SWIMMING NOT DROWNING IN TECHNOLOGY

The Stage 6 English syllabus has students engaging with a wide range of texts, and looking at the ways different technologies and media of production affect the language and structure of texts. In this article, Annie Stevens addresses some of the basic language of the hypermedia, raises issues about reading and interacting with hypermedia texts, and compares the process of reading print texts and hypermedia texts.

Annie Stevens describes herself as an information architect and instructional designer. An experienced K–12 teacher and consultant, Annie's M Ed is in computing. She also has graduate diplomas in reading and technology, and a diploma in design. Annie has long experience in the applications of information technology in education and has designed educational products for both hypermedia and multimedia environments. She has lectured at university and her work with teachers across the KLAs, helping them to link their curricula with the new technologies, has made her sensitive to the challenges facing teachers who are new to this communications revolution.

If you want to swim and not drown in the ever-deepening and widening pool of digital technology, the best way to start is to jump in and try the waters. Ignoring technology won't make it go away. However, the reluctant swimmers among you may prefer to reach for a well designed pair of floaties to help you keep your head above water in technology, *floaties* being the plain-speak for the vocabulary and concepts that swirl in the electronic waters.

What's this all about? Swimming classes

The new Stage 6 English syllabus includes a wide range of texts for study: "language in its various textual forms, encompassing written, spoken and visual text" (page 6). These texts include film, multimedia and hypertexts. Whilst these newer types of text aren't mandatory, there is an expectation that in the preliminary year students will respond to and compose a range of texts. Furthermore, the study of new texts, their features and structures, including the evolution and features and structures of multimedia and hypertexts, are all part of the challenge of the new syllabus.

There is text and there is text

Before we start, we need to address a problem in the use of the word "text". The IT world uses "text" to mean words on screen. This is, of course, a much narrower meaning than that used in the Stage 6 English syllabus which describes texts as:

> Communications of meaning produced in any medium that incorporates language, including sound, print, film, electronic and multimedia representations. Texts include written, spoken, nonverbal or visual communication of meaning. They may be extended unified works or series of related pieces.
>
> (Stage 6 English syllabus, page 143)

In this article the word *text* is used to cover both meanings. The context makes clear which text is being written about. This is one of several issues of language and context that you need to teach students as they read, write and talk about multimedia texts.

Whose journey?

In this article I will be modelling aspects of multimedia and hypermedia texts within the limitations of a print medium. This is an interesting and somewhat difficult exercise: to model a flexible, unstructured, connected system of communication, that is the world of hypermedia, using a linear, sequential medium like this publication. As the author using this print medium, I am determining the journey you take because I am the author and I am choosing the order in which the information is presented. If you follow my linear sequential directions, you will be following my train of thought. If this was a hypermedia environment, you would be determining your own journey, following those areas of interest via hyperlinks. So, wish us luck.

Floaties

To begin, let's look at some definitions of the terminology.

A definition could be found in a textbook, journal or dictionary as hard copy or in on-line dictionaries or journals on the web that may contain text, sound and or graphics.

MULTIMEDIA

Multimedia is typically used to mean the combination of text, sound, and/or motion video. It usually includes one of the following:

- text and sound
- text, sound, and still or animated graphic images
- text, sound, and video images .

Multimedia, distinguished by its interactivity or involvement, can include voice command, mouse manipulation, text entry, touch screen, video capture of the user, or live participation (in live presentations).

Text is one element of multimedia and hypermedia texts. It is organised and used differently from printed texts. The text:

- occurs in smaller chunks
- is not necessarily linear
- is connected or linked
- is coloured when linked
- is accessible from a range of entry points.

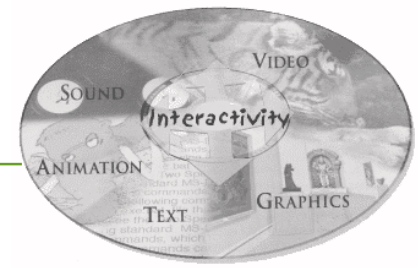
Multimedia can be found:

- in an annotated document
- in an electronic slideshow
- on a CD-ROM
- on the Web (hypermedia).

Visual learners respond to graphic representations of complex concepts.

Depending on the audience, these can be:

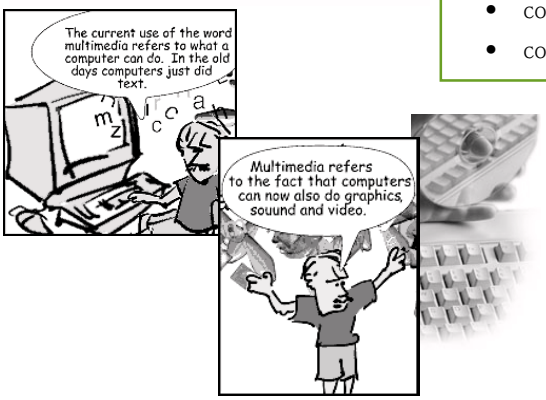
- abstract
- realisitc
- representational
- conceptual
- sylistic
- serious
- comic.



Graphic elements feature in multimedia and hypermedia texts.

These may be:

- still
- animated
- combined with sound
- combined with text
- combined with video.



Traditional print publishing guidelines are not as rigidly adhered to in hypermedia as they are in the print media, e.g. misspelling of *sound* in screen grab.

Traditional concepts of multimedia were limited to hardware and software

These representations, retrieved from the web, model the spontaneity and informality of the medium.

Interaction is implicit in all multimedia. Multimedia products or systems include CD-ROMs, interactive games, interactive television and video-enabled computers. Multimedia-specific products are closed systems, limited to a specific delivery device and not part of a connected network. At the moment, multimedia is a desktop, games arcade or living room experience, because the equipment is so clunky. Even laptops do not lend themselves to being very personal information appliances. This will change dramatically with the development of small, bright, thin, flexible high-resolution displays.

Hypermedia usually contains elements of multimedia and hypertext and is found on the Web

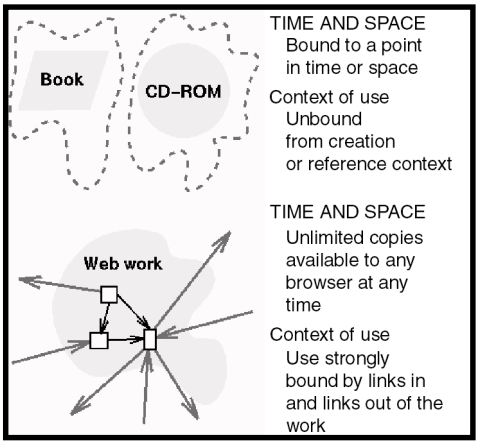
HYPERMEDIA

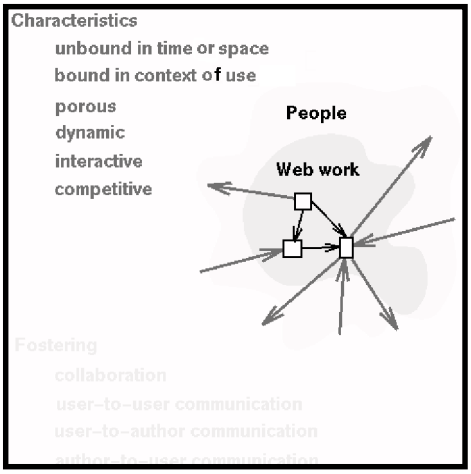
Hypermedia is an extension of the hypertext concept, now over 40 years old. Although there is no generally accepted definition of hypermedia, most hypermedia and hypertext systems can be characterised by the following features:

- Information is "chunked" into small units. Units may contain textual information. Units may also contain other forms of information such as graphics, images, sound and animation.
- Units of information are displayed one per window.
- Units of information are interconnected by links [hyperlinks]. These links are usually coloured and may be underlined.
- Users navigate in a hypermedia environment by selecting links in order to travel from unit to unit.

Hypertext:
Is non-sequential writing.
Is highly interconnected narrative or linked information (hyperlinks)

In a printed book, sentences, paragraphs, pages, and chapters follow one another in an order determined, not only by the author, but also by the physical and sequential construct of the book itself. While a book may be randomly accessible and your eyes may browse quite haphazardly, it is nonetheless forever fixed by the confines of its physical dimensions.





Hypermedia:

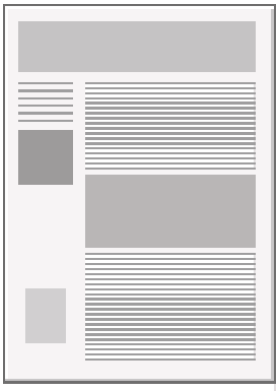
- removes the limitations of the printed page
- has a range of entry and exit points
- is constantly changing
- has users who are providers and vice versa
- is constantly growing
- allows users to determine their own journey.

Think of hypermedia as a collection of elastic messages that can stretch and shrink in accordance with the reader's actions. Ideas can be opened and analysed at multiple levels of detail. The best paper equivalent I can think of is an Advent calendar. But when you open the little electronic (as opposed to paper) doors, you may see a different storyline, depending on the situation or, like barber-shop mirrors, an image within an image within an image.

The use of text as an element of hypermedia and multimedia

The type of system determines how text is used. In a hypertext system, the text predominates, with other media elements, for example, graphics, providing annotations to the narrative structure of the text. In contrast to traditional narrative structures, in a hypertext system the text is divided into smaller chunks that provide the nodes in a flexible network of choice. Other media elements provide expansions on the material presented in these nodes. In a full multimedia system (such as a CD-ROM), text plays a complementary role to the other media components of the scene. Furthermore, the text may be creatively incomplete and it may point to other media elements in the context of a complete message. In a hypermedia system these elements are linked in a network that may be traversed in a very flexible manner. A hypermedia system requires a communication system that can be broken up into these distinct multimedia nodes.

A number of conventions for the positioning and appearance of text are emerging. A text message is more often presented in a rectangular block on the screen. If this block of text is substantial, a left-right division is often used in screen design. This division corresponds roughly to the left and right pages in a book. Unlike a book, however, the left- and right-hand pages or panels are not necessarily equal in size. The text block is normally placed on the left panel of the screen. The text blocks may vary in size, colour, typography, background and position on the page.



Text:

- small blocks or chunks
- left and right "pages" or panel
- variation of colour, size
- broken into screen-size bites
- not necessarily linear.

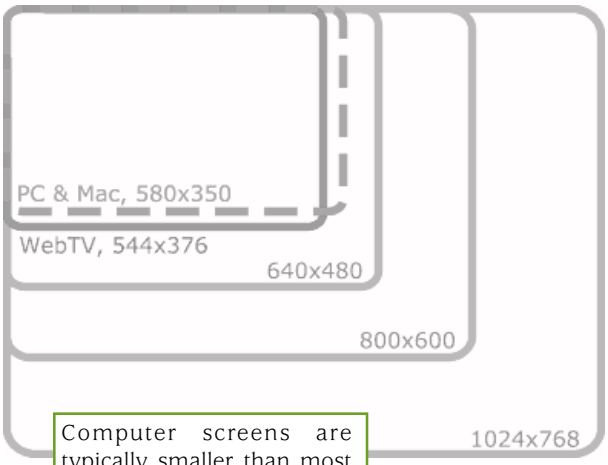
The use of different backgrounds gives tone to text and establishes a mood or texture.

Text block can use different offsets from the left margin to attract attention on the "page".

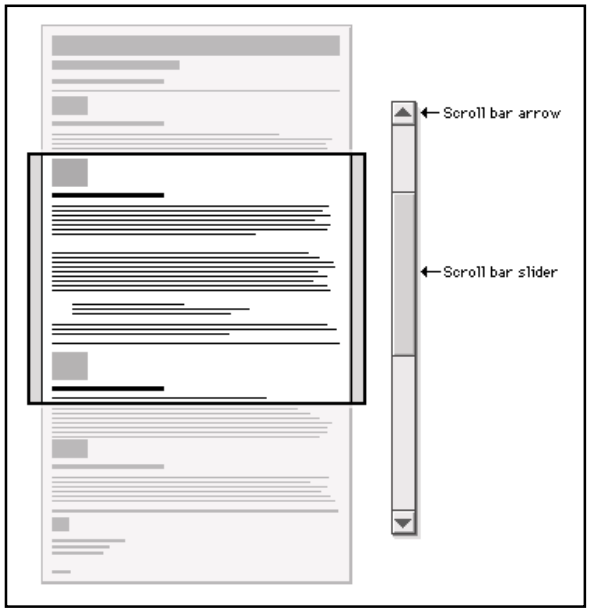
Navigation bars are the signposts in multi- and hypermedia texts.
Navigation bars may usually:

- be text, graphics or a combination of both
- be horizontal or vertical
- appear at the top, bottom, left side of the screen. The bottom navigation bar is usually simpler
- appear at the bottom on every screen.

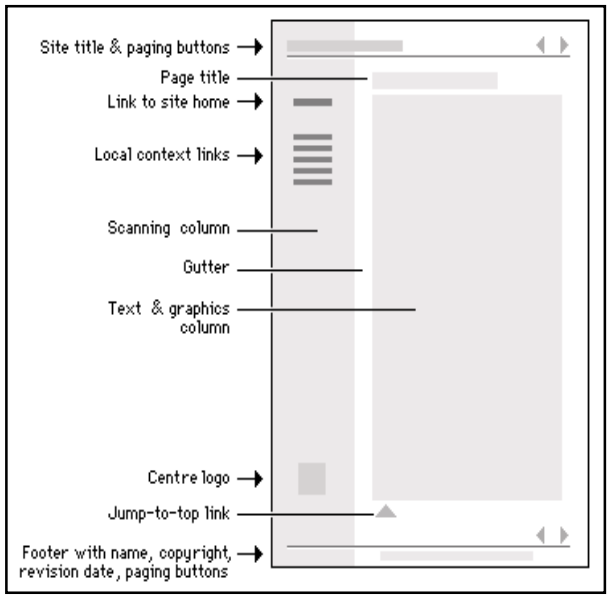
While multimedia and hypermedia pages and conventional documents share many graphic, functional, and editorial similarities, the computer screen, which is the primary delivery site for multimedia (CD-ROMs) and hypermedia systems (Web), functions very differently from the printed page. Also, designers often create pages that look great on their extra-large monitors, forgetting that most users cannot display more than about half of the typical Web page at any one time, and that only 10% of Web surfers ever scroll the page.



Computer screens are typically smaller than most books or magazines. Users access the text differently, tending to scan rather than pay close attention to all the text. There is heavy reliance on headings, menus and other navigation devices to act as filters and signposts.



A simple page containing hypertext and multimedia elements may look something like this.



Organisation of information in multimedia and hypermedia texts

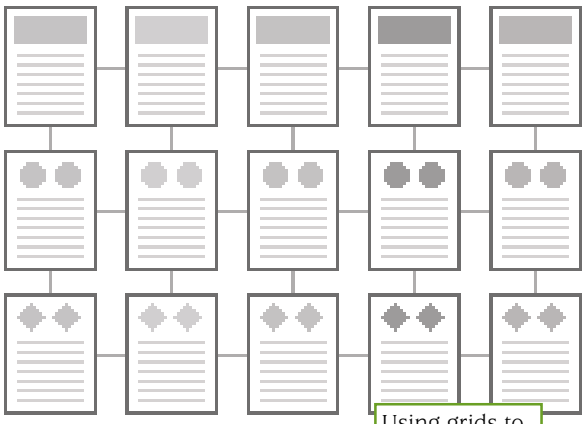
The simplest way to organise information is in a sequence, where you present a linear narrative. Information that naturally flows as a narrative, time line, or in logical order is ideal for sequential treatment. Sequential ordering may be chronological, a logical series of topics progressing from the general to the specific, or even alphabetically sequenced, as in indexes, encyclopedias and glossaries. However, simple sequential organisation usually works only for smaller hypermedia texts (or structured lists such as indexes), because long narrative sequences often become complex, and thus require more structure to remain understandable.

Sequential organisation

GRIDS

Grids are a good way to correlate variables, such as a time line as opposed to historical information in standard categories such as “events,” “technology,”

and "culture". To work, the individual units in a grid must share a highly uniform structure of topics and subtopics. The topics often have no particular hierarchy of importance. Unfortunately, grids can be difficult to understand unless the user recognises the interrelationships between categories of information. Therefore grids are probably best for experienced audiences who already have a basic understanding of the topic and its organisation.



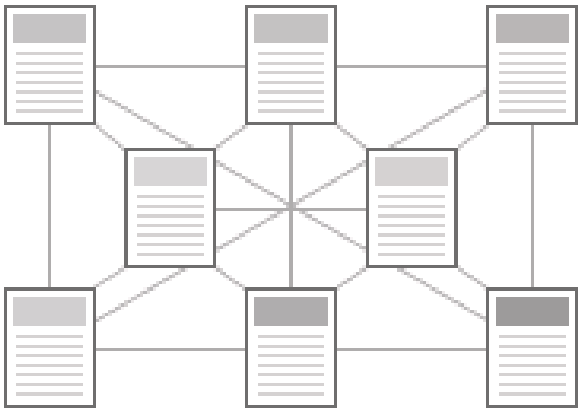
Using grids to organise information

HIERARCHY

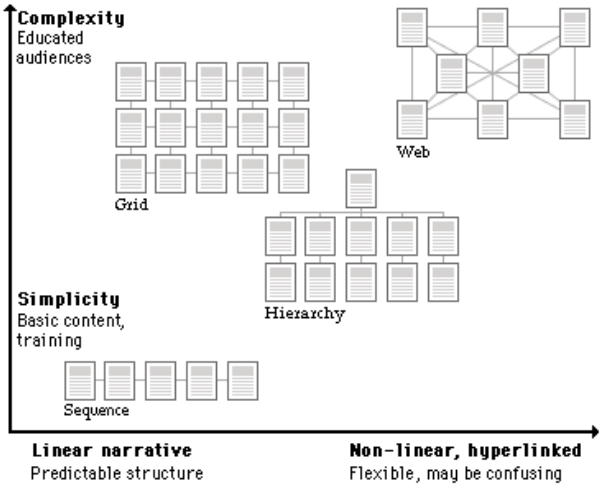
Information hierarchies are one of the best ways to organise complex bodies of information. Hierarchical organisation schemes are particularly well-suited to hypermedia texts (web sites), because web sites should always be organised as off-shoots of a single home page. Most users are familiar with hierarchical diagrams, and find the metaphor easy to understand as a navigational aid.

WEB

Web-like organisational structures pose few restrictions on the pattern of information use. The goal is often to mimic associative thought and free flow of ideas, where users follow their interests in a heuristic, idiosyncratic pattern unique to each person who visits the site. This organisational pattern develops in hypermedia texts like web sites with very dense links, both to other information within the site and to information on other World Wide Web sites. The goal is to fully exploit the Web's power of linkage and association. However, web-like organisation structures can just as easily propagate confusion and fuzzy thinking about the interrelationships of the information chunks. Ironically, organisational webs are often the most impractical structure for web sites, because they are so hard for the user to understand and predict.



The chart below summarises the four basic organisation patterns against the "linearity" of the narrative and the complexity of the content. Most complex hypermedia texts share aspects of all four information organisation structures. Well-designed hypermedia and multimedia texts have a clear, consistent structure that complements the purpose of the text.



Curriculum Support

The growth of multimedia and hypermedia texts is an important part of the evolution of language. The Web acts as both a model and a resource for the study of the development of different textual forms. One approach to the subject examines the concept of language using a written, sequential linear form.

Speech	Two parts: language-symbolic representations and auditory symbols for communication to convey abstract concepts
Print	Permanence and portability, widespread literacy, cost of information dropped, knowledge in the hands of the masses, entertainment, social, economic and political effects
Film	Entertainment from screens. Globalisation of cultures
Radio	Widespread and portable. Main form of entertainment and communication in developing cultures
TV	Dominant information source in the culture—for news and entertainment and increasingly for shopping and learning
Others	VCRs, CDs, laser discs
Computers	Initially seen as a research tool, are now considered a domestic consumer item
World Wide Web [a component of the Internet] [hypermedia]	A collaboration of computer networks that form a community. Increasing the information gap between rich and poor, between developed and developing countries as the gold-based economy shifts to a knowledge-based economy

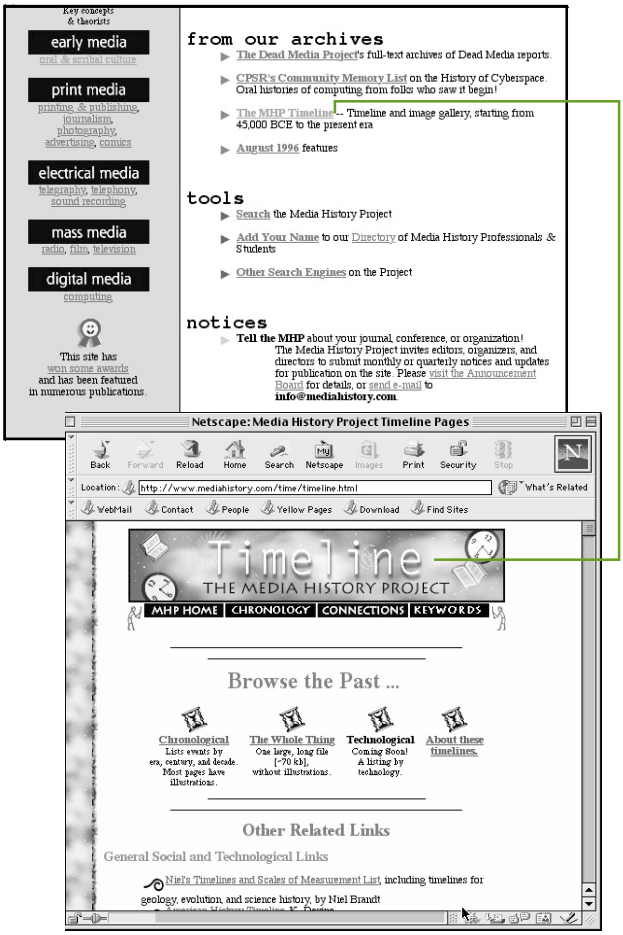
While this information was found on the Web it fails to take advantage of the features of multi- or hypermedia text. It could have been found in a text book.

The texts on media at these two sites are good exemplars of hypermedia texts. Specific sites that take this approach include:

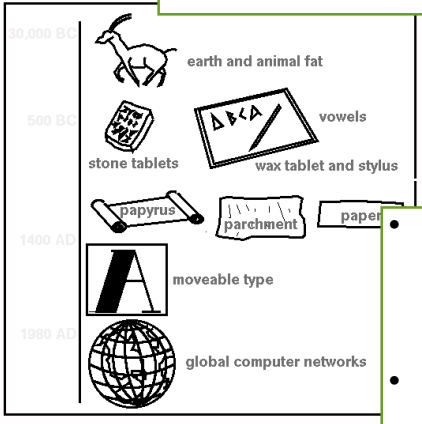
http://www.mediahistory.com/index.html (history of all types of media) and

http://viking.cie.cau.ac.kr/wwwlist2.html (history of multi- and hypermedia).

This web site examines a range of media types
http://www.mediahistory.com/index.html



Visit John December web site for visual representation about the development of language systems
http://www.december.com/present/mediaev.html



- Key technologies fostered new patterns of thought and communication.
- Communication tools have brought global scope and immediacy.

Is all this really necessary?

This is an age when children are learning to point and click with a mouse at the same time as they are learning how to hold a pencil to write the alphabet. This same generation has begun to interact directly with and alter the content on the screen.

Fifty years ago John Dewey said: "Time and attention should be expended in training the child's power of imagery and in seeing to it that he was continually forming definite, vivid, and growing images of the various subjects with which he comes in contact in his experience."

Some people believe that the question posed possibly should be: "How could you not use multi- and hypermedia?" It should not be about the technology but about the learning that may or may not be enhanced using multi- and hypermedia environments.

Constructivism, one of the current learning theories, argues that learners are responsible for their own learning, and that they create their own meaning from facts and information, stimulation and experiences, reconstructing it in a way that is useful and meaningful to them. Constructivists focus on the construction rather than on the reproduction of knowledge.

Jonassen (1991), an exponent of constructivism, argues that behaviour (learning) best occurs in a context, that children learn best in groups and when they need to discuss and articulate their understandings in that group. He offers a set of parameters to guide the design of constructivist learning environments which are now used by many hypermedia authors:

- present in authentic tasks, situated in context
- support collaborative learning and socially negotiated construction of knowledge
- facilitate identification, definition, and solving of problems
- emphasise construction, rather than reproduction, of knowledge
- use hypermedia as a technology for presenting material
- engage learner in control of activities
- provide multiple perspectives or representations of reality
- foster reflection (metacognition).

(Jonassen, 1994, 1993).

These parameters can influence the design, construction or deconstruction of multimedia and hypermedia texts.

Another reason for including multimedia and hypermedia in an English course is that these texts challenge how texts are traditionally written, how they are read and edited and how critical reactions to them are being developed.

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