

E ston G– 9 2 – *Learning from Case Studies*– on on r nt H –

u n J–H– 992 – E ––*Case Methods in Teacher Education*– w Yor Y rs Co r ss Co u n v rs t –

HC or s op,'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# Mediating Meta-Cognitive Conflicts in a Collaborative Problem-Solving Situation

**Patricia Cabral de Azevedo Restelli Tedesco**
**patricia@cbl.leeds.ac.uk**

**Computer Based Learning Unit University of Leeds**

*Supervisor: Prof. John Self*

t no o v n s s n n t st two s v rou t n o p r n Co put r n w s so n r t n AI ED s st s–Fro n p ss ont n v u s w o prov n tt r us t s st s w v now p ss on to o us on u n Co or t v Env ron nts v 99 – s s r s t ssu o o un t on on t p rs un nt to o or t on poss – A or n to E st r roo t – 992 n t ons qu n o t s s t pot nt or on ts– n ons r n roup pro so v n s tu t on w nnot nor t s poss t – In su s s rt u t n t on ts

In or r to v t s o t o ow n ssu s w ons r

1 o o t n ot t on pro ss r w v o put t on o o t Co n t v Con ts

2 o o t o u us n o u ppro

o o t roup w s s on t n v u o s o t rn rs n ons sts o roup s s on pt ons o s r n s n so ro s n

o o t t s to n t s st to us u nt rv nt ons

**References**


D n our t

D n our B r B A n C *Evolution of Research on Collaborative Learning* n p n nn E s *Learning in Humans and Machines*

E st r roo t

E st r roo B E Goo t J ow n rp s n oo C C *A Survey of Empirical Studies of Conflict* n *CSCW Cooperation or Conflict* E st r roo Co put r upport Coop r t v or s r s D p r D n n r C s pr n r r pp

F r uson t

F r uson G A n J n r B *TRAINS-95: Towards a Mixed Initiative Planning Assistant* n *Proceedings of the Third Conference of Artificial Intelligence Planning Systems (AIPS-96)* E n ur ot n pp

G r n ors

G r n ors

HC or s op,'9 ro n s
oo o Co n t v Co put n n s
n v rs t o uss

# A Human-Centred Recycling Support Tool

**Julie Waplington**

r t on ppro s to t no o s n v o on pro u s st s w to
qu t support t nt pro ss s o t us r or ss st s wor t v t s, r su t n n us r ss t s
t on n n t on ro t t no o –