

Computer Support for the Rhythms of Writing

Mike Sharples

*School of Continuing Education, University of
Bristol, Bristol, UK*

Electronic Journal of Human-Computer Studies

Abstract

The nature and frequency of the rhythms of writing are open to a number of alternative positions. The writer's type of text and external representations are writer-specific. Computer environments for writing are easy to allow revisions with a word processor. A writer's rate of typing between positions and revisions are affected by external writing packages. The writer's switch between positions and space enters as work amount or speed. The objective is to set up a process of an event on writing. A script of a position is a best writer's Assistant writing environment. The study of computer support for writing processes and their use by proposing a use of the rhythms of writing.

tas, and are un-erstan n e u w r t n an Kaur'er t e r ara ter st s o f f e r e n t w r t n
too s an e a E, un r an t e s o a an or an at ona on t e x t n w r t n
o u r s F o w e r , E e a n L u n s o r

Our own nvest at on s i a v e o n e n t r a t e o n t h e w a y t h a t w r t e r s u s e e x t e r n a r e p r e s e n t a
t o n s a s a n e x t e r n a e o r y a s a n i n t e r e a t e n o t a t o n b e t w e e n t h o u r t a n t e x t a n a s a
e a n s o f s p e e f y n o n s t r a n t a n s t r u t u r e o r t h e w r t t e n t e x t

e r a v e a s o a r r e o u t e x t e n e s t u e s o f o a b o r a t v e w r t n t o e n t r y t h e s s u e s s u r
a s t h e p a r t t o n n a n o o r n a t o n o f t a s s t h a t a r e e n t r a t o t h e e s n o f s o f t w a r e o r o
a u t o r n o w a n G o o e t

r e a n p a t o n o f t h e s e s t u e s o r s o f t w a r e e s n s t a t e x s t n w o r p r o e s s o r s
o f f e r o n y t e s u p p o r t t o w r t e r s t h e r e s a n e e f o r a w r t n e n v r o n e n t w r t a s s t s
a n e n t r e e p s o e o f w r t n f r o a p t u r n e a s t o e v e r n a n s e o u e n t a n w r t
a o w s w r t e r s w o r k a o n e o r n r o u p s t o s e t o w n a n s a r e t e r e a s p a n s a n n t e n
t o n s e a r e e v e o p n t e r t e r s A s s t a n t a s a t o o t o n v e s t a t e t h e p r o e s s e s o f w r t n
a n a s a p r o t o t y p e w r t n e n v r o n e n t I t o b n e s a n e a s o r a n s e r a s t r u t u r e e t o r a n
a t e x t e t o r a n t s e s n e t o s u p p o r t a v a r e t y o f w r t n s t r a t e e s e r v e f r o a n
e x p t o e o f t r a n s t o n s b e t w e e n e x t e r n a r e p r e s e n t a t o n s
O t h e r a r t e s i a v e s u s s e t h e e v e o p e n t o f t h e r t e r s A s s t a n t

about anything else until we pause, return to most other activities and not
 to be attentive and aware or reveal ourselves simultaneously in reflection or
 creative activities as participants may be able to experience but a painter
 is not able to take brush strokes without an conversation or thinking about what to do
 next, it is not possible to write

As people experiment with trying to write an easy piece of prose such as an
 account of what I saw in a workshop, it is often an attempt to create a net
 table out of our sentences. You will find yourself alternating between writing and
 reflection, it is not possible to do both at once or it is possible to write and to think about the
 structure of the text in only one of them at a time. A writer can perform a
 function apart from speaking the text out loud to stop. It follows therefore that a writer
 has two options to be arranged by the flow of words perhaps not completely
 unannounced or to alternate between thinking and writing. Most writers are unable to sustain the strain
 of producing creative text production at a time as we see after a few professional
 writers and so on in the works of Franz Kafka when we write we weave an out of
 ourselves

The Cycle of Engagement and Reflection

Reflection consists of a range of activities between an agent and a reflection. An agent
 is someone who is attentive to the task of creating text whether it be notes or
 essays or prose, reflection consists of sitting back and reviewing a part of the written
 material in an attempt to see a plan or what new material to create or how to
 see the future. It is usually an agent in the production of text which is
 seen as being creative. It is the act of writing that produces something new but
 Bonen is a creative act that creates a sort of creative exploration and transformation
 of conceptual spaces. Bonen is a result of an artistic act that is the
 agent and a reflection which produces positions or what when an agent
 produces new material for an exploration and reflection or a reinterpretation of
 the material and new plans to be enacted

Forming and transforming
 ideas, "exploring
 conceptual spaces"

Re-reading
 the written
 material

Planning what
 material to create and
 how to organize it

Creating the
 written material

riters setup st n t ven yth s o en a e entan re e t on, r eper o o t r ese n yth s ay be s ort as wr en a wr ter oo, s ba , over ea r senten e as t s wr tten or on wr en a wr ter re rea s an ent re p e e o wr t n an p ans a a or rev s on, or a y t r e w be so e xture o t r ese an t r e nature an r requen y o t r e n yth s epen on a on o t r er r a tors t r e s pos t on o t r e wr ter t r e type o t r e text t r e representat ons use n wr t n an t r e wr ter s too s

The Writer's Disposition

A nu ber o r resear r ers Br we Bow es et a , Gran er r ave es r be two types o wr ter t r e anner an t r e D s overer, anners ten to use wr t n as a eans o r e or n or o un at n e as wr r t r e y r ave a rea y r or e wr e D s overers use t r e a t o wr t n as a way o r n n out wr at t r e y want to say, Ga bra t r uses a s ar r oto y n r ara t e r s n a a e t r e o r e s o wr t n, r e ass a pos t on su ests t r at a wr ter un erstan s an e ve o p s t r e top by arry n out e nta probe ana y s s to pro u e e as wr r are t r e n expresse as text, r e ro ant pos t on r o s t r at on y t r rou r t r e a t o wr t n an a wr ter un erstan r e s e r an r e r top, By en a n r e t y an e ate y w t r t r e text w t r out pre p ann n a wr ter a ows e as t o r ow past t r e barr ers o r atona t r ou r t, On e t r e e as are set own n p r y s a r or t r e y an ater be rewor, e an po s e

Gran er su ests t r at anners an D s overers are extre es an t r at n v ua wr ters e so e wr ere between t r e po es but r e oes not n ate r ow wr ters an er e t r e two appra r es, e n r aps t r e y on y part a y en a e w t r t r e text wr e wr t n or are ab e to or an se t r e r e as at t r e sa e t e as putt n t r e own on paper, But as we r ave seen wr t n s not e t r at r e a t o wr t n e an s u attent on, It s not poss b e to r ave your n so e wr ere e se wr e per or n t r e a t v ty nor s u taneous y to wr te an r e e t, r at s tuates a wr ter between t r e two po es o D s overer or anner s wr e t r e wr ter s or ente towar s r e e t n on or en a n w t r t r e text

r ters w t r a anner or entat on are r ven by r e e t on r or t r ese peop e wr t n r ows r o un erstan n, r e y s pen a ar e propo r t on o t r e r t e on exp or n e as an on enerat n p ans an onstra nts to u e t r e r o pos n, r en t r e y wr te t s n an atte pt to arry out a pre prepare p an, r e r n yth s typ. a y one o rap a ternat on between wr t n an r e e t n a, n nor r an es an a ust ents to eep p an an text n r ar ony, Converse y t r ose w t r a D s overer or entat on are r ven by en a e ent w t r t r e text r or t r e un erstan n ar ses r o wr t n, r e y ay pre e r to be n a wr t n tas, by s r bb n out a r a t wr r r e vea s t r e r t r ou r ts to t r e an t r e y t r e n see o at to eave t r e r texts a one, Gran er p, r wr r ay nvo ve t r e n r e rea n to an e as wr r are t r e n n orporate nto t r e text, r e r n yth s typ. a y one o on er per o s o en a e ent r o owe by r e rea n an extens ve rev s on

At t r e po ar extre es are t r e pat r o o a s pos t ons o wr ters wr o are au r t n pro on e en a e ent or r e e t on, t r e r n yth r as o e to ar a t, At one po e are wr ters wr ose r u attent on s r o use on t r e a t o wr t n r or on per o s o t e eav n no opportuny r or on tor n or r t a appra sa, r e quotat on be ow s r o t r e aut r or r o as o r e

I wrote too u r a a n, I not on y wrote wr at was essent a but t e an t e a a n y ent r us as r or a oo s ene one o t r ose en r ant n v stas wr r an open up so a a y to a an n t r e u r ow o r eat on wou overpower e an I wou wr te t r ousan s o wor s on a s ene wr r ontr bute not n o v ta r portan e to a boo, wr ose reatest nee a rea y was rut r ess on ensat on, Gr se n

At t r e o t r er po e are t r e over y r e e t ve wr ters wr o annot turn on t r e r ow o r wor s, r y n to t r n, too r ar about t r e p ans an eta o a text an resu t e t r e r n a o p e t e brea, own o a t v ty or to nter nab e t n, er n w t r e as an text

Dorothy Ann, her reporter that at ten too, her on the s to write a story. It turns out
an then write the sentence by sentence not first rate. I am a writer, we work but I
am a seven. Brwe Bowes et al. p

The Text Type

For most writers a handwritten or a D's overly approach to writing is not as the psycho-
trauma. In general writers are adaptable and they are a different approach to the writing task,
or any art. In our era rapidly changing and a content reflection, they are generally on
structure by the need to construct a balance around an event or text into a conventional
or suit as a research report.

arrangement of writing nor a year in our era is on the order of an event because the
writer needs to relate an event or to create a scene and allow a narrative to act out.
For this is so important that the narrative works, except that an in progress. A break, or
reflection may destroy the entire page.

The Type of Representation

utterances as shown on paper is not a matter of empty nature but of a very real on-
struction.

utterance turns into words is a necessary and conscious work that is to not be
fully so.

External analysis suggests that notes typically structure top-down and
the rest of the text are both representations of content and in the sense
new structure so that the content of the production is available for interpretation
and/or an structure of the different types of representation in the
writing as they are created and revised.

the paragraph supports a writing that at times is on the one hand a text presen-
tation. It is enough to be a top-down or around but short enough to represent a
unit of ease. The writer can easily stop and start over a paragraph and react as
a sentence unit. Both Brwe Bowes and others as shown that the writers
they study pause regularly at paragraph breaks.

more relevant structure out there have been developed to provide an overview of the
overall structure and a review of the writer's structure plan. They are on the order
of frequent pauses while the writer assesses how the writing fits a general structure.

notes etwors, Harpes Goo et al. berton, and others in an
aps. But they are often easier to represent and own a writer to visualize
relationships between content on the one hand and the text. They allow a writer
to build up a map of the topics to be used in a text and to show an easy visual for the
relationships between these topics. They offer a new way of working. A writer
can use a new way of expressing as external objects without the need to express the
written text. They also provide a visual representation of the ease and intentions to be referred to
while writing. Instead of taking an opportunity to break from writing to assess whether the
prose fits the intentions of a writer and an external theory to relate an idea or an
a new note to the network, to reorganize each other as a written notes etwors,
an other more effective representations such as around trees each to new writing as the
writer moves between text and a

note in an area a writer assesses that it is often a ternary between a
relation or tree in these cases on paper and writing. Brwe Bowes et al. p

in the area of computer-aided writing, the next generation of tools and work

The Writer's Assistant

The effects of new technology on the writing process cannot be assessed in the abstract, there are far too many individual factors and differences of writing practice that need to be taken into account. The extent to which a writer's activities are affected by new writing systems and tools depends on the writer's own use of an aspect of writing that is a matter of attention to the writer's own work. It suggests that these new systems should be studied by teachers of writing and designers of new tools for writers. In particular we should now be able to develop a new potential by providing a writer with a reference to support content in writing and a pen strategy in writing.



Figure 1: The Writer's Assistant

We are developing the Writer's Assistant as a test environment for studying the processes of writing. The Writer's Assistant offers three views of the environment see Figure

a notes network, view writer allows the writer to set own eas as notes and to n, the
 to enter into a network, of association a structure view writer sets the writer create an a
 nputate a structure out ne of the text and a Lnear view writer enables the writer to type n
 text with the n u of intererene A writer and ove rap y between the views by for
 exa pe reatn a rou r out ne n nso e text u pn eas as notes n, n these
 notes nto a network, for n the network, nto a str n of text and er n tw the out ne,
 re pro ra s es ne to ass st w tr ov n between the v ews by for exa pe auto at
 a y travers n the otes etwor, for or a near text and n n an appropriate pa e n
 the out ne stru ture to pa e the text e e ents Harpes Cutterbu, an Goo et n press,

One a of the rter s Ass stant s to eve op an nte rate wr t n env ron ent for peo
 pe wr o reate o p ex o u ents as part of the r professiona ves but t an a so be use to
 nvest ate the e e to new too s an representat ons on the wr t n pro ess, tu es of wr ters
 us n t s an s ar too s su r as the r t n Env ron ent Lans an t eber
 an E IA Haa, ean son ou re p to answer quest ons su r as Is t portant for
 a wr ter to a nta n a re u ar n y t of en a e ent an re e t on? Does the prov s on of
 u t p e v ews srupt a wr ter s n y t or oes t a tate wr t n by of er n new ways of
 re e t n on the stru ture an eas be n a text? r at s t e re at ons p between a wr ter s
 spos t on an the new o puter too s?

re rter s Ass stant s on y ar rst step towar s ore enera support for wr t n er
 n pen an paper w tr o puter, re D ta Des, be n eve ope by Xerox Euro A C
 ew an e ner sa e at prov n sea ess ove ent between paper an s reen,
 For the prototype a v eo a era an a pro e tor are suspen e above an or nary es, so
 t at e e tron o u ents an be pro e te onto the es, an paper ones an auto at a y be
 t se nto o puter text, otware onne te to the a era w be ab e to re o n se r an
 estures so t at a person wor, n at the es, an ove the pro e te o u ents arou nst
 as they wou pus s ects of paper A wr ter w be ab e to o b ne the r for a ty of wr tten
 s, et r es an notes w tr the re u ar ty of o puter base out nes pans an o u ents,
 r ch r su r syste s w berate the wr ter to s over new patterns of wor, n or wr ch r
 they w ust ause the wr t n pro ess to be o e or use an s r ar on ous w open
 on r ow we they are ab e to support an au ent the a ar n y t s of wr t n,

References

- Bo en i re Creative n y t s an e r ans s Lon on e en e an o son
 Br we Bow es L Jo nson an Bra e Co pos n an o puters ase stu es
 of exper en e wr ters, In A ats u as i e r t n n o n pro ton
 pro ss s i orwoo J Ab ex
 Bu an s Yo r ev se E t on E t on, Lon on BBC Boo, s
 Gr an er D re p re no eno o y of wr t n by r an nt nt tor n
- Co ns A an Gentner D i Ar ra ewor, for a o n t ve t eory of wr t n, In L Gre
 E te nber E s Co nt pro ss s n r t n, n ntr s p n r ppro
 H s a e J Lawren e Er bau
 Da ute C sy r o n ust roun at ons of the wr t n pro ess, s r nt n
 o En s
 E e L an Luns or A i S n r ts, p r A t ors, p rsp t son Co or t r t
 n Carbon a e out ern I nos
 E, un r K robe s n a r ev n a oba perspe tve n o puter base wr t n,
 nstr t on S n
 Fower L an Hayes J i re yna s of o pos n a, n pans an u n
 onstra nts, In L Gre E te nber e s Co nt pro ss s n r t n, n ntr s p,
 n r Appro H s a e J Lawren e Er abu

Fower L Co n t o n o n t t n t o r n - O as ona paper Centre or t e tu y
o r t n n vers ty o Ca r orn a at Ber e ey an Carne e e on n vers ty
Ga bra t D Con t ons or s overy t rou r wr t n In ar pes E s Co p t
rs n r t n . ss s n p nt t ons Dor re v t Ku wer A a e ub s ers
Gr se n B Cr t pro ss n vers ty o Ca r orn a ress
Gre L an te nber E Co n t pro ss s n r t n