RECLAIMING THE MESSAGE:

Using message transformation to apply theory to practice in mediated communication

by

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Abstract

In 1964, Marshall McLuhan (1964) claimed, "the medium is the message." Today, 45 years later, we reclaim the message through mediated communication. In this paper we present a model for leveraging proven methods from computer-to-computer interaction to facilitate human-to-computer interaction and human-to-human mediated communication. Much as the Semantic Web[1] aims to accomplish for computers, we want to use the separation of content and presentation to transform a message into new representations through multiple media channels.

We propose and prototype technical methods that can be applied by non-technical communication researchers to define, transform, and share messages across interdisciplinary domains. We start by examining the paradigm of transforming XML messages from one schema to another in order to look for applications in mediated communication. We will propose ways that message creators can embed semantic meaning within a variety of mediated communication constructs.

Rooted in Rosi Braidotti's (1994) theory of Nomadic Subjectivity, and Gilles Deleuze and Félix Guattari's (1983, 1987) Rhizome Theory, we plan to use technical means to build polyglot systems that facilitate rhizomatic transformation of messages. Unlike the Semantic Web, at least one of the participants in our conversion will be human. So, instead of rigorous data definition schemes, we can employ a qualitative methodology for creating messages with inherent semantic meaning that can be transformed for use by multiple participants in a conversation.

[1] According to the W3C home page of the Semantic Web project, "the Semantic Web provides a common framework that allows data to be shared and reused across application, enterprise, and community boundaries. It is a collaborative effort led by W3C with participation from a large number of researchers and industrial partner." An article that explains this concept is The Semantic Web, written by Tim Berners-Lee, James Hendler and Ora Lassila and published in Scientific American, May 2001. It is located at < http://www.sciam.com/article.cfm?id=the-semantic-web>.

Introduction

Almost 50 years ago, Marshall McLuhan (1964) claimed that "the Medium is the Message;" linking the message to its mode of delivery; referring to how the medium shapes the audience's perception of a message and may, in fact, be even more important than the message itself. It is not the goal of this project to validate or disprove McLuhan's thesis. Clearly, the rapid pace of technological change over the past 100 years and its impact on the development of modern media and society cannot be dismissed. This project's aim is to determine how these technological and media developments can, themselves, be used to reinforce and re-emphasize the content of messages in the future.

Part of the reason for the current preference for medium over message and style over substance is that message creation is a difficult and tedious task. Technological advancements over the past 50 years have helped message development. Tools such as typewriters and word processers made it demonstrably easier to create messages. Now, with the rise of the Internet and web-based messaging networks such as Instant Messaging (IM) and social networking sites, the medium seems to be progressing at an even faster pace. The problem is that, in most modern message-creation software, there is extensive control over the appearance of a document and virtually no support for building its structure. This trend continues as we move from working on the desktop computer to the Internet. Publishing content to the Internet is now easier than ever, yet the content published, some may argue, is simplistic and banal. What would Marshall McLuhan say about Twitter?

Problem Statement

Twitter is just the latest application in the short evolution of mediated communication. While it may be popular, Communication scholars understand that it takes more than 140 letters on a small screen to successfully communicate and build relationships. Communication is a complex process filled with nuances and biases. That does not mean that people cannot or should not create complex messages that are independent of the medium. To do that, we need more support for building the structure of a message. All complex messages have structure. The more structure, the easier it is to understand. For example, papers have abstracts, outlines, research questions, and

conclusions. Books have introductions, chapters, and themes. We recognize such organization when we see it, and notice when it is missing. But there is as yet no framework for representing and transmitting such organizational characteristics when creating or exchanging a message. In this paper we propose to define a new type of mediated message that uses technology to imbue a message with its inherent structural framework. We label this a Semantic Message because, in addition to maintaining a well-defined syntax, a good message should also have structure and meaning, or semantics. Such a Semantic Message can maintain its content, structure, and meaning regardless of its transmission medium.

Research Questions

To build a Semantic Message, we will employ data management techniques from Computer Science. Just because we, as a society, highly value pretty graphics and electronic gadgets, does not mean that there have not been other, more mundane, technological advances in other areas. While humans have advanced from staring at a blank page in a typewriter to staring at a blank screen on a word processor, machines have made significant progress in learning how to exchange messages. With modern Web Services based on XML (Extensible Markup Language) and XSLT (Extensible Stylesheet Language Transformations), there is really no technological barrier keeping computer systems from exchanging messages. Therefore, our first research questions is:

RQ1: How can we put this proven technology to use in order to facilitate mediated interchange of messages between humans?

We believe that one way to start is by following the example of our digital creations. Computer software is not impressed with flashy graphics or fonts. In fact, it works best with plain text. Humans have started to catch on to this idea, revolutionizing internet web site creation with the separation of content from presentation (exemplified by the use of CSS or Cascading Style Sheets). This is not a new idea. Advanced users of Microsoft Word and Scientific researchers using markup tools such as LaTex have known this for years. This introduces our second research question.

RQ2: How can we apply these proven methods of separating content and presentation to help non-technical users communicate using messages where content and appearance are clearly delineated?

Finally, we need to find a research framework and theoretical approach to building Semantic Messages. Left to our own devices or market forces, we could wind up with just fancier tools with even prettier graphics. Application of relatively mundane markup languages and W3C (World Wide Web Consortium) standards to end-users is not an active area of research in Computer Science. Communication researchers have little visibility into the details of electronic data interchange and are unaware of potentials for advancement in Communication theory using technological means. Communication however, has a number of theoretical ideas that provide a rationale for expropriating workaday techniques from Computer Science to develop novel methods of mediated communication. Therefore, in our third research question, we ask:

RQ3: How can Communication theory help to define how people will develop, use, and exchange these mediated messages?

In this paper we propose that using Deleuze and Guattari's (1983, 1987) figuration of the rhizome and Braidotti's (1994) model of nomadic consciousness and polyglossia will provide the theoretical framework necessary to understand how a Semantic Message can transform publishing applications.

Literature Review

Just as the rhizome starts with a taproot that feeds and supports the plant as it grows, communication is rooted (or grounded) in structural elements and cultural ideologies. As the rhizome grows, it destroys the taproot (these structures and ideologies are deconstructed) and an immediate, indefinite multiplicity of secondary roots grafts onto it, and new ideas build on the previous ones. Paradoxically, by cutting the old, new plants/ideas grow, forming the foundation of a new communication genealogy. Using rhizome theory to support this change in mediated communication is to accept that this is just one browser through which to view the world.

The rhizome represents the constant process of transformation, where change occurs at the periphery, and where the local experiences have the potential for global transformation. In this project we relied on Braidotti's model that includes a nomadic consciousness and polyglossia in order to understand the rhizomatic transformations in mediated communication.

Rhizome Theory: From Deleuze and Guattari to Braidotti

Rhizome theory complements the network nature of the internet where connective processes travel in all directions, and exist simultaneously in synchronous and asynchronous time, to provide spaces for the development of multiple relationships and connections. These transformative spaces are where change happens at the periphery using the cutting edge of digital technology.

The rhizome figuration developed by Deleuze and Guattari (1983, 1987) aids researchers in their considerations of the Internet's multiplicity (identity), the conditions, causes, and consequences of a rupture of network connections, and the complexity of its designs that require accurate road maps for navigation. Multiplicity, in a networked society, relies on both known and unknown actors who influence identity formation. These actors, in turn, complicated by geography, political situations, and cultural expectations, also influence issues of access and language processes. Acting as individuals or as groups, the actors can cause intentional or unintentional a-signifying ruptures that have the potential for transforming society. Because of these complications, travelers on the information super highway need a good road map. In this project we act as virtual cartographers and information conductors to not only produce something new, but also to provide the necessary information for others to use in their own transformative journeys.

The rhizome framework is comprised of three basic elements: a nomad consciousness, polyglossia, and rhizomatic transformation. Nomad consciousness pulls together the four elements (non-fixed identity, historicity, coherent and mobile motivations, and coalition building) identified by Braidotti (1994). Identity formulation is a process through which we act from multiple, fluid subject positions. Our actions, language, and behaviors are based in historicity, an unconscious process influenced by desire. However, we are not without agency and we also rely upon coherent, reasoned, and meaningful motivations that change with the context. Our identities are fluid expressions of our multiple selves.

A polyglot is well versed in the use of multiple languages, and avoids translating "foreign" languages into "native" languages. This requires an ethical appreciation for the original text that acknowledges biases and avoids relativism, considers new audiences,

and respects the original intent of the artifact or text. It is a way in which to seek commonalities in order to negotiate relationships and build communities and coalitions. Our own experiences as polyglots contributed to the ways we conceptualized this research. We were both born in the United States and English is our primary language. However, our languages of everyday use were very different. John lived in the Deep South at the time when racial segregation was collapsing and Tess, from the Midwest, grew up surrounded by Scandinavians and Germans in a predominately white community. Both of our initial language of everyday use emerged from these multiple influences. As young adults we expanded our language use to include not only the privileged white dialects of the United States, but also the languages we chose to learn. We both studied French and German (John succeeding at it; Tess struggling with it). We began to travel to, and work in, places with other cultural influences; eventually becoming true polyglots. Today our language systems are an unconscious (for the most part) multiplicity of all these influences.

This process results in rhizomatic transformation, where growth occurs on at least two levels: first by our deconstructing previous Communication and Computer Science theories, and second, by producing new ideas nourished by the original text. This transformation produces a nomadic subject who moves from the physical to the cyborg through a process that searches for transformation through experimentation, without relying on the rigorous distinctions that restrict and conflict with them. As a nomadic subject, the researcher uses these distinctions to subvert or transform them.

Nomadism does not occur as a straight line. Rather, it is a trip of many starts and finishes, where we negotiate relationships and meanings, and build coalitions and communities in the process. Braidotti (1994) writes, “The polyglot has no vernacular, but many lines of transit, of transgression. The complex muscular and mental apparati that join forces in the production of language combine in the polyglot to produce strange sounds, phonetic connections, vocal combinations, and rhythmical junctions” (p. 13). This is no easy task. While staying true to oneself, one must also respect the shifts in language and influences of blurred cultural locations and become, what Braidotti refers to as, an ethical entity who confronts multiplicity and avoids relativism. This fundamental imbalance relies on the notion that “all knowledge is situated, that is to say partial; [and

that] we are stuttering for words even though we speak fluently" (p. 14). This is extremely important in digital spaces where textual language exchanges dominate the discourse. In addition, digital environments are filled with visual language and software programming designs that influence contexts. As these become more "natural," boundaries will fluctuate and multiply, making rhizomatic transformation possible.

Braidotti's researcher-as-nomad is a politically informed account of alternative subjectivity. As a political myth, the nomad figuration allows us to move through established territories and challenge the cultural categories and values that inscribe them, and blurs the conventional ideas of boundaries. Braidotti sums up this role when she writes, "I would say that speaking 'as a feminist woman' does not refer to one dogmatic framework but rather to a knot of interrelated questions that play on different layers, registers, and levels of the self" (p. 168).

The Rhizome Figuration and Mediated Communication

Traditional software development is not rhizomatic. It is based on incremental upgrades from previous versions. Rhizomatic software development would use features and techniques that are relatively far from the mainstream and combine them with other techniques and viewpoints that are similarly on the fringes of other domains. Basic application of current data representation and transformation technologies is not a subject of mainstream Computer Science research. Often, they are considered merely database topics better suited to Business and Information Technology. Data representation and transformation are interdisciplinary subjects that may be considered active research, as in the Semantic Web, or simply applications of previous work, better suited to industry.

Polyglossia –The quest to have computers understand human language is one of the founding goals of Computer Science. The "Turning Test" will succeed when researchers build a computer whose conversational skills, when communicating with a human, cannot be differentiated from those of a human being. While this is an important area of research for Computer Science, it does not apply to this work. Instead, we focus on the computer's mastery of computer and data representation languages. In this area, computers are true polyglots. These computer languages can be easily formatted to be comprehensible to humans, even if they cannot yet be made indistinguishable from human conversation. We will exploit modern computers' inherent polyglot capabilities

by building upon existing standard language definitions such as XML and proven message transformation methods like XSLT.

Nomadic Subjectivity - Our tool is not limited to one particular language or culture. It will facilitate working simultaneously in multiple languages. It will encourage global collaboration by endowing messages with intrinsic meaning. We eschew translation in favor of transformation.

We feel that Computer Science research can be enhanced when combined with Communication theories. In addition, Communication research can be enhanced by application of proven Computer Science and database techniques. This project is an analysis of Human-to-Human Interaction that is mediated with specific Computer Science techniques. It is not mainstream computer-mediated communication either. Our project is an application of Rhizome Theory to Computer Science and Communication and is, itself, rhizomatic.

Use Cases

For this research, we look at three specific communication use cases: web sites, academic papers, and advertising projects. All of these use cases require a complex message, are dependent on computer software for message creation, and are familiar examples for both technology and Communication researchers. These use cases have been created or transformed by technology. We begin by examining the difficulties in message creation and maintenance in each use case and then explain how Semantic Messages could be beneficial.

Internet Web Sites

Internet web sites are the quintessential application for digital messages. To state that web sites are difficult and tedious to create is not a controversial assertion. Early web sites were simple and hand-coded by technical experts. Design tools such as FrontPage and Dreamweaver resulted in more complex web sites. While this enabled end users to build simple web sites, more complex web sites still required expensive tools and technical abilities. Today, most web sites are based on templates in the form of blogs, Content Management Systems, or plug-in such as Flash. Consequently, creation of internet content is more accessible than ever before. This ease of use has come at the

expense of flexibility. These CMS-based sites restrict the user to a narrow range of formats and lock them in to particular software and service providers.

To date, the most advanced and reliable method for adding data to or retrieving data from a web site remains copy and paste. Even that process is complicated due to embedded formatting. All too often, the only difference between a slick, professional-looking document and an amateurish effort is simply knowledge of the "Paste as plain text" command.[2]

Ideally, web content should not originate on a web site. It should be written and designed by subject matter experts in the form of promotional material, official procedures, regulations, and other documents. While Content Management Systems have dramatically improved the ability of non-technical users to publish web content, they also greatly restrict how data can be entered and accessed. Converting data from other sources is usually a manual and error-prone process. Furthermore, web site information quickly becomes stale and out of date without regular maintenance. Like any public works project, all the effort is expended on funding and executing the initial work, with little thought to the effort and expense required for ongoing maintenance.

Academic Papers

While web site creation and maintenance are time consuming, they may be actually easier to build than to write about. The rapid pace of technological advancement in web content has been missing from word processing software. The level of difficulty of building and organizing a message in the form of an academic paper has changed little in 20 years. Microsoft Word is now the de-facto standard word processing software used by most academics. Donald Knuth's TEX-based systems such as LaTeX have been popular in the mathematical and scientific communities. While Word provides a virtually unlimited array of formatting options, it has virtually no support for organization, structure, and semantic meaning. LaTeX, on the other hand, does a good job at allowing the writer to concentrate on content by eliminating virtually all formatting tools. The

[2] Modern university professors exploit this ignorance to easily detect plagiarism in students' works by looking for unexplained changes in formatting.

authors of LaTeX make a point, however, to emphasize that LaTeX is a typesetting system, not a word processor.

Modern word processing software is certainly an advancement for academics. People at least 40 years old can still remember the days when we used typists to prepare our papers for publication. Even the slowest "hunt-and-peck" keyboardist today is more efficient than writing papers by hand and hiring a typist. We are close to the time when most papers will never be printed at all, but will exist only in electronic formats. But even with these advancements, constructing a document such as an academic paper is still a difficult and tedious exercise. Even modern word processing software provides only rudimentary tools for content organization. It is up to the author to maintain an outline and a logical document structure. Word processing software can identify a table of contents, or a chapter heading, but it cannot identify and highlight specific themes as they occur throughout a document. They cannot differentiate the literature review from the conclusion.

While word processing systems are lacking in semantic abilities, they do not lack for formatting options. As in web page creation, most word processing software provides advanced visual document formatting, but proper use of formatting is an advanced skill. Few non-technical users employ formatting templates, such as styles in Microsoft Word. Yet these formatting templates can, themselves, complicate document editing.

Academic papers are frequently posted to the Internet. The same formatting complications inherent in web site creation discussed earlier are only exacerbated when combined with word processing software. Ironically, this particular formatting problem has only gotten worse as software has become more advanced. As software has grown more interoperable, word processors and web sites can now speak the same language, albeit in distinctly different dialects. A word processor is quite happy to take a paragraph of text, with some italics and maybe a footnote, convert it into an undecipherable mess of 1994-vintange HTML, and insert it into a carefully structured, previously-W3C-compliant web site.

Finally, academic papers have strict citation requirements. Citations are an inherently data-driven component of research documentation. There are 3rd party add-ons and plug-ins for word processing software to handle citations. Citations, however, are a

fundamental part of academic works, not an afterthought. Citations will always be difficult to use and manage until they are integrated both with the tool and with the documents themselves.

Advertising

Electronic academic papers and their web-based representations are but modern instantiations of traditional media. Right or wrong, McLuhan's ideas have driven the development of mass media and will continue to influence it in the future. Whether the messages of the future are text documents or some types of new media, people who desire to employ those messages need plans and organization to do so. A web site or paper has the content of the site or paper itself that can be used for semantic content. Other types of media may not have any text content to use as a guide. This is an issue that the advertising industry deals with today. An advertising message is likely to span the gamut from traditional print advertising to the latest Internet fad. It is critical to be able to maintain a brand or theme across this diverse set of media.

Advertisers have been at the forefront of technology change. They typically have the most demanding needs with print, audio, video, and web-based products. Advertisers have been quick to embrace any new technology that even has the potential to be effective. They must be aware of new directions in media and, in some cases, create those directions. Advertisers need a way to organize the meaning behind a message (or medium). Their messages may be simpler than either web sites or academic papers, but they are no less sophisticated. Advertising messages are rich in new media expressions. Instead of associating a particular meaning to a paragraph of text or web page, they must provide semantic meaning to a video clip or a specific music segment.

Advertisers, academics, and web site designers can all benefit from a tool that gives structure, organization, and semantic meaning to a message – whether that message is just a text message, or a new type of media for a new type of message. So far, we have only looked at limitations of current tools. We must also propose a vision of the capabilities of a hypothetical Semantic Message composition tool. We have identified three target audiences that could benefit from an easier way to produce a complex message. A tool that meets the needs of all three groups must fulfill some specific requirements.

Semantic Message Requirements

The goal of this tool is to build a Semantic Message. Recall that a Semantic Message has both structure and inherent meaning. The best way to structure a Semantic Message is with a hierarchical organization, much like an outline. A Semantic Message groups nodes of information with other, related nodes. Related nodes of more specific information are associated with more general, parent nodes. This hierarchical organization will allow an overview of the entire message or just a section of the message. A Semantic Message should be easily re-arranged. When a node is moved, all of its child nodes should be moved along with the parent. This feature can facilitate collaboration. Multiple people can work on separate parts of the same message without interfering with each other and while maintaining visibility of the overall message itself.

A complex message, perhaps with multiple authors, is likely to be more complex than can be represented by a simple outline. The user must be able to view the message from different axes, or vantage points, than simply top-down or bottom-up. A Semantic Message may have multiple, simultaneous threads of meaning throughout. It should allow the communicator to see threads of semantic meaning, such as examples, for example, as they occur in the message.

This can be accomplished by tagging information with semantic identifiers. Filtering a message based on one tag or set of tags can allow a message to be tailored to one or more specific audiences. A dissertation, for example, may have a small number of tags. The communicator should be able to transform the message, using only a single tag, into a new document that is suitable for publication in a more specialized, peer-reviewed journal.

Use of semantic identifiers can facilitate a polyglot message. The message creator can build the structure and meaning of a message using his or her native language or perhaps in a specific language best suited for the message. Then, the content of the message, separate from the message's semantic meaning, can be developed in multiple languages simultaneously, rather than translated. A single message can have multiple, simultaneous meanings, depending on how it is targeted.

A Semantic Message can also be considered polyglot in a machine language, rather than a human language. Messages can be transformed to new representations rather

than translated. Typically, translation implies converting a message from one complex language, such as a human language, to another, equally complicated language. A message transformation is an inherently algorithmic operation between one representation and another representation of equal or lesser complexity. As such, a transformation, by definition, cannot lose data. A simple message has no transformation to a more complex representation without the additional of more information. A Semantic Message may have more than one simultaneous polyglot representation. An obvious example is a work of academic research that has a representation in Microsoft Word format, another in a Powerpoint format, and, finally, a representation in HTML format. For a Semantic Message, this example does not constitute three different documents. It is one Semantic Message with multiple representations or transformations.

A final requirement for Semantic Message creation is making advanced data organization tasks usable for non-technical users. The goal of this project is not to create yet another programmer's XML editor. A successful implementation of a Semantic Message tool would:

1. be easy to operate for non-technical users;
2. be intuitive and immediately usable;
3. provide templates for common message types;
4. provide built-in capabilities for commonly used tasks; and
5. be extensible for new message types and new applications.

Tools and Techniques

With the requirements identified, the next step is to identify the technologies and tools currently available for implementation. The Semantic Message should be based on XML. XML is a worldwide standard for markup languages and is becoming the de facto language for all data representation, allowing the Semantic Message to be organized hierarchically. XML attributes can be used to implement semantic tags. An XML query language such as XPath can provide random access to the underlying XML data and traversal along multiple axes. The specific XML schema used is not important at this time. Using XML is not a panacea. Like any language, it can be used to create a monster. It is the expectation that the XML schemas used by this project will be fairly simple and easy-to-use.

A logical choice for translating an XML document is XSLT. XSLT is an XML-based transformation language. It is used to define a transformation from one particular XML schema to another XML schema, another markup language, or plain text. With the proper set of transformations available, an XML document can theoretically be transformed into any other compatible XML document. Combined with the popularity of XML as a data representation language, XSLT can facilitate communication over the widest array of message pathways.

Using XML as a document format and translating it using XSLT is not ground-breaking research. This is standard practice for electronic data interchange between computers. While non-technical users normally do not use it, or even know about it, it is mature technology and ready for an end-user environment. The problem space for the use cases that have identified so far is limited and well-defined. Only a few simple XML schemas would be needed to implement the use cases identified so far. Transformations to HTML are very well understood and could be easily implemented. XML and XSLT are already widely used in web site development and content management systems. A Semantic Message could quickly compatible with such systems.

XML is also supported in current versions of popular word processing software such as Microsoft Word and OpenOffice with the OpenXML format. Since both our source and destination XML schemas are well known, transformation between the two should be relatively easy. This would be literally and legally impossible using closed, binary document formats. Furthermore, XML is becoming known as more than just a markup language. It is also a fully capable database with a number of powerful query tools and languages. This fact allows a Semantic Message to be both a database and a message with inherent meaning. Advanced data manipulation abilities that could support tables, graphs, and citation information become just another feature instead of a 3rd-party add-on.

While 3rd party software extensions are still popular with some applications, such as web browsers and image editors, they are not appropriate for a Semantic Message tool. In order to achieve rhizomatic behavior, a Semantic Message tool should be very interoperable with other software. It is not realistic to expect to replace other industry-standard, well-known software. Rather, the Semantic Message should be a data repository

that establishes interconnections between various other software packages. With the recent introduction of interoperability standards such as .NET technology on Microsoft Windows and the Scripting Bridge on MacOS X, this is now a real possibility. This capability would be particularly attractive to the Advertising industry. They have significant investments of time and capital in powerful audio and video software. Instead of replacing this software, we can enhance it by linking it to the Semantic Message. This would effectively be establishing a metadata repository for their existing data using XML. Again, using XML to associate metadata with external media is standard procedure in the GIS industry. GIS data analysts are very comfortable with XML. With modern interoperability standards, we hope to make bring the same proven technology to less-technical users in Advertising.

Most modern tools with which a Semantic Message editor would interact are already based on XML themselves. There would certainly be significant work to be done in order to achieve a high degree of interoperability. However, there are no technological difficulties. It is possible, with enough time, effort, and funding. With this high degree of interoperability, a Semantic Message tool need not duplicate any existing work. For example, XML has no support for formatting of any kind. This is a good thing according to our rationale. Separation of content and presentation is guaranteed. Formatting controls may not be needed at all. If a user wishes to transform a Semantic Message into an HTML document, one or more associated CSS files would drive the formatting. If the user transforms the message into a Word document, Word's built-in styles could control the formatting. Defining the CSS files used or the specific style definitions would still be difficult tasks for non-technical users. The Semantic Message tool could employ modern scripting technology to allow the user to pick from a list of pre-defined appearance templates. More technically advanced users, with advanced knowledge of CSS or Microsoft Word, could define their own templates.

Conclusion

This project is fundamentally an applied project. XML is no panacea that can solve any and all data representation tasks. The problem we seek to address is not, in a technical sense, novel or groundbreaking. Microsoft or any other company could have easily built a tool such as the one we propose – and they still may. But they have not done

it yet and seem in no hurry to start. The current version of Microsoft Word has experimental and very rudimentary XML abilities. But Microsoft Word, with its emphasis on formatting, is not the solution we seek. There are dedicated XML tools, such as Syntext Serna XML Editor, that make XML almost easy enough for non-technical people to use. These tools are, however, still firmly targeted towards software developers. Technical data management experts consider XML to be a valuable tool, but no more than that - just one out of many. They are absolutely correct.

In the world that Marshall McLuhan foresaw, and that we now inhabit, the medium may very well be more important than the message. McLuhan's prediction for the future is now our present, and past. The message is not, and never had been, devoid of all importance. Nor do we know how the messages and media of the future will shape our society. There are many people who are perfectly comfortable reading, and posting, virtually content-free messages on *Facebook*. Many of those same people are equally at home writing scholarly articles or developing cutting-edge advertising messages to market *Facebook*'s hot competitor next year. We do not expect Semantic Messages to take the world, even the academic world, by storm. Just because someone has advanced technical skills in web site design or Microsoft Word does not mean that they want to spend time doing those tasks.

Finally, web sites themselves may not be the medium of the future. The web of the future may be a web of interconnected social media sites. The World Wide Web of today may be the GOPHER of tomorrow. People who wish to publish a message on these sites will have to type it in, or use some tool that has good support for XML and XSLT web services. Without such a tool, Communication scholars and professionals may have to turn back the clock and return to the practice of hiring typists to enter data on different social media sites to reach their target audiences.

We propose an interdisciplinary solution. Rooted in Communication theory, driven by proven Computer Science techniques, and supported by industry, we can build a tool for tomorrow's Semantic Messages. Our goal is to show that such a tool is possible by building a prototype that is useful for our professional target audiences, both technical and non-technical. We expect that software development companies would quickly copy and enhance a successful Semantic Message prototype tool.

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