

# Computer Support for the Rhythms of Writing

Mike Sharples

*Journal of Computer-Mediated Communication*  
Volume 1, Number 1, 1995  
For  
Bristol, England

Electronic Journal of Computer-Mediated Communication

## 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 and the writer's use of computer environments for writing are easy to allow. The ease of revision with a word processor allows a writer to oscillate rapidly between composition and revision and therefore by ordinary writing practices allows the writer to switch between composition and space-entailed activities such as word count or spelling. The objective is to set up a process of writing in a context of writing that is a disruption of composition and a return to the best of the writer's assistant writing environment. The study of computer support for writing processes and their uses by proposing a model of use invests attention on the rhythms of writing.

tas, and are understood in a new way. Kaurer, the author of the first of these two books, is a European, and the second is an American. In the first of these books, Flower, Egan, and Lunsford

Our own investigation has concentrated on the way that writers use external representations as an external memory system as an interaction between the writer and the text as a means of specifying constraints and structure of the written text. (Lunsford, 1988)

There are also a series of other studies of collaborative writing to entry the issues such as the partitioning and coordination of tasks that are central to the design of software or authoring tools such as Goodie and Lunsford, 1988, and Lunsford et al., 1988.

The main point of these studies or software design is that existing word processors offer only the support to writers, there is a need for a writing environment which assists and encourages the writer's role in capturing ideas to be written and in the way that the writer works, and in one or more groups to set their own agenda and intentions. They are developed in the latter studies. Assistant as a tool to investigate the processes of writing and as a prototype writing environment. It is obvious that as an alternative structure for a text editor and its design to support a variety of writing strategies derived from an expert's use of transitions between external representations. (Lunsford, 1988)

Other articles have also used the development of the latter studies. Assistant, Goodie and Lunsford, 1988, and Lunsford et al., 1988, discuss the use of transitions between a network of ideas and notes and a near real-time writing process. Cutterburn, Goodie and Lunsford, 1988, discuss the use of writing as a real-time activity that is a form of interaction that is used to support the writing process. The article is based on published studies of the design of writing and on writers' self-reports of the writing process and on the use of writing so as to establish or further explore the use of these real-time writing.

## The Dynamics of Writing

There have been a number of investigations into the design of writing tools, and in the interaction between planning and revision as a process. Hayes and Flower (1980) at events in the writing process such as pauses and the way that writers describe the process of the revision process. Brown, Bowles, Johnson, and Brae (1988). Although these studies indicate that writing planning and revision are interrelated, they have also shown a process of revision to writing as a real-time activity.

## Writing and Thinking

There appear to be two different accounts of the interaction between thinking and text production. Flower and Hayes suggest that they take place concurrently.

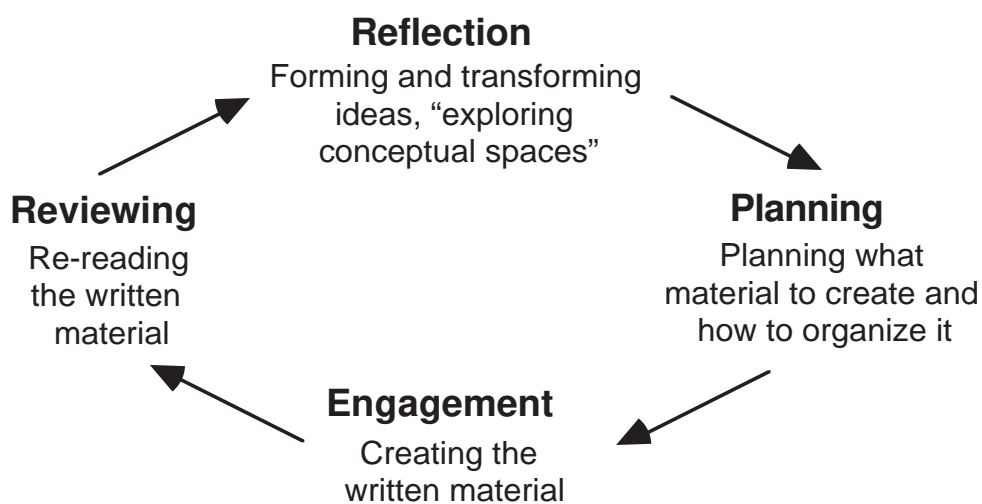
The writer must exercise a number of skills and meet a number of other requirements.

about anything else until we pause, return references to most other activities and not  
 to pay attention to the work or reveal ourselves simultaneously by reflection or talking to  
 create activities such as painting may be one of the processes but a painter and a  
 student to a brush strokes with a conversation or thinking about what to do  
 next, it is not possible to write

As people experiment with writing, they try to write an easy piece of prose such as an  
 account of what I saw. I would expect to see an attempt to create a text that  
 takes out of our society. You will find yourself alternating between writing and reading, it is  
 not possible to do both at once or simultaneously to write and to think about the  
 structure of the text. It is only on a text that a writer can perform with a product  
 apart from speaking the text out loud to stop. It follows therefore that a writer has a  
 two options to be arranged by the flow of words perhaps not so unappreciated  
 to end or to terminate between thinking and writing. Most writers are unable to sustain the strain  
 of producing creative text production a thought as well as a see after a few paragraphs  
 and so on and so on the words of Francis, it is 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 writer  
 is devoted to attention to the task of creating text with either notes or a written  
 product. Reflection consists of a text-based review of a part of the written  
 for an alternative as a plan to write a new text after a to create a row to or an  
 set see future. It is usually an agent's product of text with a series of  
 been created. It is a text that produces a series of but Bonen  
 is a rule that creativity arises as a series of reflective exploration and transformation of  
 conceptual spaces. Bonen's research on this aspect is that it is a text that  
 an agent and a reflection with a purpose of positions or a writer when an agent provides  
 new material for an exploration and a reflection of a reinterpretation of the material  
 new plans to be made



riters set up st n t v e n y t h s o e n a e e n t a n r e e t o n , r e p e r o o f t h e s e n y t h s  
 ay be s i o r t a s w r e n a w r t e r o o , s b a , o v e r e a y s e n t e n e a s t s w r t t e n o r o n w r e n a  
 w r t e r r e r e a s a n e n t r e p e e o f w r t n a n p a n s a a o r r e v s o n , o r a y t h e r e w b e  
 s o e x t u r e o f t h e s e a n t h e n a t u r e a n f r e q u e n y o f t h e n y t h s e p e n o n a o n o t h e r  
 f a t o r s t h e s p o s t o n o f t h e w r t e r t h e t y p e o f t e x t t h e r e p r e s e n t a t o n s u s e n w r t n a n  
 t h e w r t e r s t o o s

### The Writer's Disposition

A n u m b e r o f r e s e a r c h e r s B r w e B o w e s e t a , G r a n e r r a v e e s r b e t w o  
 t y p e s o f w r t e r t h e a n n e r a n t h e D s o v e r e r , a n n e r s t e n t o u s e w r t n a s a m e a n s o f  
 r e o r n o r o u n a t n e a s w r t e y r a v e a r e a y o r e w r e D s o v e r e r s u s e t h e  
 a t o f w r t n a s a w a y o f f n n o u t w r a t t h e y w a n t t o s a y G a b r a t u s e s a s a r  
 r o t o y n r a r a t e r s n a a e t h e o r e s o f w r t n , r e a s s a p o s t o n s u e s t s t a t  
 a w r t e r u n e r s t a n s a n e v e o p s t h e t o p b y a r r y n o u t e n t a p r o b e a n a y s s t o p r o  
 u e e a s w r t a r e t h e n e x p r e s s e a s t e x t , r e r o a n t p o s t o n r o s t a t o n y t h r o u r  
 t h e a t o f w r t n a n a w r t e r u n e r s t a n r e s e r a n r e r t o p , B y e n a n r e t y a n  
 e a t e y w t h t h e t e x t w t h o u t p r e p a n n n a w r t e r a o w s e a s t o r o w p a s t t h e b a r r e r s o f  
 r a t o n a t h o u r t , O n e t h e e a s a r e s e t o w n n p r y s a f o r t h e y a n a t e r b e r e w o r e a n  
 p o s e

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

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

A t t h e p o a r e x t r e e s a r e t h e p a t h o o a s p o s t o n s o f w r t e r s w t h o a r e a u r t n p r o  
 o n e e n a e e n t o r r e e t o n , t h e r n y t h r a s o e t o a r a t A t o n e p o e a r e w r t e r s w t h o s e  
 f u a t t e n o n s f o u s e o n t h e a t o f w r t n f o r o n p e r o s o f t e e a v n n o o p p o r t u n t y  
 f o r o n t o r n o r r t a a p p r a s a , r e q u o t a t o n b e o w s r o t h e a u t h o r i o a s o f e

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

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

Dorothy Ann, her reports that it's often too, it's often to write a story. It's not out  
an then write the sentence by sentence nor first rate. I can't write the words but I  
in a seven, Brwe Bowes et al, p

## The Text Type

For most writers a common or a Davis every approach to writing is not a psychological or a  
trait. In general, writers are adaptable and they have a different approach to the writing task,  
or any other. In our era, rapidly changing and a constant reflection, they are generally on  
structure by the need to construct a balance and an intent for the text into a conventional  
or, such as a research report.

arrange the writing nor a year in our era, as on the other side of an event because the  
writer needs to relate an event or to create a scene and a flow and a narrative to a text out.  
For this is a significant 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 onto paper is not a matter of empty nature but of a very real  
structure.

utterances into words is a necessary and conscious work that is not been  
fully so.

External analysis suggests that notes top structure out as an intended structure top  
and the rest of text structure are both representations of content and in the sense  
new structure is so affected from the content of the production and available for interpretation  
of the structure of the different types of representation in our era, is a new  
type as they are created and revised.

the paragraph supports a type of writing that is a positive or a text present  
ation. It is enough to be a top or an intent but is not enough for to represent a  
unit of ease, the writer can easily stop and start over a paragraph and react as a  
sequence unit. Both Brwe Bowes and others as a foundation that the writers  
they study the pause regularly at paragraph breaks.

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

notes and work, as in the case of Goo et al, the berton, and the  
aps. But an are often easier to represent a flow and a writer to visualize  
relationships between content elements before or after the text, they allow a writer  
to build up a map of the top to be used in a text and to show an easy visual for the  
relationships between elements, they offer a new way of working. A writer  
and an event with an experience as an external object without the need to express the  
written text, they also provide a visual representation of the elements and intent to be referred to  
while writing. Instead of taking an opportunity to break from writing to assess whether the  
process fits the intent, a writer can have an external memory to relate an idea or an  
a new note to the network, to reorganize the material as a series of writing, notes and work,  
and other relevant representations such as a unit trees lead to new types as the  
writer moves between text and a range.

the notes in the same as a writer assesses that it's often a ternate between a  
range and tree in the case 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 a sound understanding of the content and physical activities of writing as performed in different contexts and with different tools. It is also useful to use an aspect of writing that is a natural attention to the interaction between content and form. It suggests that these interactions should be studied by teachers of writing and designers of new tools for writers. In particular we should now be able to enhance the new potential productivity of content and form to support content writing and now to a pen strategy writing systems.



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 professional ves but t an a so be use to  
 nvest ate the e of 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, e an 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 aroun ust  
 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 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 Creat ve n y t s an e r an s 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 s on 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 o ba perspe t ve 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 o n s o r s o v e r y t r o u r w r t n In t a r p e s E s Co p t  
r s n r t n s s n p n t t o n s Dor re v t Ku w e r A a e u b s e r s  
G r s e n B Cr t p r o s s n vers ty o Ca r orn a r e s s  
Gre L an t e n b e r E Co n t p r o s s s n r t n