Design perspectives on multimodal documents: system, medium, and genre relations

Book

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4 – Framework

4.1 – Introduction and context

Building on the literature discussed in the previous two chapters, this chapter will, amid further discussion, outline a framework for studying changes within sets of documents communicated across many systems.

It may be that the significant question is not: how do we define 'document'? Huitfeldt recognises this in relation to text: 'What is a text? […] I have come to think that these questions do not represent a fruitful first approach to our theme' (1995, p. 235). Questioning the definition of document in general has been undertaken before (see section 3.4) and aside from the minimum necessary restatement needed to give context within this book, further theorising is unlikely to yield useful results. Instead, the nature of the division between one document and another (or variations of 'the same' document) should be questioned. What is it that is the separator between different documents, or variations thereof? What is it that links documents? In the first instance there is an immediate potential for category mistakes and this needs to be addressed. There are documents in the broad sense as opposed to the definite individual sense – the exact document you, the reader, are in process of reading at this very moment, as opposed to all the other copies of this same 'document' existing elsewhere, i.e. the general vs. the specific. This line of thought relates directly to the end of the previous chapter and is further highlighted in this one.

Error! Reference source not found. presents an example using this book as an example of a document, with a range of variations presenting a high degree of homogeneity relative to many other examples that could be chosen – but this is precisely the point. In the OHCO context of

section 3.4. the majority of the variants in **Error! Reference source not found.** are all the same document[1] – the same content in the same order, the same text. If we accept that these are all the same content at some essential level (and again, the example used is deliberately basic) and we can also see that there a wide range of *differences.* What do we call these differences? This chapter seeks to address that question directly.

[INSERT FIGURE 4.1 HERE]

Figure 4.1 – Variations of a page from the working draft document of this book to illustrate variation within documents. Only twelve variations are presented here and the variations between those twelve are still relatively minor. Each variation may also appear in more ways than shown above. For example, when changing from laptop to desktop (a. to b.) a different operating system (OS) is used but both are running their nativised version of MS Word ('the same' software). Changing to the smartphone (c.) the OS changes as does the file format and the application used to read it (it is being viewed as an ebook). A vast set of different variations could be created: thousands of fonts, colours, printing methods, colours, etc. but linked by what at some level is seen as the same text, content or document.

A number of simple means of categorisation present themselves based on sources from the previous chapters and, to some extent, from using intuition. Clearly there are changes in medium and system of (re)production – the 'print view' on screen vs. physical printout on paper. Clearly there are changes in style and layout – the same text in the same application on the same machine, but set in Minion Pro or Comic Sans. In this example, mode does not change with the exception of user interfaces and the addition of images added to menus (which are part of a separate question). Typographic genre changes across the examples. The different methods of display across media result in different methods of interaction with the artefact and text structure

(do I scroll? do I turn a page? do I turn a visual metaphor of a page?) and the (typographical) topic structure also changes.

So far, the examples used in this book have been chosen individually to exemplify certain points, often theoretical. While these examples are not representative of all cases, they were intended to aid in the understanding of abstract ideas. This will continue to be the case for this chapter, while the framework is put in place and questioned. While a direct need for practicality is vital, the framework presented in this chapter will to some extent be deliberately abstract. Current changes in publishing and media consumption have magnified and extended the commonality and possibilities of variation across medium and mode, but these phenomena are not wholly new and will likely continue to an even greater degree in the future. It is not possible to predict future changes in technology, production and consumption, but care can be taken to try to ensure that any frameworks that fit the present also fit the past and are constructed in such a way that they might fit the future with easy modification or additions. This is easier in the abstract and with isolated examples.

In Chapter 5, more complicated examples in the form of detailed case studies are presented to bring together the more conceptual themes covered in this book so far, and in this chapter's framework (section 4.3).

4.2 – Questioning ‘medium’

Medium was not covered in as much detail as the terms genre and mode in Chapter 2. Following the discussion of systems and form in Chapter 3, medium will now be examined again to a greater extent (alongside system) to address foundational issues necessary for the framework outlined in section 4.3 of this chapter.

4.2.1 – Distinctions

Distinctions between media only go so far – the range of different media that were shown in **Error! Reference source not found.** (previous page) is relatively limited at a high level perspective: digital, print, and handwritten. Digital media is a broad, catchall term, the possibility of further sub-divisions is clear, but which are significant?

An obvious division of ‘digital’, might be, for example: desktop, laptop, smartphone (as seen in **Error! Reference source not found.**; tablets, e-readers and other mobile devices could also be added). But within these sub-divisions there are still further layers of notable variation, both in terms of hardware and software. Screen type, resolution and size will vary greatly across different configurations of hardware. Two electronic screens of the same physical dimension and display technology type (LCD, OLED etc.) might have different display resolutions. Alternatively, two desktop computers with identical hardware configurations running different software may display the document differently, from generalities of surrounding interface to specifics of type (text) presentation between different font rendering engines.

Even such distinctions, though attempting to encompass all aspects of a medium, only focus on what the user uses. In the context of digital media it might be argued that the method of storage is highly significant in the medium: magnetic hard disk drive compared to solid state disk or DVD. While this is important, there will be many instances where this is of relatively minor

significance to the user, or at least of secondary importance, compared to how they interact with the content of these devices on screen (or other method of visual display).

Following such paths, however, ultimately becomes so specific as to be unhelpful. 'Smartphone model 1234a' and 'Smartphone model 1234b' may be different in some way, but to state every single smartphone variation as a different medium removes the usefulness of medium as a term. There is also a risk of biasing towards digital/electronic devices and publishing as there is a temptation here to combine and confuse the sub-factors that make up perceptions of media and a physical level. The same type and brand of paper stock may be fed through different printing presses. The same stock and press may be used with different ink. It would be convenient to state that changes in exact medium only matter when the change is perceptible, but this must be considered within a wider model of design process. What is noticed by the general reader will differ from what is noticed by the expert practitioner, and this should be accounted for.

4.2.2 – Materiality: digital and physical

A first step is the teasing out of the materiality and systems of consumption. [2] Kress and van Leeuwen (2006, p. 233) discuss the significance of materiality with 'signifier materials', divided into: surfaces (substrates, e.g., paper); substances ('ink, gold, paint, light, etc'); and tools of production ('chisel, pen, brush, pencils, stylus, etc.'). However, in the case of digital and electronic documents the classifications of parts of systems of (re-)production may become difficult to categorise neatly. Does the keyboard count? Should the CPU, GPU and memory be included, what about the software and operating system?

An additional hardware distinction between systems of production and reproduction (or distribution/consumption) exists in the divide between some digital and print systems. A printer

or printing press is needed to produce, but not to read a printed document; but a computer (or similar device) and relevant software is typically used to read a document produced on a word processor (without printing it) (paraphrased from Lickiss, 2011). In many printed instances it is a necessity to remove the document from the system of (re)production to allow for consumption. With digital production methods this does not need to be the case, though in some situations a document might be compiled or coded in one piece of software by the author and viewed in another by the user. Additionally, the author may require a physical keyboard (or similar input device) to type a document, but the reader does not necessarily need a keyboard to read the document. The distinction between systems of production and consumption is not as clear as it might initially appear. Current trends in technology, such as the removal of physical push buttons in favour of contextual buttons in touch-sensitive displays, may further blur the production/consumption distinction at a system and material level.

The print document is, depending on exact definitions, directly bound to the materiality of its medium. The printed page of text, with few exceptions, contains only the text/narrative/document printed, it cannot be easily changed to show another. This is a very broad statement, but, while there are many counter examples, they are very specific and not representative of the majority of cases. Palimpsests present a directly physical example and a weakness of the statement's acceptance that text in printed documents is set, uneditable, whereas annotations and similar additions could create a new or modified document. At the other end of the spectrum the view could be taken that each new reading of a document of text is different, the same text is never experienced twice, however this is a different approach to that being used in this book. (See also 4.5.4 for discussion of Levy's arguments relating to document fixity)

Conversely, it is the direct purpose of an e-reader to be able to show an infinite series of documents on one surface. It seems that to read a different print book the reader must pick up a different physical material object, to read a different digital book the reader merely changes what appears on the screen of a single physical object. The significance of object here is in terms of the materiality of the surface. In both cases the configuration of what Kress and van Leeuwen year? term substance changes configuration to some extent (an electrophoretic display showing one page compared to another), regardless of whether the surface is the same at a token, or only a type, level. Electronic screens at a material level become digital palimpsests, a surface continually expunged and re-written.

Central to questions of medium is the seeming disembodied portability forming an aspect of the quiddity of digital documents. One way to locate the specifics of a digital document is 'the file' – the distinct store of information that can be opened and read to access its contents. Crucially it can also be transferred and copied to another machine, another materiality. The 'same' file can be opened in two different (but compatible) software applications on different hardware running different operating systems. It will probably appear slightly differently in each case, but it is a copy of the same file. In order to retain some parity between digital and print documents it is essential to maintain the link between the digital file and the materiality through which it must be embodied to be of direct human use and meaning. There is a risk of lining up unlike examples for comparison given the ease of transfer of digital files between varying materialities. An underlying concern with the exactness of medium and materiality distinction is the change in appearance that results. The extent of changes in appearance may vary significantly. In some cases the change may be too subtle to affect what might be termed the 'style' of the appearance. Contrastingly, the same file might be displayed with different sub-pixel

rendering or it might appear in a completely different typeface due to a lack of font availability. The same distinct file on the same distinct hardware seen in the same software may also appear differently. For example, zooming in on a page or using a different 'view' (e.g. print layout view compared to draft view) gives a very different appearance.

4.2.3 – Hypothetical example

An expanded terminology is needed to label the different types of relationship between and among documents. This must take account of the subtleties of some types of change and, where possible, accommodate both print and digital systems. A hypothetical example of similar but physically distinct documents will now be given, as an introduction, ahead of the framework in the section, 4.3.

A single-sheet printed bill or invoice is a document, conforming to common views of what a document is in normal language, outside of any specific field of study. It presents concrete information in a physical form, text on paper – an 'ordinary' thing, presenting no challenge to initial, broad, classification. This same document might appear digitally. Again, in common use this digital bill is a document: a print/electronic distinction can be made but document no longer has an exclusive link to the physical. The digital version of the document might be a scanned in or photographed copy of the print document, or a direct (native) digital document: e.g. a word processor document or database query output saved as a PDF (see 2.5.3 for more on medium successions). Assuming that change between the three (printed, scanned/photographed digital, native digital), is limited so far as possible (that is, the typeface is the same, the relative sizing and positioning of all elements is retained, etc.), are these three variations the same, or different, documents?

The ‘information content’ within each of these variations is at some level the same: the same letters and numbers in the same order and spatial relationship. The difference in context of presentation and medium may mean that information is perceived differently. In certain instances the scanned in copy of a paper document may be seen as having a different connotation (tone, formality, provenance) to the paper document it was scanned from, and the interfaces used (both software and hardware) to view the digital version may influence the presentation. In this example there is a change in the system of production/reproduction and in one case a change in physical media. There is a strong temptation to say they are the same document, they have the same layout, at a general level the same information, and although the systems of production/reproduction differ, they are related.

The variations in the above scenario might be called different *instantiations*: style, layout and internal content and meaning remain the same so far as possible, but are presented in a different medium or system. The extent to which style is the same is subjective, the same typeface printed on a low quality inkjet printer compared to a high quality laser printer may appear noticeably different, especially to an expert.

In the example described above the digital file is assumed to be relatively static – the content does not flow or change or adapt in response to the device it is being used on or the user’s settings (apart from some changes in screen size and resolution on specific devices). However, a further example will now be considered. If the digital document, (e.g. as a website), is adaptive/responsive there may be a state in which it appears very similar to the print document; e.g. the line breaks are the same, relative spacing is the same. However, it can also vary as the browser window changes size, or if it is now viewed on a smartphone not a laptop (screen size variation and device type change); the layout adapts and scales to fit the new display

environment. If we take the view we had of this web page at one state/configuration (i.e. larger browser window) and a different adapted state/configuration (i.e. a very small browser window or mobile device) are these the same document? They have been generated from the same code with the intention to communicate the same intended information. It may be tempting to say that yes, the two different configurations are the same document. But are they then the same as the print document in the previous example? At one state the print document (A) appears relatively similar to the adaptive document (B): A = B, a different instantiation. It might be said that the adaptive/responsive web page (B) in a second, different, configurations (C) is the same document as itself: B = C. But is the reduced size browser window configuration of the web page (C) also the same as the print document, the print document that shares its layout with the large format configuration (B). That is, A = B, B = C, but it is more awkward to say that A = B = C. This type of change/ variation is different from the different instantiations of the first example of the digital, printed and scanned/copied invoice.

4.3 – Framework: changes across medium and system

The example of the responsive document, discussed at the end of the previous section, highlights the need for clear terminology, as documents are increasingly communicated simultaneously across a range of systems and mediums. To enable accurate discussion of this phenomenon an understanding of the types of relationships between these different, but related, documents is needed.

Instead of defining document(s) in strict terms, a series of cases of difference and similarity between and within individual documents from groups of closely related documents will now be discussed, to outline basic categories and relationships. An emphasis on media, materiality, and the systems of (re)production will be retained initially, following the discussion in 4.2.

4.3.1 – Overview, instantiations, and sets

A brief outline of the proposed relationships between documents (and accompanying terminology: document set, document instantiation) will be given here (Figure 4.2 and the rest of this section), ahead of more detailed explanation:

[INSERT FIGURE 4.2 HERE]

Figure 4.2 – Overview of the set of relationships proposed in this framework, between the instantiations of documents within a document set, across changes in system, medium, and materiality. See main text following this figure for explanation of each term.

Relationship 1: copies and one-offs – the same systems of (re)production and/or materiality with the same content, presentation, and layout. Includes a sub-level for view changes in digital and projected documents. *E.g., two 'identical' printouts of a document.*

Relationship 2: systematisations – different systems of (re)production and/or materiality with absolute minimum change in layout, presentation, or content outside this change.[3] Includes

a sub-level to address the very broad cases found within digital systems. *E.g., a PDF on screen and printout of that same PDF*.

Relationship 3: (re)configurations – different systems of (re)production and/or materiality accompanied by notable variation in layout or presentation of content, some content variations may occur as this happens. *E.g., a print book and an e-book of 'the same' text in a different layout and font.*

Relationship 4: embodiments – different system of reproduction and/or materiality with very significant divergence of content presentation, use, and layout. E.g., *train time information from a data feed presented in a smartphone app and an on-station departures board.*

Two additional terms will now be defined for use in explaining the details of the system, one to refer at an individual level to points within the system, the other to refer to their total grouping.

A specific, identifiable, document will be referred to as an instantiation. That is, whenever a document can be pointed to directly ('look, here is a document!'), it is a specific instantiation of a document that is being pointed at. For convenience it can also be used to refer to all tokens (documents) of the same type (see relationship 1 for clarification). These instantiations of documents point to the artefact, as opposed to any higher-level, more theoretical, conception of documents. An instantiation is always necessary for the identification of a document – whenever the document is presented in any way it is as an instantiation. Instantiation is, therefore, a term for use across all categories of the system.

The total grouping of all related instantiations across all levels of variation is a document set.[4] There is not a strict boundary to the edge of the set, but degrees of belonging. What is included within a document set, what is seen as being related, might vary depending on the

perspective and motivation of an analysis or investigation. Broadly, however, theme and content will be seen as the main factors linking a document set.[5] While this begins to stray towards document idealism (see section 3.4), it is always and only exemplified by collections of direct instantiations.

The use of these two terms, document set and (document) instantiation, occupy two different (though not wholly opposite) extremes of the more general usage of the term 'document'. Without having to commit 'document' as a whole to a single view, document *sets* can address the broader, generalised idea of document, while document *instantiation* deals with the precise, identifiable, artefact.

Within the relationships between documents described above (and Figure 4.2) there are degrees of belonging, rather than rigid boundaries. Distinctions may also be subject to shifting and blurring with additional technological advances in future years. No suggestion is made that these relationships (or groupings, categories, etc.) exist in an objective sense, they are instead intended to facilitate more accurate discussion of documents in broad terms. The first category presented may appear redundantly simple, but is included to ensure a firm starting point for further ratiocination.

4.3.2 – Relationship 1 – one-offs and copies

At the lowest level (low level of complexity, maximum level of homogeneity) we have a single print (or handwritten) document, such as a sheet of printed paper or bound book. This document is the same as itself. There may also be multiple copies of this document, identical to one another so far as the system of reproduction allows. There might be minute differences between one sheet of paper (of the same stock type) and another, slight variations in the wearing of any mechanical printing method, but at too fine a level for this analysis. The same file and printer or

press and type has been used on the same paper to create multiple copies of 'the same' document. These documents are tokens of the same type, they are equal to themselves and their copies (barring any later modification, annotation, etc.).

The manner in which 'copy' is understood should be questioned at this point. Ten identical print outs might generally be referred to as copies, but copies of what? In some cases they will not be copies of one another, not copies of their own instantiation, but of a different systemisation. At the same time, it is understood, generally, that the copies should all be similar – there is a two-way relationship of copying: between the 'original' and its copies; and between the multiple copies themselves. If a photocopy is taken of a photocopy it may be a copy of the same instantiation (with perhaps some very slight variance for different paper or photocopier make). But, if a photocopy is taken of an offset-litho printed book page the outputs are copies of this different instantiation and systematisation. In this second case the copies are more similar to themselves than they are of the instantiation they are intended to be copies of, but they are still copies of this latter.

With an electronic document a single instantiation may be viewed in different ways (in terms of scale, the users can zoom in and scroll, rather than in terms of 'print view', 'draft view' etc.). One digital file viewed on the same hardware with the same screen and software is the same as itself, as in the previous level. However, its framing and relative size can be varied. In many cases a reader can change the 'zoom level' at which a document is seen and resize the window showing the document. (At this level we assume the document is not responsive). The reader of a digital instantiation of this document can (probably) zoom in to make the letters on this page 50mm tall, or zoom out and make them 0.5mm tall. Clearly it is the same document. The layout does not change, the style does not change relative to itself, but the appearance may

still be very different, not only in element size but correspondingly in terms of selection shown. Scrolling up or down will show different parts of the page, zooming out will show it in its entirety. This is the same document, the same instantiation of the document with a very similar materiality, seen in a different view. This is a different case from a reader simply holding a print document closer or further away from their face. The relative distance between user and screen can be varied in this same way, but the zoom and scrolling of the electronic document is a change in addition to that resulting from physical distance. Apart from digital documents a case can also be made for variations of size in projected material. Note that documents that adapt and adjust their display for different zoom-levels are not included in the case considered in this paragraph.

For relationship 1 it is assumed as a starting point that a given document instantiation is the same as itself. It could also be asked if there are documents that are not the same as themselves? An example of a document that is not the same as itself might be one presenting information updated in real time. There is no change in system or materiality (making this, from the start, outside the core scope of this framework), no input from the user/viewer but the content of the document instantiation changes from one moment to the next. Defining these as documents that are not the same as themselves, however, is misleading as the intent behind the document is change. At any one moment it may be in a specific state (see Levy's concept of 'fixity' in Levy 1994 p. 24, discussed in section 4.5.4 of this book) but this does not invalidate the overall identity of the document.

4.3.3 – Relationship 2 – systematisation

A further level of difference sees a change in specific system (and potentially the medium of production/reproduction) with minimal disturbance to other aspects of the document from the

perspective of the reader. Style, layout and internal content and meaning remain the same so far as possible, but are presented in a different medium or system. This covers a broad spectrum of system-level change. A photocopy of an inkjet printout would be a different systematisation, but would appear very similar and use the same (or close to the same) material substrate. More divergently, a printed document and its on-screen WYSIWIG incarnation would also be different systematisations (different medium, different system). Documents in print and on screen appear very different in terms of their materiality and the methods of interaction afforded thereby. There have been, however, no changes in typographic style (with the possible exception of font rendering), or layout, and the text matches the OHCO[6] cohesion for text and text order, even down to the line breaks. Figure 4.3 shows a Word Document on a desktop computer, a PDF of that Word Document on the same desktop, and the laser printout of the PDF. All are different systematisations of one another. Systematisations will generally be limited to documents of static, rather than responsive, layout.

[INSERT FIGURE 4.3 HERE]

Figure 4.3 – A draft page from this book instantiated in three different systematisations (Word document, PDF and laser printout). The layout, typeface, line length etc., are all preserved across the changes in system and media.

These changes in system are analogous to some areas of Norrish's 'transformations' (Norrish, 1987, p. 5, see section 3.2). The term 'transformation' is not used to describe what is called 'systematisation' here as transformation refers to a broader class for relationships, which might be seen to cover relationships 2–4. Norrish distinguished between the capabilities of systems in categorising types for transformation ((Norrish, 1987, p. 5), but a translation between two low or two high systems[7] would not necessarily match a relationship of systematization. The

capability of a system to vary appearance and space only matters here so far as this is done with the same style, the same marker. For example, the use of emphasis would need to be bold in both systems, a swap from bold to underlined is a greater change, even if it marks the same level differentiation from the regular roman text (which would be accepted by Norrish as a translation between systems of roughly compatible capabilities).

4.3.4 – Systematisation and digital materiality

Systematisations also run up against the problems of medium definition and specificity – at what level is the distinction between two mediums drawn? digital vs. print? Laptop vs. smartphone? Smartphone model 123a vs. smartphone model 123b? (See 4.2.1 for a more detailed discussion of this point). A word-processing document and an export of the same as a non-lossy[8] digital image file would be systematisations, but what about the same word processing file viewed on two different types of screen and software? (Assume that each document instantiation here is static, i.e., it does not re-adjust line length based on window size). These might simply be classed as systematisations: the document viewed on a glossy laptop LCD screen versus a desktop CRT screen might be seen as instantiations as different as a word processing document and its printout are. However, there is an inescapable sense that the first two screen documents are more alike. You could walk between two physical devices with external data storage in your hand and open 'the same'[9] digital file on both devices. This appears more akin to two different views or copies rather than systematisations. But arguably the same file was used to display the digital file as is used by the printer to create a print output. Again, the degree of change and the view-point of analysis defy any attempt to impose a rigid division. The relationships given here are not strict boundaries, the difference between two similar monitors, compared to two very different

monitors are the same kind of difference, but to varying extents (sometimes appearing to be essentially just copies, sometimes far more obviously separate systematisations).

A more significant example is that of a web-page. Assume, to begin with, a relatively static page: HTML and CSS without additional scripting and a layout of set measurements and line lengths. This same page can be called from the same server by users on a wide range of different systems, some identical, some almost identical, some differing greatly. The same central file is being displayed and the internal layout of the document remains the same (line breaks etc.) but the appearance of the document for each user may be very different (the view on an 800 × 600px CRT, compared to a high pixel density LCD). Difference in locally available typefaces could mean that the instantiation seen by each user is rendered in a different font – a level of variation which moves beyond what is intended here by systematisation.

4.3.5 – Relationship 3 – (re)configurations

At the next point on the scale of difference and similarity, documents begin to alter more than is physically required by a change in system and/or medium. This includes variation in style, layout, and extent, to a point where noticeable change has taken place, but there is still a strong cohesion between the instantiations. The change between system and/or medium is accompanied by a change in the configuration[10] of the content.

Printed text and a digital e-book file of that text would be two different configurations. The 'text' in the OHCO sense is the same, the same words in the same order; but the typeface, line length and other aspects of the layout will be different (even though both conform to broadly the same type of layout (linear interrupted, by Twyman's schema (1979)). There may also be further changes in terms of running heads and page numbers (or lack thereof) leading to changes not just to the appearance and layout of the central text, but also variation in the content overall.

Following the questions about the categorisation of static layout webpages in the systematisations section above, the more dynamic types of web-page are of relevance here. There is a wide range of possible variation for web-pages, from line lengths that reflow with the browser window to responsive layouts that undergo more advanced layout reconfigurations. Again, there is still the disconnect between, firstly, the single file located on a server that contains, in that one file, the parameters for its own reconfiguration and, secondly, the individual reconfigurations each end user sees, potentially on the same device (the same medium and/or system). This change within the same medium and mode highlights that the change in configuration, as considered in terms of media, is taking place along two axes: medium (or materiality, or system) and appearance (style, layout). This second can be varied without a change in medium as it is conventionally understood, but represents a large and important type of change.

[INSERT FIGURE 4.4 HERE]

Figure 4.4 – A draft page from this book presented as an EPUB (e-book) file on an Android smartphone. As the phone is rotated the text is reconfigured to match the new line length afforded by the screen orientation.

In Figure 4.4 the ebook file being read on a smart phone provides an example of a re-configuration with a high degree of self-similarity. Depending on whether the phone is held in landscape or portrait position, the line length and margins of the document adapt to suit the screen. As a result of this the exact arrangement of the text changes, line breaks are re-set and the number of ‘pages’ the document takes up will be adjusted. The text has been re-configured between the changes in screen orientation, but is still very recognisably the same core text (that is, the words and their order encoded in typography) presented in the same graphical style. This is different from a change in view, as the exact positioning of the internal text has changed

relative to itself. The words are in the same sequential order, and for a prose text any changes in line breaks do not alter the semantics of the document. However, the re-flowing of the text is still a very evident change. In more complicated documents the order of content may not always remain the same within a reconfiguration. Elements that appear in parallel on a wide page might appear sequentially on a narrow page.

This change within the medium or system continues on a second, separate, but related, path from the set of medium and system relationships described here (see section 4.5).

Until the point where configurations are introduced, all changes between relationships are cross-medial (see section 2.4) with no change in mode,[11] though the application of this term depends on where the distinction of media is drawn. Progressing through configurations, at further levels of change, some elements of trans-media variation may occur. As this happens, cross-/trans-mode changes may also be present. However, the variation between modes is unlikely to be total. For example, a mobile-web version of a page might have fewer and smaller images than the main webpage. This is not a complete change in mode, but a difference in balance between modes. The direct applicability trans-medium and cross-/trans-mode is limited here by the scope of the document sets in question. Documents divergent enough to present distinctly different sets of information (albeit thematically related in some sense) would be outside what is being considered here, in terms of instantiations. While these terms become increasingly applicable in relationship 4 (see next paragraph) this is at the document element level, rather than at the level of the document as a whole.

4.3.6 – Relationship 4 – embodiment

Embodiments represent the furthest degrees of variation between document instantiations across mediums and systems, while still conveying the same central information (design and layout also

convey information of their own which may be lost in this context). Embodiments may include changes in the use of, and switches in mode, (see cross-mode discussion above) and complete re-styling of content presentation. In some cases these embodiments may be directly linked – such as a series of instantiations backed by a common CMS (content management system) or database, which is given a new embodiment for a set of different systems and uses. For example, a print catalogue and its online embodiment may display the same set of products with the same core information within a very different layout (despite linked branding) and method of use, possibly incorporating more images or cross referencing. The web example used in discussing systematisations and configurations is again relevant. A single set of files might be made to display very differently and alter the amount of content shown on devices of different sizes. The addition or subtraction of content may also take place to varying degrees. At the extreme of the relationship, working on the fringes of connection by content within a document set, this approaches the trans-media (and trans-mode) relationships as discussed at the end of relationship 3 (re-configurations).

For relationships 3 and 4 the prefix ‘re-’ may be use interchangeably with the key terms, i.e., re-configuration and re-embodiment. This is for convenience, as for certain relationships the ‘re-’ prefix seems more natural to use (especially for re-configuration), and does not alter the intended meaning of the words. It also gives an indication of the direction of change, ‘re-’ allowing flexible variation to be suggested, instead of

primacy.

It should be emphasised that there is no negative connotation at any of the levels of similarity expressed by these relationships outside specific contexts. For certain systems it is a

strength to produce identical documents. For others it is a strength to produce either documents with a high degree of similarity (but allowing for variation and adaptation for ease of use), or to produce documents that appear and behave very differently, whilst communicating the same underlying verbal/numerical content. Where the exact physical (and software) medium will vary for the end user, having documents that adapt, therefore appearing differently in an objective sense, may provide an overall more cohesive look and feel for the end user.

The rest of this chapter addresses further issues pertinent to this framework and the understanding of document sets. Chapter 5 presents two detailed case studies, giving a fuller demonstration of the framework in use.

4.4 – Designer/producer intentions

4.4.1 – Intent

A missing factor in the questioning of changes across medium, mode and system, and the relationships therein is intent. In some cases the variation (or lack thereof) between documents across a change in system may be intended, planned, or designed; in others it is incidental. Between certain systems a change may occur which is reversible with input from the user/designer. For example, when pasting text between two applications of similar capability the font selection might revert to an application default, but can then be changed back to the original font by the user.

With reference to the series of relationships in 4.3, intent could be the difference between categorisation as systematisation versus configuration. The end result of a change in system/medium might be a configuration into which an amount of effort has gone to make it appear as a systematisation. If the text from a print document is to be presented digitally (as digital text, not an image), the appearance of the raw text used on the digital system will probably not resemble the print document to any great extent, excluding coincidences. There may be many possible coincidences and some of them might be relatively common, so this is not a point to be dismissed immediately. For example, many print documents might use the same default font and page format as the word processing software into which they are re-keyed or OCR outputted into.

Considerable time might then be taken to match minutiae of spacing and composition between the two instantiations, one print and one digital, so that their appearance is preserved so far as possible. Here a large degree of change has been applied to the in-between instantiation (the raw digital text, a configuration) to give the appearance of no change other than that forced

by the change of system/medium in the final instantiation (the final digital output, appearing as a systematisation).

4.4.2 – Intention: designers and systems

The 'focus' of intent might be in the direct hands of the immediate user, of the designer of the document instantiation, and/or distributed back to the people involved in the design of the system of (re)production itself – or shared across all of these parties. Related to the previous examples (4.4.1), a decision on how to parse the styling of clipboard data across applications may have been taken at some point in the design of those applications. What appears to the user as an incidental change may therefore have been a change intended by designers of the system when faced with a particular task. For example, text colour might be copied, but font selection ignored; or all styling discarded and the text restyled in the application default, which might happen to be a close match to the original source. This is not a designed change, an intended change, on the part of the user of the system (the graphic designer), but in some cases might be an intended change, or type of change, on the part of the creator of the system (the software 'designer' or developer).

Differing degrees of competence may also contribute to differing results from similar intents. A range of areas of competence might come into play, but those of design ability and technical ability are most pertinent for initial examples. The user of the system generating the new instantiations may not have the relevant design training or experience to notice some types of change and/or to know whether these are significant. That is not to say that the changes are imperceptible when pointed out, but that the user of the system will not notice them as a matter of course. Examples might include the change between two similar typefaces (such as a pair of geometric sans-serifs), changes between style of numeral, or micro-spacing variables. Secondly,

not only does the user of the system need the design acumen to be aware of these changes, they require the technical fluency and ability in using the systems in question. The user might notice a change occurring in the transfer between systems, have the intent to address this change, but then be unable to effect the desired result, even though the new system is capable of the task. It may also be that a system is/would be generally capable of utilising specific typographic/design variables, but the system designers have not realised this is relevant to the tasks the users of their system wish to complete. Degrees of informed and perceptive intent are therefore applicable to the discussion of intent and relevant across a range of competencies.

The role played by designers and users in intent must also be considered within the wider context of document creation and dissemination. The context and scale will both have an impact on the views of those involved, and the effect of these on any academic consideration. For context, in certain instances 'design' may not be applicable from the perspective of those undertaking the actions. An example of this would be document digitisation, an activity currently being widely performed on all manner of documents from diverse periods, technologies and cultures. The act of digitisation, of 'replicating', an already designed document may not be seen as design, perhaps an area more relevant to the analytic bibliographer (e.g. Dane, 2012). This digitisation may be being carried out on a large-scale, organisational/systematic manner. For example, in 2013 the Internet Archive began systematic digitisation of 'Approximately 15 million pages of printed books and pamphlets' (Story, 2014) relating to the history of medicine from the Wellcome Library, Jisc, and partner institutions. This represents a significant logistical undertaking, requiring dedicated space, staff and equipment. For example, accommodation of the Internet Archive's work at the Wellcome Library involved 'demolishing several walls and

creating a large open-plan room capable of housing over a dozen scanning units and thousands of books on shelves, trolleys and crates.' (Henshaw, 2015)

Alternatively, digitisation may be carried out by individuals in an impromptu manner as needed with varying degrees of care – photographing an old letter on a camera phone, or scanning in a driver's licence. Between the one-off and systematic cases it is possible for the technology to be almost the same. High quality digital imaging is currently likely to be affordable to the home user via assorted routes, some of which may differ little in many applications from professional equipment. Alternatively there may be large differences in software, hardware and user skill creating a difference in quality and speed – for example, the use of bespoke hardware and code to enable automation of repetitive tasks in document digitisation. The design creation and dissemination of document instantiations could also occur at a range of levels and points during the history of a document and its publication. In some cases there is intent from the publisher, or creator, from the start of a project to distribute the document across a range of systems and mediums. For example, content might be housed in a specially organised content management system that allows instantiations to be constructed in a range of ways to take account of different systems' capabilities. In other cases it may be designed for one system (or a very limited set of systems) and later re-distributed via a new system that had not initially been intended as a channel for the document.

While it may be difficult to factor in all of the specifics of individual intent, the distinction between intended and incidental actions is useful to consider in analysing wider arcs of document creation, development, and distribution, and the document set(s) related to them.

4.4.3 – Intent, process, and practice

Discussion of intent should be linked closely to thinking about design as a process. The ultimate significance of the exploration here is not what classification in any imposed system intended/unintended change may result in, but to question how designers consider (or, do not consider, or *could* consider) the existence of different instantiations of a document within the design process. The third-party academic observer might notice certain distinctions (instantiations) that are not seen by the designer, who in turn sees a different set of distinctions.

There is also a need to understand the thought process of the document designer when moving across mediums and systems. What are the factors that designers are aware of when making these changes? How are these factors addressed during the planning and development of a design? There are many tasks in this area that designers, both trained professionals and lay designers perform as an assumed part of the process and practice of design for which there is little defined account or theoretical commentary. To answer such questions confidently with anything more than reasoned conjecture from within the discipline would require extensive study of the working methods of practicing designers in the relevant areas – a task outside the scope of this book.

4.5 – Medium and document

4.5.1 – Internal and external boundaries

For the above hierarchy (the framework of section 4.3, see Figure 4.2) to be of use, the extent and boundary of a document must be accounted for. Not in the sense of where one instantiation sits within a group of like documents (the document set), but the spatial and hierarchical boundaries of what, in any isolated instantiation, is counted as within the 'area' of the document. Related queries are also raised by embodiments and reconfigurations in terms of transclusion (see below) and embedding between sources and documents, highlighted more than ever by contemporary trends on the internet. Webpages have been used as examples throughout this chapter, but their exact status as documents should be considered. The more abstracted, 'thought experiment', conception of webpages used in that discussion (section 4.2.3) does not account for the reality of depth of modularity of advertising, content management, and targeted/customised user variation seen on many sites . If a webpage is a document, are the adverts displayed on it part of that document, or documents in themselves? Assuming these advertisements are dynamic, a user might refresh a page and be presented by the same central text they wanted, but surrounded by a different set of adverts.

The term transclusion was originally used with reference to early theory surrounding hypertext documents and systems such as Ted Nelson's Xanadu project (see Nelson, 1987, Nelson, 2007, Sippey, 1996). This transclusion allowed documents to be constructed from fragments of other documents via links and references, without adding (changing the location of) the fragments themselves. Sippey (1996) defines transclusion as 'the act of "quoting" another document on the network, without having to actually "copy and paste" content.' This means that the quoted material remains readable elsewhere in its original forms, and in any other places it

has been transcluded (Nelson 2007). In its original use, transclusion is strictly digital and not applicable to documents produced and used on other systems. In hypertext the user may be unaware of the boundary between elements of one document and another transcluded into the same page, however, the distinction would be clear and exact in the code used to link the document components together. While not transferable to non-digital systems, it is a useful concept to consider to get an alternative perspective on placing one document within another, creating documents from and within further documents.

An extension of discussion on the boundary of documents brings in wider system context. Is the GUI of the software or application used to view a digital document part of the document? Is the surrounding operating system, the hardware part of the document? Taken to the extreme the idea that an entire personal computer should be considered as the document seems absurd from a pragmatic standpoint.

Having questioned which sub-elements of content within a webpage are part of a document, the scope of classification can also be widened to clusters of linked hypertext (websites). Is a single page within this a document, or is the site as a whole a document? A website might be made up of a series of webpages, connected by links. Is this analogous to a book containing a series of pages? Travel though linked hypertext documents may be non-linear (see Levy, 1994, p. 27, also Bolter, 1991, argued against by Levy), but this is not a sufficient distinction from print, as print documents are not themselves restricted to purely linear reading e.g. catalogues and encyclopaedias are rarely read page by page in series from front to back.[12] Similarly, is one screen of a relevant smartphone app (or indeed any software application) a document, or is it the app as a whole that is the document?

4.5.2 – Collections and concatenations

Transclusion[13] is not the only possible source of confusion caused by having documents within documents. Collections of discrete documents presented as a single document occur in physical and digital media without transclusion. A written letter can be considered a document. A book might present facsimile copies of a series of letters, bound into a single volume. Each of these letters can be a document in its own right, but have been collected physically. Should the book as a whole now take the role of document, do the letters within still count as individual documents in this format? Likewise a series of separate digital documents might be combined into one file, itself a document. In the second case there is a risk of being too easily led by technical use of 'document' in a software context, compared to a more general view (i.e., that we call it a document in that specific computing context does not guarantee it conforms to notions of 'document' as discussed here).

Such special case examples can be constructed, but the idea can also be extended to relate to many 'normal' documents and objects. A book on art, for example, might include a range of pictures or sketches, paintings and photographs within one page, within one book.

The limits of a document may also apply to more conceptual views of documents removed from distinct physicality. A book might contain a range of different types of information and page layout, different modes and a combination of physical materials, but we are often happy to call it a single document. A book is conveniently bound as one distinct physical object. If the book is multi-volume, say three volumes, is each volume a document in itself? Is just one book from a multi-volume set a part of a document, an incomplete or truncated document? Would it make a difference in classification if multiple volumes came physically grouped together in a slip case? At the page level some multi-volume works might restart page numbering at the start of each volume, while others might run across volumes. To some extent distinction might depend

on the content. Is the status of a single novel, envisioned as one story but split into three volumes, which are always sold together, different from that of a set of three related volumes published as a set, but which can be read as standalone texts?

4.5.3 – Conceptual and technical

At this point a distinction between conceptual and technical divisions should be raised. Documents and their content or limits can be considered in a technical, systematic manner. Consider, for example: the printing process that leaves an impression of a picture on a page, the code that calls an image file and displays it inline with text. Here, there is a physical (or electronic/code) process. We can directly say that the software is displaying a document, that the document contains an image file which is stored as a separate file and then displayed within the document. At the same time there is the more conceptual/perceptual approach: for example the chains of media from section 2.5.3, seeing an image of a page which itself contains images containing images. This can be explored without directly calling on systematic details.

A further example of this divide, with relevance to document and mode classification, is that of image and text. A computer file might be a picture of some text. To the computer system (assuming no OCR) this is simply an image. An informed user of the system may be able to see that the file type is an image, but that it appears visually to display text. A further user might be shown the image without the former context (e.g. a full screen view of the image, saved in a non-lossy format without artefacts) and assume that it is text stored as text,[14] as they have no technical or systematic knowledge to suggest otherwise. It may not always be apparent to the reader/user what the natures of the processes resulting in the presentation of a document are. As such they may interpret distinctions differently from any underlying technical distinctions.

Goldsmith's concept of Pragma, presented in the context of illustration research (Goldsmith, 1984, Chapter 9), analyses visual impact based on each viewer's personal experience and how this influences the meaning a viewer constructs from an illustration. This could be applied to traditional documents in a broader sense (outside of illustration), but with digital documents the process can become systematically externalised, with a level of recursion appearing in the makeup of the documents. Behavioural targeting and similar personalisation used in the generation of elements for web pages (or other digital documents) uses information about the user's past activity (behaviour) to display targeted content based on that activity. The extent of such system driven personalisation (as opposed to personalisation selected directly by the user) can vary greatly. A simple thumbnail of 'last page viewed' on a page is as relevant here as a quarter-page targeted banner advert or automatic sorting of preferences on a film site.

In Goldsmith's pragmatics the user constructs meaning based on their experiences. With current technology, however, the generation of the displayed document can itself be constructed by a system based on information about the user's past experiences. This document is in turn understood based on the user's past experiences and will feed into the external assemblage and internal comprehension of future documents.

4.5.4 – Fixity

Levy's (1994) questioning in *Fixed or Fluid? Document Stability and New Media* relates strongly to the concept of self-similarity and stability used to order the levels of the framework presented in section 4.3. It should first be noted that Levy's use of 'fixed' and 'fluid' has a slightly different applicability to what could be directly overlaid onto the levels of the framework; this stems from the use of a more conceptual understanding of document. Levy seeks to disrupt any clear boundary between fixed and fluid documents, challenging the assertion that

paper and print represents stability and permanence as opposed to more unstable and dynamic digital documents. This challenge is significant not only as a means to explore an assumed static/dynamic divide between print and digital which persists even today, but because Levy questions the 'fixity' of a document as one of its 'crucial properties' (Levy, 1994, p. 24). Whether or not one agrees with this as a defining feature of documents, the implications of the argument are highly significant within their own context. As Levy emphasises, if permanence and stability are key features of documents as exemplified by print 'then the new digital products cannot even be considered documents' (Levy, 1994, p. 25). The argument 'that all documents, regardless of medium, are *fixed* and *fluid*.' is made by Levy (p. 24) highlighting the fluidity and change in a document's development and lifecycle between stages of relative fixity.

The example given by Levy (1994, p. 26, paraphrased here) is of a memo, written, photocopied, annotated, and photocopied again. Here a physical print document has undergone change, has been fluid, between distinct phases of fixity. This is a different type of fluidity than that outlined in the framework of section 4.3, where levels 3 and 4 relate to fluidity within what would be stages of fixity in Levy's example. As such, a distinct digital document can still exhibit a degree of fluidity, not found in print documents, within itself at one stage. By extension this more fundamental level of fluidity is still medium dependant.

The fixity and fluidity in Levy's argument relates to the editing and change of a document in a manner compatible with, but distinct from, the framework. Annotation, editing and change of a document introduces a parallel strand in the discussion of documents: 'issues of identity' (Levy, p. 26). Levy goes on to ask what degree of change to a document (such as editing a word processed document) leads to a new '*version*' of that document rather than 'a *new* document' (p. 26) altogether? This question of identity should be seen as foundational to Levy's earlier

arguments – when tracking fluidity across a document's changes, the degree of belonging to the original document is vital to consider. If the changes have made the result a distinct, new, document then the type of link between the two stages of fixity is different from one of change between two versions of the same[15] document. A firm distinction on the point at which a new document appears will be subjective: 'Fixity and fluidity is, to some extent, in the eyes of the beholder.' (Levy, p. 27)

Valid arguments can be made that print and paper are dynamic, but even when this is acknowledged, it is a different order of dynamism or interactivity from digital formats. Aside from annotating or ripping or sticking a printed document, elaborate systems of dials, flaps, overlays and the like can be used in physical documents to allow changes in what is shown on one page, to add interactivity. Children's books provide many examples of interactivity in printed documents, ranging from pop-up books to the use of interactive page elements to change parts of a story. Moving a flap or dial in a certain way to change a noun in a story might be compared to selecting a different option from a drop-down menu on a website. More unusual methods such as scratch-off panels or scratch-and-sniff could also be employed, not limited to children's books. However, in print such interactivity and dynamism is generally done at the control of the reader, the reader must provide the physical input to bring about such changes. In digital documents similar interactions may be present (drop down menus, for example) but content may also behave dynamically without the reader's input (such as data feeds of live updates on aircraft flight times).

Parallels between Heraclitus' river (Plato, 1921) and books have been variously drawn before. (This has been done with varied phrasing and degrees of poeticism; Katzev (2009) collects a number of quotations on this theme, p. 21–23.) Considering books to be within the

category of documents, the extent to which the same document can be viewed (or even, exist) twice could be queried. The more emotional, psychological, approach to this idea found when making the link to books is of less interest here – though the argument that the viewer's own context and experience will cause the book to be read differently might be linked to Goldmsith's Pragmatics (Goldsmith, 1984). Instead, it is possibly to identify states of flux, focused on the document itself, with degrees of change, both internal and external, in creation and in use.

As the author of this book I have a word processing file of the book open on a laptop in front of me. It is a document and is saved to the hard drive. Every time I add a new character, space, or word, to this document a change has taken place; the document is not as it was a moment before. Is a new document created every time I press a key? And, simultaneously, is the old document lost unless saved as a separate file? It is accepted in presenting these questions that, taken directly as a problem to answer, they are both unhelpfully philosophical and probably impossible to answer with any certainty. The awareness of such themes within the wider context of inquiry, however, is relevant. These cases are similar to Levy's versions of documents, with some degree of periodic fixity in the saving of the file after some number of additions of subtractions agreed upon as a stage of the document, for convenience. Depending on the system of production some form of direct version control or tracking may also exist; here there may be a divide between a conceptual and a technological view of document change, see 4.4.4. Annotations, both physical and digital are also relevant. If I make a biro scribble on a printed document, a change has happened. How does this change the identity or classification of the document? A diary might be designed to be filled in day by day and have large areas left blank or lined to afford this. In this instance we have a physical object, the diary, to point to, when questioning whether or not it is a new document on each occasion. A closer link to the river can be drawn, to the category mistake

about what a river is, or what a document is. It still cannot be resolved, however, without a set agreement on what the essence of document is (materiality, content, use?).

In some cases a degree of final fixity may have been supposed by the author/ designer/ publisher (for example, the sale of a specific edition of a conventional book), giving a more objective point from which to catalogue later changes. Here little or no change is anticipated within the document itself. Change may occur: annotations, inscriptions, marking, etc., but this is an addition from an external source. Other documents published at one point of finality or fixity expect or invite change. A children's book with flaps or dials as conjectured above is an example of this, the book's physical state might be varied to be read in different ways. Whether a flap is flipped to turned to read 'bat' or 'ball' it does not seem to be a change similar to that of a version change, but a change in state of the same version. Here the change is internal and from within a pre-defined set of options. A document might also be made with the expectation and requirement of change or addition without pre-defined limits. Forms (electronic or physical) are created to be filled in, used. Anything might be written in an open answer box, relevant or not, a change which seems more external. An electronic form might only take answers from a list of pre-defined options, this would be a more internal change as for the children's book example.

As shown by the framework (section 4.3), there is an emphasis in this book on the distinct physical/digital token of a document as 'the document', as opposed to broader, conceptual, views of documents. One reason for this is the pragmatic desire to be able to point at a sheet of printed paper and say, directly, 'this is a document'.[16] The denoted artefact may be related, indeed very strongly related, to a group of similar documents, but a distinction between them is still required. There is the direct document before the user (before you, now, as the reader) and the broader 'essence' of the document (see Platonism and documents in 3.4.3). This broader class contains

reconfigurations of the same content within and across mediums (as the above framework covers) and ‘versions’ of a document (see Levy, 1994, above), such as the document I am correcting now, compared to its ‘draft’ incarnation, compared to the final version you are reading.

4.6 – Context for mode and genre

Having started this book with an exploration of genre, mode and medium, a focus on the role of medium (and the interaction of medium and system) has been employed for the majority of this chapter so far. While mode has appeared alongside medium and system as a secondary qualifier, genre has barely been addressed. In this section, the role of mode will be expanded upon first, as this connects to medium more directly. The applicability of genre in relation to medium/system and mode will then be examined and used to advance the limitations of medium and mode.

4.6.1 – Within and between mode(s)

There are two broad categories of change and variation relating to mode that should not be confused: variation *within* a mode (or modes), and variation *between* modes (Figure 4.5).

[INSERT FIGURE 4.5 HERE]

Figure 4.5 – Change within, and change between, mode. The change on the left is, at a broad level, a change within a mode (or set of modes) with the space between the letters changing (the tracking). The right example is a change between modes. In both cases this change within/between mode is taking place within the same medium and system, with the same software and hardware being used in both cases (although admittedly different features of the same software were employed – drawing by the author).

Such an elementary distinction must be acknowledged not because it is abstruse in itself, but due to the differing understanding and employments of mode as a term, as highlighted in section 2.3. To make the initial distinction with reference to Twyman's (1979) high-level use of mode, a change within modes might be variation happening only within the verbal (written typography) mode, such as editing the text in appearance (font choice and formatting) or wording. A change between modes would be the move from the verbal mode, to the combined pictorial and verbal

mode, for example by the addition of an image to the text. To make the comparison another way, directly using Twyman's (1979) matrix, a change within a mode would move across the columns of the matrix, a change between modes moves down the rows.

When discussing change in relation to medium, system was useful as a more all encompassing qualifier. In some cases, even a seemingly simple variation in a document's production could be considered a change in system. For example, swapping the typeface for a letterpress document would require the use of a different set of physical metal sorts – potentially a change in system, depending on the level at which the term 'system' is intended. pursuing medium/system to the specifics of materiality, small change might might result in more or less ink use – the key signifier material, part of the medium. Taking a wider view, systems can be very broad. Clayton (2013) recounts an example of the documentation within an airport changing as the result of changes in operation room seating, from swivel chairs to fixed chairs. The documents 'exist […] within a delicately balanced ecosystem' (p. 339).

With mode, the situation can appear even more pedantic, since, at a detailed level, most types of variation within a document will come about through change within a mode *and* change in one mode will be concomitant with change in another mode. For example: an increase in leading (line spacing) within the wider mode of verbal written language might variously been seen (depending on the use of 'mode') as requiring change in the use of the modes: space, colour, typography, and sequence. A change in space (which might be thought of in relation to 'layout' in a broader design context) will necessitate some change in colour (i.e. an area that was white is now black, the overall 'colour' of the page, typographically speaking, is changed). The higher level mode of typography, of which space and colour are a part will vary and the sequencing of space and text will likely vary across a long document.

Having suggested that this is pedantic, it would be wrong to hold firmly to such a view, since, though it is awkward to follow the above explanation at the most fundamental level when aiming for a pragmatic use of mode, it is also essential to the understanding of mode. For change or variation to occur in a document, or between document instantiations something must change, that change will be within mode(s). Even if 'only' the medium has changed, this would be a change in mode, where medium can be considered in the capacity of a communicative resource (see section 2.3.5).

A simple application of mode to the medium/system-centric framework of 4.3 gives the following:

Relationship 1: *copies and one-offs* – no change in mode.

Relationship 2: *systematisations* – a very significant change may occur between different modes at a technical level, but not at a conceptual/perceptual level. That is, a page of text might have been converted into a vector graphic format, but in such a way that most users will still 'read' it as text, not image (see section 4.4.3). Very minor change may occur within modes.

Relationship 3: *(re)configurations* – very significant changes within modes may be present, from the changes in the representation of content changing as the system changes.

Relationship 4: *embodiments* – very significant changes both within and between modes may be present.

The distinction of translation (change of system, Norrish, 1987) and transformation (change within a system), drawn in section 3.2.1 when 'system' was first introduced, relates directly to the distinction being drawn here between change within/between mode and the relationship of such change to medium. Here, translation is change *between* systems (and related mediums) and

transformation (using the initial broad definitions of section 2.2.1) is change *within* a system, matching the change within/

between mode distinction from this section. Translation was used by Norrish (1987) to explore changes between systems with different capabilities to present content, capabilities can be considered as the range of modes supported by a system/medium (and flexibility within each of those modes). As systems capable of supporting different modes and different degrees of differentiation within the same modes interact (in terms of different instantiations of a document being produced or transferred across these systems), the results would fall into different categories of the framework from section 4.3. See section 4.3.3 for specific reference to Norrish within the framework. The nature of intent in the context of the results of changes that occur with the translation of content between systems of differing capabilities was covered in section 4.4. Document translation can result in a range of changes, some of which may be outside the control of the designer/user and which may or may not be perceived as significant for the use or analysis of the instantiation.

Medium/system and mode may be seen as two variables, which can be combined to give combinations of change and non-change. This results in four combinations: change in medium, but not mode; change in mode, but not medium; and change in both medium and mode (with no change at all as the fourth combination). Within these very broad categories there would then be wide variation as to the extent of the change. A caveat to this is, as mentioned previously and in section 2.3.5, is that a change in medium also represents a change in mode, where medium is viewed as a mode. For convenience it should be assumed that when phrases such as ‘change in medium, but not mode’ are used, it means no change in mode, aside from the mode of medium.

4.6.2 – Relevance of change

Having identified groupings based on change (or lack of) within/between medium and mode, the next question to ask is: what is it within these groupings that is of interest and relevance to the investigation of this book? Certain changes within mode(s) are not of any special relevance: on a full colour website, if the heading colour is changed from green to purple (with no additional special significance attached to this change) then there is a change within mode and not medium. In this example it is a small stylistic change affected by mode variation, but not one of significant enough depth or variable-interaction to be of great interest here. It is a basic, minor change in design that does not raise questions about the interaction of medium and mode. If such a change within a mode required a different medium or system to be employed, that would be of interest.

But this boundary of relevance is, again, a question of degree, one that hangs not only on the extent of the change within/between modes, but upon the identification of medium and system change. A website might be re-designed within a set of modes in such a way that it appears completely different to the reader, is structured differently, but is still within the same general medium (e.g. 'a website viewed on devices of type-x', assume no great change in plug-ins or coding language that would constitute a change in system). Technically this is ‘only’ variation within modes and without change in medium (as in the first example), but it would be myopic to dismiss the change this presents.

If a similar example is constructed using medium, the problem seems to return to the use of medium as mode (see section 2.3.5). For example, a document might be produced in different size format (one regular, one large print, one pocket size, etc.) but the content formatting could remains the same relative to the substrate size. That is, the typography will be different in size and spacing between the instantiations (change within mode) but this change will to some extent be evened out by proportional change in the size of the substrate. In such an example the mode

has changed relatively little by some approaches to classification and the medium is the same in many ways too, but the change between instantiations is pronounced to the reader. These are different instantiations with different specific intended uses, rather than minor copy revisions to a document, but certain applications of medium and mode categorisation could be applied to mask this substantial difference. The system of production and medium is of the same broad type: the same machinery and software used to create both instantiations on the same type of substrate, but trimmed to a different size. This is a change in size as a difference within the materiality, but not a change to new materiality. Likewise, there has been a change within the other modes, but in proportion to the size change.

The specifics of the missing factor necessary in the discussion of the point at which change becomes of interest, with regards to medium and mode, is muddied by limiting consideration to only medium and mode, or at least to an overly simplistic view of mode. Setting up mode as an axis of analysis with medium alone does not allow for the range of possible relationships between document instantiations to be adequately addressed. Twyman's matrix/schema (1979) sets out 'mode of symbolization' against 'method of configuration'. The confines of the schema as written can therefore be interpreted as being wholly mode-centric, with the second axis being further configurations within each mode. As was noted above (footnote **Error! Bookmark not defined.**), this schema shows a change within a mode when moving across columns and a change between mode moving between rows. As was suggested by Bateman (2008) and in section 2.2.4, it is also comparable to a simple genre topology.

4.6.3 – Approaching genre

Following the application of mode to the discussion of medium and system, two related gaps are apparent: the need to articulate the specifics of changes within modes; and a way to account for

seemingly small changes within the framework of medium and mode which appear to produce far greater changes in the reception of a document than their 'technical' classification would suggest. Put another way: what is needed is a way to discuss the small changes in style and presentation that result in changes greater than the sum of their parts. Genre can be applied to at least partially account for these gaps, although care is needed at this initial point to work up to broader concepts of genre gradually, so that the details and practicalities of the role of genre are not obscured and lost in a divorced conceptual overlay. While genre is used as the overall term here, only specific aspects of genre will be applied.

The use of genre initially required is one that presents a means of grouping and categorising documents using both medium and mode, and potentially differentiating factors (and with the possibility to 'combine' medium and mode). This appears direct enough and broadly compatible with the review of genre in section 2.2; however, the dynamic interplay between medium, mode, and genre should be kept in consideration. Here genre is being used as an overlay developed from medium and mode (at this stage – a fuller genre model would be more complex), but the use of mode and medium will, in turn, be informed by genre. (See Graham and Whalen, 2007, Bateman, 2008, from section 2.2.) At the same time, the socially constructed nature of genre also needs to be emphasised. Such an emphasis should not be made without awareness of the related context for medium and mode. To emphasise the social aspect of genre should not diminish the social aspect of medium and mode. However, medium has, to some extent, a basis in physicality and materiality (see sections 2.5.2 and 4.2). While the use of medium extends well beyond and extrapolates above simple physicality in the act of considering materials and mediums in use (perhaps even positing a genre of medium) there is a degree of difference between the level of social construction here and in genre (albeit genre is partially constructed from medium).

Likewise, with mode, depending on the level of mode, sub-mode, or resource used, there is some fundamental property in play – such as the use of space. While this is all conceived of within a social context – indeed 'mode' *only* has meaning when used in communication (social) – genre appears to extend beyond that.

4.6.4 – Genre and the role of style

Can an idea of style as a sub level, rather than constituting the whole of, genre be arrived at through the specifics of mode? For example, style could be defined as: the combination of the specific articulation of the modes (including medium-as-mode) present in a document. That is, the exact colour, size, positioning etc. of elements in the presentation of the document are its style. Each of the specific variables might be modes, or combinations of modes. Typography, for example, might be a mode, but built upon the resources or sub-modes of colour and space (see section 2.3). This idea is partially similar in application to CSS or similar 'style' mark-up, be it for display specification or categorisation. Moys (2012) employs such a technical approach in constructing a 'framework for describing typographic presentation' (p. 28), using terminology familiar from advanced desktop publishing 'software packages such as QuarkXPress and Adobe InDesign' (p. 28). Using such a system, a delineation of the variables and use of mode creating the appearance[17] of the document can be stated. This technical statement of mode gives the visual appearance of elements in a partially content-agnostic manner, a technical mark-up of style, but may not match exactly to social, genre-relevant, uses of style.

The GeM model (Delin, Bateman, and Allen, 2002/3) presents an expansion and 'uncollapsing' (p. 4) of Waller's typographic genre model (Waller 1988), creating a separate layout structure, encompassing: 'the nature, appearance and position of communicative elements on the page;' (Delin, Bateman and Allen, 2002/3, p. 5). This is where the more stylistic changes

brought about by variation in mode within medium are located, as the relationship between small changes at this level. It is hard to take any level fully in isolation, as it is only through the combination of the whole that the document and its genre is fully analysed. While the layout structure is most relevant here, it must be acknowledged that changes to the layout structure may change the interpretation of other structures, and vice versa.

Without wishing to delve into another discussion of definitions, there seems to be a separation between a full, clinical, account of the variables of presentation (style) and the overall visual effect created by some of these variables as perceived by the viewer. A description of the appearance of the document is only basic cataloguing, a further level of analysis is needed to identify those factors contributing to the appearance that are of disproportionate significance compared to their fellows in the perception of the user (and/or of the designer or client). Certain features of the application of modes may be distinctive and key to a style, others more incidental (e.g., 'this shade of green is what sets this group of documents apart, the background colour is incidental').

This re-approaches the point raised at the start of this section: the need for a way to account for seemingly small changes within the framework of medium and mode which appear to produce far greater changes in the reception of a document than their 'technical' classification would suggest. Section 4.5.2 suggested some examples: a generally insignificant change in heading colour, a slight change in format size and a wide range of such small, but very noticeable changes can be imagined which, while noticeable are not sufficient to change the genre-level perception of 'style'. In some situations a certain type of change will be relatively insignificant, in others that variable may be one of the key carriers, main signifiers, of a genre of style (or style of genre? – the terms begin to be exhausted). It may also be that only certain

changes in combination create a large effect. Such a line of thinking suggests relevance to two related areas: the use of brand styles, and the poorly articulated use of style leading to genre confusion.

Expressed in the terminology of this book, the *visual* styling of a brand (brand visual identity) might be described as: a system for the application of a specific use and combination of selected states of modal variation such that a cohesive style is presented across contents and formats. Here a set of mode variables are chosen, such as a specific colour (or group thereof), a specific typeface (or selection thereof), or a certain use of shapes (e.g. always using curved corners) and applied in a range of different contexts.[18] Logos may also form a key part of the brand identity, using many of the same features of colour and type in unison with the brand. Logos, as a concentrated focus of brand identity also illustrate the extent to which certain variables within a style (in the technical sense) can be changed and manipulated while still leaving the impression of unity, in a looser, user perceived sense).[19] An extreme example of this is found in the generation of parody or spoof logos. An online image search for the logo of many major companies, (e.g., Starbucks) will reveal numerous unofficial variations and applications of the logo. These variations might include changes to the core brand's colours, wording, illustration, and typeface. However, the spoofs are all only effective because the retain a connection to the original brand *despite* the variation.

Genre and branding are not the same, but at a visual communication and design level there is a similarity in the way in which both encompass sets of related but different material (in this case documents) through groupings of more or less rigidly defined socially perceived variables. Brand and genre, while two dissimilar areas in a number of ways, can both lead to the generation of a stereotype of groups of documents and group identities. Brand and genre overlap in a wide range

of ways – a brand may be applied to documents belonging to a wide range of genres. Motivations and origins may be different – there may be a more conscious intent to create a brand than to cliché a genre. A genre is generated and applied through interaction and experience, a brand is created to project the impression of a certain type of experience. Both maintain a mutable, non-content-locked[20] identity across potentially disparate documents/artefacts. Brands may also be influenced in their selection of visual identity by the configuration of the genres related to them. For example, a specialist publisher of horror novels may select its visual identity to conform to the visual genre of the covers of horror novel books.

In the horror example the manipulation of style and genre is deliberate, elements of style prevalent in one genre are applied to another to give a specific look and feel with related connotation to another. While borrowing inference from another genre might be used successfully in this way, accidental misreading of a genre by a designer might lead to a document that is confusing for the user. This would be a situation in the form of 'well this *looks* like a restaurant menu, but it's actually a film listing'. While such a situation may seem peculiar, this example is taken directly from the author's design teaching experience. Working with 1st year undergraduates who had been tasked with designing and formatting a film listing leaflet one leaflet was pointed out as looking 'menuey' by students commenting on one another's work in group a feedback session. When asked what it was that gave this impression the group identified the specific use of centering, italic, and rules (lines) on a white background as looking like a restaurant menu. Similar situations will be relatable to those involved in teaching document design – practice based commonalities that hint at unintended genre confusion through styling.

While borrowing conventions from other genres may be deliberate, it can also be an unintended effect brought about by the specific use of mode variables in combination or isolation, which are then seen as iconic to another genre (see section 4.4 for intent).

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[1] Only the majority, not all, are the same in terms of OHCO. The comments added to the pdf would represent a deviation and the code/mark-up views presented in a couple of cases are ambiguous in terms of classification.

[2] See 2.5.2 for Bateman (2008) on medium and viewing media within a context of systems of production and reproduction (for 'systems' see section 3.2 of this book, Kress and van Leeuwen refer to 'distribution media' (2006, p. 237)).

[3] Such relationships may therefore be limited to systems of compatible 'capabilities' ('capabilities': the range of graphic resources within a system, such as the use of size, colour and style variation, paraphrased from Norrish, 1987, p. 2).

[4] Swales' (2004, Chapter 1) use of genre chains, genre sets, and genre networks relates to a similar idea to what is suggested here for document sets. However, as is illustrated in the case studies of Chapter 5 in this book, the use of document set here has a far narrower scope and operates on a lower level (as necessitated by the nature of the study for which they are suggested) than does Swales' genre terminology.

[5] Theme and content where there is a very high to total overlap of written (or other mode) content. This is a far more directly homogeneous set of documents than might normally be considered in a document set for document clustering (see Aggarwal and, Zhai, 2012 for an overview of computational text clustering methods, where 'text' can range from short phrases to longer documents).

[6] OHCO: ordered hierarchy of content objects. Ontological view of text identity based on the ordering of content. See DeRose et al (1990) and section 3.4 of this book.

[7] Low and high refer to the capability of a system to differentiate content by variation of appearance and use of space (Norrish, 1987).

[8] Non-lossy: any data compression does not lead to a distortion of the original image data or the ability to reproduce the image.

[9] Except of course that the document must be copied from the external memory into the system memory, read and converted into a human readable format etc.

[10] This might also be interchangeably termed a reconfiguration, though the prefix brings with it an indication of re-ordering and heritage – that one is a reconfiguration of the other (with a sense of primacy of that preceding other), as opposed to being different configurations of themselves.

[11] Mode does not change, excluding seeing image as text (see technical vs. conceptual, section 4.5.3). The possibility of medium functioning as a mode as raised by Kress and van Leeuwen (2001, p. 22 and see section 2.3.5 of this book) should also not be discounted. In this regard certain cross-media relationships automatically bring about a cross-modal change (at least for certain groups of user/viewer).

[12] The term 'linear' should be questioned in this context. On what grounds are linear and non-linear decided? To take a path through printed content in an order other than that of the page numbers is not necessarily non-linear. At the other extreme, any route is linear from a certain perspective and intention of inquiry. Ultimately, context should be considered beyond the author/designer's intent and the spatial sequence of content.

[13] For many of the uses of transclusion here 'transdelivery' may be more technically in line with Ted Nelson's original views (Nelson, 2007, 22:59), 'if a document sends for a piece from somewhere else, I call that transdelivery', compared to transclusion: 'the same thing knowably in two places'. However, as the term transclusion originally relates to hypertext, not print text, its use in this book is already broader than its original definition.

[14] The division between text and image can be distorted further at the next level of technicality. Bitmaps and vectors of letters can be considered as images, an arrangement of these images is also an image. In general word processors don't store their files made of letter-images as images, but this need not be the case. Chadtech (an image based word processor for maths and logic notation) (Stearns, 2014) displays, saves, reads and edits 'text' documents as image (.png) files (although in this example the machine readable part of the text within the image is encoded in coloured pixels in one corner of the image, not in the area of the letterforms themselves).

[15] See Levy's footnote 1 on p. 24 (1994) on the temptation to put 'same' in quotes, a similar struggle has plagued the author of this book.

[16] 'This is a document' cannot be stated purely objectively; there must still be a context of convention, understanding, communication and technology to interpret the document as document.

[17] Consider appearance for the moment, as the terms style and genre are applicable to the written content (the words and their use, rather than their printed embodiment). However, the separation between words and visual style/genre is not wholly distinct. In looking at a 'traditionally' typeset book page the distinction is relatively clear. Where banner headlines, pull quotes, and other short, attention grabbing, and often large, pieces of text are used as part of the design (as design elements themselves, not just 'words', though words on a page are always part of the design) the words themselves might begin to contribute to the style, or the initial interpretation of style/genre. A basic example might be the covers of lower-end men's/women's magazines using sensationalist/taboo words to grab attention: 'sex', 'fat' etc.

[18] Possibly with sub-specifications and exceptions for certain contexts. Consider Norrish's (1987) translation between systems of high and low capability – the application of a brand to a system of lower (or different) capability may require differences appropriate to the systems. For example, the core brand font might be Akzidenz Grotesk, but Arial is permitted in the corporate email footer signature.

[19] Having focused on brand similarity, it should be noted that in certain brands change and mutability of style within certain modes (within bounds of varied strictness) become the unifying distinguisher. For example, Stephan Sagmeister's *Casa Da Musica* logo (Roberts and, Wright, 2010, p. 10–25).

[20] Content-free, broadly speaking, there may be some examples where content is a key part of genre identity, and/or certain genre classification systems that emphasises content.