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A presentation set of 19th and 20th century photographic processes from the Art Gallery of Ontario's Harris study collection

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A PRESENTATION SET OF 19th and 20th CENTURY
PHOTOGRAPHIC PROCESSES FROM THE
ART GALLERY OF ONTARIO'S HARRIS STUDY COLLECTION

by

Sara Keane

Bachelor of Arts, Honours - University of Western Ontario,
London, ON, 2007

An applied thesis project
presented to Ryerson University,
the Art Gallery of Ontario,
and the George Eastman House International Museum of Photography and Film

In partial fulfillment of the requirements for the degree of
Master of Arts

In the program of
Photographic Preservation and Collections Management

Toronto, Ontario, Canada, 2011

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Author's Declaration

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A PRESENTATION SET OF 19th and 20th CENTURY PHOTOGRAPHIC PROCESSES FROM THE ART GALLERY OF ONTARIO'S HARRIS STUDY COLLECTION

Master of Arts, 2011

Sara Keane

Photographic Preservation and Collections Management

Ryerson University, Toronto, Ontario in coordination with the Art Gallery of Ontario,
Toronto, Ontario, and George Eastman House International Museum of Photography
and Film, Rochester, New York.

Abstract

With the rise in digital photography—and the shift in photography's materiality—it has become increasingly important to revisit photographs and reconsider them as multifaceted objects, and not simply as two-dimensional images. In this applied thesis project, the Art Gallery of Ontario's John Richmond Harris study collection was used as the basis for creating a presentation set of fifteen different 19th and 20th century positive photographic processes. With specially constructed archival housings and concise didactic labels accompanying each photograph, this presentation set aims to enable learning about the identification of photographic processes through the use of original examples, while encouraging the consideration of photography's material qualities, to help the user better understand photography's past social and cultural function.

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There are many individuals to whom I owe the success of this project.

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One of the fundamental ways to analyze a photograph is through the identification of its chemical composition, which can provide a wealth of information about when and where it was made. But, recognizing a photograph's other physical properties—such as inscriptions and even damage—can also help one glean a better understanding of a photograph's use and function. Often, this kind of pertinent information is only readily ascertained when the original photograph—not a reproduction—is available for first-hand use. A photographic study collection represents a conduit to the education of photography—its history and development—that emphasizes the original object and its material form, and addresses the various particularities and challenges that are associated with studying photographs. For the past decade and a half, photography has experienced a major overhaul in its practices and materials due to the rising presence of digital technology and its various applications. Increasingly, there has been a move away from analogue photographic production and towards digital options, which yield images but not necessarily tangible objects.

With this digital shift has come a variety of ways to study photographs without actually using physical photographs. While digital media has many useful applications in a variety of learning situations, for the study of historical photographs, some argue that this shift to digital may present more hindrances than benefits. As James M. Reilly suggests, “illustrations cannot fully convey the colour, surface character, or any number of other distinguishing features of actual photographic objects. Anyone learning to accurately identify photographic processes needs direct and extensive experience with

photographs”¹. Thus, learning about the medium’s history—its early experimentation, evolving practices and various iterations—through reproductions in books or on the Internet does not sufficiently address photography’s innumerable and intricate material forms, which are critical to engage with when studying photographic processes. However, such an approach to the consideration of photographs is waning as the landscape of photography changes. Using the Art Gallery of Ontario’s John Richmond Harris Study Collection as my body of work, this applied thesis project will explore some of the applications and benefits of a study collection and “presentation set” as an educational tool in the identification of photographic processes.

John Richmond Harris, an individual, private collector and photography enthusiast, donated this collection of works to the Art Gallery of Ontario (AGO) in 2006. This gift was given with the stipulated purpose of being employed as an educational resource. While building this modest collection, Harris was determined to find as many variations of a given process as possible to provide an extensive overview of photographic materials and formats, and offer grounds for comparison between the objects. From this collection of material, I have created a “presentation set” that will serve as an overview of nineteenth and twentieth century *positive* photographic processes that were in popular use and circulation, highlighting objects from fifteen different processes. The primary objective of this applied project is to facilitate greater access to the AGO’s Harris study collection, and enable learning about the identification of photographs through the use of original *objects*. While this presentation set will encourage learning about the identification of photographic processes through close examination, handling, and

¹ Reilly, James, M. *Care and Identification of 19th Century Photographic Prints* (Rochester, NY: Eastman Kodak Company, 1986), 49.

comparison, it will also serve to enhance the users knowledge about different aspects of photography's history.

Achieving the project's goal has involved three distinct areas of development. First, broadening the scope of the collection to include a more diverse range of photographic processes was necessary to give the user of the set a more comprehensive introduction to photography's past practices and materials. The second step involved researching and writing didactic labels for each object/process featured in the set, to provide the user with a contextual framework for each object included; such information will enable the user to make connections between the objects and draw some of their own conclusions. Finally, the third step required designing and constructing individual archival housings for each object. These housings encase the photographs to protect them from any potential handling damage. However, rather than being restrictive, as some protective enclosures can be, these housings privilege all sides of the object—recto, verso, and edges—to afford the user the opportunity to amass as much visual information as possible to better understand the object. A detailed explanation of this process of development and decision-making will be outlined in Section III; examples of each of the didactic labels will be provided in Section VI; and photographic reproductions illustrating the completed archival housings will be provided in Section V.

While investigating the use of photographic objects as the foundation for teaching about photography and the history of the medium, I discovered that this was a complicated subject area because there has been little, if any, literature written specifically on the subject of “Photographic Study Collections”. To efficiently approach this topic, it was necessary for me to simplify the subject into its component parts, research them separately, and then re-organize the information to establish a foundation for my subject and work. Based on the intended use of my body of work, I decided to first look at the topic of museum education, to establish a context for the study collection, and explore how a photographic study collection of this kind might fit into and function within museum educational programs.

Many sources point out that one of the primary roles of the museum is that of educator and suggest that, because a museum’s lessons are based on its collection, the museum’s *objects* should always be used as the focus of the teaching. In the chapter “The Potential of Museum Learning: The Essential Museum”, in *The Manual of Museum Learning* (2007), author Elaine Heumann Gurian points out that museums remain one of the few places where one can find rare and interesting cultural and artistic objects. Gurian argues that the physical presence of the museum’s objects is what makes the museum such a valuable institution and that these objects should be made accessible to the public for an enhanced learning experience. In a similar vein, author/editor Eilean Hooper-Greenhill discusses the “object-lesson” in the chapter “Museum Education”, found in *The Educational Role of the Museum* (1994). The “object-lesson” is a conduit for education that is historically rooted in nineteenth century pedagogy, which focused on

training the senses and using authentic objects to conduct lessons. In support of her argument, Hooper-Greenhill presents graphs and illustrations to represent ways in which the object can be explored by museum educators, and suggests different contexts in which to think about the object.

Further, Hooper-Greenhill discusses the dual function of the museum, as educator of the collection, but also as custodian of the collection. The author points to some of the problems that can arise from these two somewhat conflicting roles: specifically, the debate over whether to preserve or to display objects. Other sources, such as Max Van Balooey's text "Hands-on or hands-off? The Management of Collections and Museum Education (1990), suggest that finding a balance between the goals of education (read: access) and collections care (read: conservation) remain challenging, particularly as museums try to use a variety of teaching philosophies, such as *hands-on* approaches, in an attempt to reach out to wider audiences. The discussions presented in these sources are directly applicable to this project—the purpose of which is creating access to, while at the same time protecting, photographic objects—and were very helpful to me as I began to think about the presentation set and its function within the institution.

Another text that shaped the direction of my research was *Museums and The Interpretation of Visual Culture*, also written by Eilean Hooper-Greenhill and published in 2000. In a chapter titled "Objects and Interpretive Processes", the author notes that the object is the site where discursive formation and material properties intersect. Hooper-Greenhill discusses two major intellectual fields—Visual Culture and Material Culture—that examine objects and are relevant to my investigation into the role of a study collection or presentation set. Visual culture, the author explains, addresses the meaning of the image; it is largely interested in two-dimensional objects and the

relationship between the object and the viewer. Material culture, by contrast, is mainly interested in three-dimensional objects and the meanings of these objects that are inscribed in their forms, and by their uses and trajectories across time. Although these definitions helped me to establish an intellectual framework through which to consider photographs in a collection, I also wanted to better understand how objects are used for teaching in museums.

A separate, but related, category of my research centered on a branch of education called “Object-Based Learning”. Object-based learning is a method of instruction that promotes a tactile learning experience, where touching and handling objects is emphasized. Judging by its name, I anticipated this subset of museum education to be very useful; however upon closer analysis, many of the sources that I found fell outside of my topic’s scope. For example, at first glance, the study titled “Object-Based Learning in Higher Education: Pedagogical Perspectives on Enhancing Student Learning through Collections” seemed like it would be useful to me; but, ultimately the study concentrated on scientific collections, from medical objects to anthropological artefacts. Very few sources about object-based learning focused on objects in a *museum* setting.

In addition to this drawback, I also discovered that in the areas of museum education and object-based learning, few of the sources treated the photograph as an object. Instead, most discussions of photography were in reference to using photography’s illustrative capacity in the education of *other* things—using photography as a surrogate for “real”, three-dimensional objects. However, one resource titled *Perspectives on Object-Centered Learning in Museums*, a compilation of essays edited by Scott G. Paris in 2002, proved to be quite valuable. Although photography was not the central focus

here either, some of the principles about object-based learning and the museum were certainly relevant to the concepts behind a study collection/presentation set.

For example, in C. Olivia Frost's essay called "When the Object is Digital: Properties of Digital Surrogate Objects and Implications for Learning", the author describes that, while there are some benefits to reproductions, there are also definite drawbacks, including the information that is lost when a reproduction is used as a surrogate for the original object. Frost makes note of the growing trend in objects being "born digital" and how this changes the focus of an object from its material form to strictly its image or surface content. Based on this tendency, the author argues that it is increasingly imperative that educators recognize and stress the differences between an object and its digital proxy—such as scale, form, colour—to students and audiences in the museum. Current studies in photography also grapple with the loss of material form through digitization; thus, I found this article to be beneficial for my study, even though photographs as objects did not feature prominently.

Moving to the discussion of the photograph's material form, a section of my research concentrated on the identification of photography's chemical and physical properties. These resources were studied to inform the didactic labels used to introduce and identify the processes included in the presentation set. I consulted many process-identification resources such as James M. Reilly's *Care and Identification of 19th C Photographic Prints* (1986) and Bertrand Lavédrine's *Photographs of the Past: Process and Preservation*, as well as books on the technical terminology of photography, such as Gordon Baldwin's *Looking At Photographs* (1981).

Of this category of books, I found Brian Coe and Mark Haworth-Booth's 1983 exhibition catalogue *A Guide to Early Photographic Processes* from the Victoria & Albert collection in London, England to be very useful, because it really combined these two elements. The first section of the book provides an examination and comparison of all early photographic processes through an essay, a "processes key", and a glossary with a timeline documenting all processes that were in general use up until World War I. The second half of the book analyzes the plates from the exhibition, which are examples of the processes described in the first half and are arranged according to their chemical and physical classes rather than chronologically; these entries reinforce the idea that the understanding of the physical components of a photograph can provide great insight into their production, meaning and use.

Additionally, the Image Permanence Institute's *Graphic Atlas* website proved to be an incredibly useful tool for gathering information for didactic labels. This interactive website allows the user to navigate the site via three different *tabs*: Guided Tour, Compare, and Identification. For my purposes, the "identification" tab was most useful to me as it organized the processes by type, such as *pre-photographic*, *photomechanical*, *photographic* and *digital*, and offered fundamental information about each. Included in the descriptions of the processes was a timeline of usage and physical attributes of the process. The site was also very well equipped with a variety of three-dimensional and magnified visual examples that were helpful to gain a better sense of the photographs' surface texture and material form.

The reason or motivation behind the new housing enclosures for the presentation set's objects was to improve accessibility to the *object*—meaning, privileging both the recto and verso of the photograph. Thus, the final "category" of my research focused on the

scholarly discourse regarding the materiality of photographs, which is a fairly recent development in photography studies in North America. In his article “The Polaroid as Photo-Object” published in the *Journal of Visual Culture* (2010), Peter Buse attributes this rising interest in materiality to the digital age, and resultant loss of material form. He argues that, in this digitally dominated era, the photograph’s supports and mounts are no longer paper or card but rather computer screens, and the photograph’s singularity becomes questionable as it is increasingly transmitted as computerized script.

Due to the fact that this offshoot of photography studies is relatively new, one of the problems I encountered was that there are very few resources available. Most of the texts that I referenced in this category were the essays found in *Photographs Objects Histories*, published in 2004 by Elizabeth Edwards and Janice Hart. In the introduction to the book, Edwards and Hart suggest that in most cases, a photograph is judged by what it is *of* rather than what it *is*. The editors state plainly that the central argument in the book is that there is a need to shift away from the dominance of the image content and toward a consideration of the physical properties of the photograph that can influence the visual information.

Another essay from *Photographs Objects Histories* that was central to my investigation of materiality was Joanna Sassoon’s “Photographic Materiality in the Age of Digital Reproduction”, which discusses the current trend of transferring analogue photographs into digital files. Sassoon argues that a digital referent in no way acts as an appropriate substitute for the original photographic object; this, Sassoon argues, is because reproducing a photographic object reduces the complexity of a multi-dimensional object into a single dimension. By ignoring vital components of the object—such as the back of the photograph—additional information that could contribute to the understanding of the

object is eclipsed. Similarly, in his essay “Making Meaning: Displaced Materiality in the Library and Art Museum”, also found in *Photographs Objects Histories*, Glenn Willumson notes that when only the image content (or, the recto) is made visible—which is often the case in a museum display—significant historical information that may be inscribed on the verso of a photograph is entirely overlooked. Willumson also claims that in order to gain a complete understanding of the object, it is necessary to provide the viewer with access to the object’s material form—in other words, all possible visual clues—as is the case with a study collection/presentation set of this kind.

Section III: Methodology and Summary of Work

To achieve the project's objective of enhancing the accessibility and usability of the study collection for a public audience, I engaged in three principal *applied* components that contributed to the project's completion and success. The first step involved broadening the scope of the study collection's holdings to include a more diverse range of photographic processes and formats, as well as a wider date range for the presentation set. Second, was the researching and writing of didactic labels for each process featured. And lastly, the final component called for designing and constructing individual archival housings for each object in the set.

Collection Expansion

When I began this project, forty-seven objects constituted the John Richmond Harris study collection. Though a sizable group of photographs, the collection was rather limited in its variety. Among these forty-seven objects, which date between 1860 and 1910, only eight photographic processes were represented, including: albumen, cyanotype, tintype, photogravure, collodion POP, gelatin POP, gelatin silver print, and autochrome. Although Harris made clear his intentions at the time of his donation—to use the objects for educational purposes—based on these initial findings, it was my position that the collection required some expansion in its breadth before a pedagogical application of the collection would be feasible.

Therefore, a wider variety of processes in the study collection was pursued primarily to ensure that the *presentation set* (the basis of which is formed by the objects in the study collection) is comprehensive enough to prepare the user with a strong foundation about the history of photography; ideally, this knowledge will, in turn, better prepare the user to

identify photographic processes. After much research and consultation that will be further discussed below, the final selection for the presentation set includes examples whose dates range from the early 1840s until the 1970s, from fifteen different processes. To add to the processes mentioned above, the presentation set also now boasts the following: daguerreotype, salted paper print, ambrotype, carbon print, woodburytype, gelatin silver print on resin-coated (RC) paper, chromogenic print, and Polaroid print.

John Richmond Harris also donated most of these additional objects, in a gift that was separate from the study collection. The selection of the added objects was guided, logistically, by the fact that they were immediately available and will not likely be used in any upcoming exhibitions. These supplementary objects will be stored with the presentation set in the vault and their location will be updated in the gallery's database, should they be needed in another capacity in the future. The final selection for the presentation set, then, is as follows:

Process (Period of common use):

Daguerreotype (1839 – 1860)
Salted Paper (1840 – 1860)
Cyanotype (1842 – mid-20th century)
Albumen (1855 – 1900)
Ambrotype (1854 – 1870)
Tintype (1853 – 1930)
Carbon (1855 – 1930)
Photogravure (1858 – early 20th century)
Woodburytype (1864 – 1900)
Gelatin POP (1890 – 1920)
Collodion POP (1890 – 1920)
Gelatin Silver (Fiber-based and Resin-Coated) (1880 – present)
Autochrome (1907 – 1935)
Chromogenic (1942 – present)
Polaroid (1948 – present)

Each process listed above is represented by one example in the presentation set, except for the Gelatin Silver print, where two examples are featured. As the date range above

suggests, the gelatin silver print has had the longest active history of any positive photographic process—included on this list and otherwise. Because of its enduring history, the gelatin silver print has undergone many developments, which has resulted in various iterations. Two of these *iterations* will be used in the presentation set to illustrate the substantial differences between earlier versions and later versions of the process. Although each process has a number of possible variations that could also have been presented here, the ubiquity of the gelatin silver print—its universality in both public collections and private collections—warranted the inclusion of multiple examples in this presentation set.

The Selection Process

To restate, the presentation set is a sampling of nineteenth and twentieth century *positive* processes that were in common use and circulation. Because there are seemingly infinite variations and combinations of photographic processes, focusing on only the most *common* types, and ignoring more obscure examples, became a necessity in order to maintain a manageable scale for this project. As James Reilly suggests, “in first learning to identify photographic print processes, it is best to concentrate on the major materials, and temporarily avoid the others”². This excerpt, essentially, expresses my approach to the consideration and final selection of photographs for this project.

As the list above indicates, the presentation set is much more heavily weighted in nineteenth century objects than twentieth century. The uneven distribution is a product of the time periods in question: because the nineteenth century was teeming with experimentation and new discovery, there are simply more processes from the

² Reilly, James M. *Care and Identification of 19th Century Photographic Prints*, 48.

nineteenth century to identify than those from the twentieth century. When studying photographic processes, it is crucial to remember that photography's evolution has not been a linear progression; rather, it is comprised of parallel developments in a multitude of related areas, from materials to apparatus. Research led to new contributions in science and technology, which in turn allowed for the furthering and refinement of image-making processes. Additionally, nineteenth century photographers made their own materials, which, in conjunction with the continuous testing and invention, led to highly variable, hybridized results in positive prints. Some of these prints are indistinguishable from one another as they exhibit many of the same physical characteristics³. Due to the innumerable combinations of materials and the inconsistencies in practice, then, identifying photographic prints from the nineteenth century can be quite difficult, and arguably require greater explanation and assistance to navigate, which also explains their larger presence in this presentation set.

Processes introduced in the twentieth century, on the other hand, were much more streamlined, as practices became standardized and materials became industrially produced, giving more uniform results. This shift is illustrated in the set through the inclusion of the three types of photographs that dominated the industry during the twentieth century—gelatin silver prints, chromogenic prints, and Polaroid (instant photography) prints. Such standardization certainly makes the task of identifying photographs from the twentieth century more straightforward. For example, large manufacturing brands like Kodak, Fujifilm and Polaroid often printed on the back (verso) of their products, explicitly denoting the processes or materials used; to add,

³ Coe, Brian and Mark Haworth-Booth. *A Guide to Early Photographic Processes*. (London: V&A Publications, 1983), 9.

photofinishers during much of the twentieth century would typically stamp the reverse of a print, again, indicating the process used and occasionally the date⁴.

It is relatively easy to identify twentieth century materials, a point that might make someone challenge their inclusion in the presentation set at all; however, incorporating the most recognizable processes from the last century alongside their nineteenth century counterparts, does have definite benefits. First, the disproportionate number of processes from each century explicitly points to the aforementioned shift from handcrafted, trial and error to mechanized, commercial manufacturing. And, second, twentieth century materials and processes, for the reasons already mentioned, are presumably more familiar to people. Offering familiar examples will create an easier access point, helping to engage and anchor the user when they are learning about the other, less familiar, processes.

Deciding on which processes should be selected for the set was not a clear-cut task. In the literature focused on the identification of photographic processes, there is no single prevailing way in which the processes are classified. Due to photography's complicated path, photographic processes have been categorized in various ways: by chronology; by *type* of supporting material—for example, “direct positive on glass”⁵; or by *type* of image material, such as *silver-based*, *pigment-based*, or *photomechanical*⁶. I consulted this literature and other sources to determine the types of processes that could be considered the *most common*. I made a conscious effort to consider each of these organizational approaches when deciding on the additions for the presentation set, in an

⁴ Image Permanence Institute. “Graphic Atlas - Identification”. Accessed January 20, 2011. <http://www.graphicsatlas.org/identification/>

⁵ Lavédrine, Bertrand. *Photographs of the Past: Process and Preservation* (Los Angeles: The Getty Conservation Institute, 2007), 2.

⁶ Coe, Brian and Mark Haworth-Booth. *A Guide to Early Photographic Processes*, 31.

attempt to acknowledge the different angles from which photographs can be studied, and how these different clusters of information might contribute to the identification of photographic prints.

While filling in the “missing gaps” in photography’s historical timeline was a factor in the decision to expand, the decision was also based on my motivation to present an array of materials *on which* and *with which* photographs were produced. Following this logic, then, I strove to acquire a daguerreotype and a salted paper print, the two processes that mark the birth of photography, to add to the set. These two examples also address the notion that from the medium’s beginning, photographs were made using an assortment of materials, such as a silver-electroplated copper plate and paper, respectively. In addition to the daguerreotype’s copper support, other alternatives to photographs on paper are represented in the set, including the glass supports of the ambrotype and the autochrome, and the iron support of the tintype. And, while both the daguerreotype and salted paper print use silver halides as the light-sensitive substance with which the image is formed, examples that employ alternatives to silver also exist in the set, including the pigment-based carbon print, iron-based cyanotype, as well as the ink-based photomechanical prints, the photogravure and the woodburytype. These categories provided me with a framework for the selection of objects for the set—from the existing processes within the study collection and in the pursuit of additional , “supplementary” processes.

A central function of this study collection is to enable analysis and learning through comparison; as such, I wanted to use the material that was already available to me in the study collection as a springboard to determine which accompanying objects could maximize the teaching potential of the existing objects. For example, because there was

a photogravure already in the study collection, I felt that including a different type of photomechanical print—a woodburytype—would complement the photogravure because photomechanical reproductions are often difficult to distinguish from one another.

Similarly, the chromogenic print was added to the set not only because it is the most familiar and wide-reaching colour process in photography's history, but also to provide a juxtaposition between a later popular colour process with the earliest commercially popular colour process, the autochrome (already available in the study collection). This paralleling will allow the user to see the differences in production and the degree to which practices changed in a relatively short period of time.

The selection for the set was not strictly process-oriented; having an array of presentational formats was also an important goal for the final selection. The way a photograph is presented communicates a great deal about the way in which a photograph functioned socially and culturally; and, knowing its historical use (or misuse) can also explain the object's other physical features, such as wear and tear. Therefore, a concerted effort was made to include a carte-de-visite, single prints, stereographs, album pages and cased objects, to offer the user of the set greater insight into the photographs' many applications.

Didactic Labels

For each object selected, I set out to write an informational label that would offer specific details about the process—and, when applicable, the format—in question. To approach this component of the project, I began by establishing a template for the labels (refer to Appendix A). Formulating a template compelled me to delineate the type of information that should be included, which in turn, prompted me to focus my research. The purpose of these labels is to provide the user with enough background information about each

featured process—its history, its structure, as well as its common visual cues—so that they can begin to identify the process at hand, as well as offer some insight into the complex annals of photography. Although the labels are not exceedingly in-depth, they will, ideally, equip the user with concise information on which they can build with further independent research.

The labels are divided into four distinct sections. The first section, the *object-specific* information (also referred to as “tombstone information”) lists the artist—along with the artist’s nationality and dates—title, date, medium, and credit line. I derived this information from the labels that were assigned to the objects by the AGO at the time of their donation. The second section of the labels introduces the reader to the history of the process. It addresses key elements including the credited inventor of the process, the time period and location of its popular usage, as well as the specific purposes, if any, for which the process was employed. This section is intended to give the user a basic understanding of photography’s non-linear development and allow them not only to think about each process in relation to the others in the set, but also in the context of the medium’s larger history.

Distinguishing the component parts of a photograph, including the light sensitive materials that form the image and the structure of the photographs’ layers, is key to the identification of any process. These compositional and material differences also account for the unique signs of degradation that photographic processes exhibit. Recognizing the deterioration mechanisms affecting a photograph’s components, or a lack thereof, can also reveal information about the process itself. Thus, the third section of the labels addresses these two concerns—the physical structure of the process and its most common signs of chemical deterioration. In the fourth and final section, a brief checklist

of key identifying characteristics is provided. This list is presented in bulleted form and will highlight the common visible indicators of any given process. Inherent features of a process, such as the blue hue of a cyanotype print, as well as deterioration features, such as silver mirroring in gelatin silver prints, have been included because both of these types of characteristics contribute to the identification of a photographic process. For those objects that depict a specific photographic format (the collodion printing-out paper *carte-de-visite* and gelatin silver print *stereograph*), a brief explanation is given detailing the history of the format—its inventor, when and where it was commonly used, and in what capacity it was used (refer to Appendix B for completed labels).

The presentation set will be available as a resource in the Prints & Drawings centre at the Art Gallery of Ontario. The volunteers of the centre extend an invitation to the public to use the space at their leisure during the “open doors” hours every Wednesday afternoon; it is during this time, as well as by appointment requests made by individuals or school groups, that I foresee the presentation set being put to use. Bearing in mind that my audience will likely be the general public, I have attempted to use a language and provide a level of information that will be suitable for an adult, “non-expert” user group. During the development of the template and the subsequent writing of the labels, I consulted the Art Gallery of Ontario’s institutional guidelines to establish a suitable length for the labels. Based on these parameters, the labels that I have created for the presentation set fit into the types of didactic panels designated as “In-Depth Materials”. *In-depth materials*, according to the AGO, are “text-based strategies that motivate visitors to delve further into a particular issue or idea”, of approximately 150-400 words in

length⁷. Judging by this brief description, I deemed the “in-depth” label the most fitting to fulfill the goals of this presentation set.

I also referenced various label-writing sources to hone a writing style that would be appropriate for the collection’s potential users. Some sources suggest incorporating provocative questions or comments into museum labels in order to help guide the user’s analysis, and prompt the user to think independently and critically about the object in question. The AGO’s Exhibition Planning Workbook recommends, for example, that labels be “designed to ask questions, encourage participation, attract attention, direct viewers and encourage comparisons”⁸. This is particularly important and useful when the reader is not an expert on the subject. Because the presentation set’s users will likely fit into this category of visitors, a few of the labels will include leading comments to help navigate the user’s reading of the object. For the Photogravure label, for instance, after mentioning that the process was used predominantly for book illustrations, I draw the user’s attention to the tiny holes along the left side of the paper support and propose that this example, indeed, looks like a page from an album. Comments such as these will help steer the users’ examination of the work and ideally help them become aware of certain elements and details—details that help to inform the user about the object’s historical use and function—that may have otherwise gone unnoticed.

Each label has been adhered to the archival housing that surrounds the object. Each label, in its entirety (all four sections described above), will be situated on the “back mat” (Fig. 1a). In addition, because the artist, title and date can be particularly important

⁷ Art Gallery of Ontario. “Art Gallery of Ontario: Exhibition and Interpretive Text Standards”. (Toronto: Art Gallery of Ontario, May 2007), 5.

⁸ Art Gallery of Ontario. “Exhibition Planning Workbook – Draft 10/06”. (Toronto: Art Gallery of Ontario, October 2006), 37.

when learning to identify photographs, this information will also appear on the recto of the window mat, just below the object (Fig. 1b). The date of a photograph is one of the most revealing pieces of information that can be used to narrow down the number of possible processes, while the artist and title can be telling of the process based on the techniques that an artist may have been known to use, or the subject or location being depicted, which may be stated in the title.

Fig 1a; 1b – Placement of labels; on the back-mat; on the recto

Archival Housings

The third and final applied component of this project involved designing and constructing each object's individual housing, using only archival materials (For a complete list of the tools and materials used, refer to Appendix C). In conceiving the housings for the presentation set, the underlying motivation to my approach—in addition to creating a secure and chemically-neutral environment for the objects—was the treatment of photographs as three-dimensional objects, and not simply as images, echoing my research into the *materiality of photographs*.

Constructing individual housings for photographs in any collection is important to protect and preserve the objects, while on display or in storage. The study collection, and its presentation set, should not be an exception to this rule. When John Harris donated the study collection to the AGO in 2006, the quality of materials and the methods used to house the objects lacked consistency and consideration. Some of the photographs were kept in window mats that were hinged in a variety of ways, all of which were questionably safe and sustainable (Fig. 2a and 2b); others were scarcely housed at all, wrapped in tissue paper, in sections of a transparent sleeve, or in a folded piece of cardstock, again with materials of a questionable grade (Fig. 2c). Part of the rationale behind re-housing the presentation set's objects, then, was to establish a uniform way to display and store the objects safely, and to standardize the materials used in order to buttress the objects' longevity.

Fig. 2a; 2b; 2c – Examples of original hinging/housing variations - Carbon print; Photogravure; Cyanotype

Determining how to present the objects in a unified way required that each objects' unique characteristics be carefully considered. Specific housings were designed and

executed for each object in this set, and these housings were made to correspond with the object's individual requirements, dictated by structure, size, and format. For example, to bear the weight and protect the fragility of the autochrome's glass structure, its housing has been made with additional materials to ensure that its safety was not compromised. While each object's durability—or breakability in some cases—was a major factor in the housing decision, size was another element that needed to be taken into account.

There is a disparity in size among the photographs selected for the presentation set; the largest in the group is the carbon print, measuring 42.4cm x 33cm, while the smallest is the cyanotype, which measures 6cm x 9.1cm. It is recommended that photographs of similar size always be kept together; following this protocol keeps the photographs more secure in their storage box, mitigating any risk of damage that might occur from shifting or movement.⁹ Based on this recommendation, I decided to make housings of three different sizes to accommodate the variety in the set. For the largest objects, the enclosures measure 50.8cm x 40.6cm (20in x 16in); the enclosures for the mid-size objects measure 45.7cm x 35.5cm (18in x 14in); and finally the smaller objects' enclosures measure 25.4cm x 20.3cm (10in x 8in).

Constructing these housings was a critical step to granting greater access to the collection because they would afford the set's users the opportunity to *handle* the objects in a safe and controlled way. Although direct handling of the object itself will not be permitted—except in the instance of the cased daguerreotype and ambrotype—such interaction with the material that directly surrounds the photographs will encourage the

⁹ Vogt-O'Connor, Diane. "Conserve-O-Gram – Caring for Photographs: General Guidelines. June 1997.

user to connect with the objects on a more intimate level. With secure housings in place, the user will be able to visually analyze the object on a closer level than in a typical viewing situation like a gallery space, for example.

While safeguarding the photographs was the goal of a practical motivation, the treatment of the photograph as an *object* was the goal of a more cerebral motivation. As previously noted, when only the image plane of a photograph is made visible (which is often the case in museum displays), significant historical information that may be located on the verso—or on the recto, outside of the image frame—is entirely overlooked. This information can take the form of deliberate markings, such as hand written inscriptions or printed studio stamps, but it can also refer to inadvertent marks, the evidence of time and use, such as handling damage or signs of chemical deterioration. Both of these groups offer a great deal of information that can contribute to the knowledge of an object's origins and past trajectory, as well as visual cues that can potentially aid in the identification of the process and its date, if unknown.

Reproduced below is the representative example of the *collodion printing-out paper (POP) process* included in the presentation set (Fig. 3). This example clearly illustrates how much information can be discarded when the content of a photographic object—besides the image—is ignored. Here, not only is a printed studio stamp present, which could offer clues about the date range of the photograph (or at least when the studio was in operation), but it is also written in Russian, pointing to part of the object's provenance. In addition to the stamp, there are handwritten inscriptions, one of which identifies the sitter in the portrait as *Peter Nickel*.

Fig. 3 – Image, recto and verso of collodion printing-out paper print carte-de-visite

To ensure that pertinent information such as this is available for the set's user, I designed housings that expose all sides of the photographic objects—the recto, verso, and edges. First, a window that measures slightly larger than the object was cut into the mat board, to make certain that the object's entire perimeter would be visible. Thin strips of polyethylene were then fastened along the border of the window so that the edges of the print can be fully observed on the recto, while simultaneously securing the object in place (Fig. 4a and 4b).

Fig. 4a; 4b – DuraLar transparent strips; transparent strips securing photographic print in window mat

An additional piece of mat board—with an identical window cut out—was glued on top of the first, further securing the polyethylene strips and photograph; several layers of board were used in the instances of a thicker or heavier object, to compensate for weight and size, giving the object the extra support that it requires. Sheets of transparent plastic material—DuraLar™—cover the verso of the mat's window, making visible the verso of the photograph, in its entirety (Fig. 4c). Finally, these two (or more) window mats were then adhered to a full piece of mat board (“back-mat”), where the main body of the label is attached (Fig. 4d).

Fig. 4c; 4d – DuraLar transparent sheet covering verso of print; Linen tape used to hinge window mat and back mat

The decision to *not* completely cover the recto with DuraLar™ (Fig. 4b)—as I have done for the verso (Fig. 4c)—was a deliberate attempt to provide an unobstructed view of the print's surface. When trying to identify a photographic print, it is important to closely inspect its surface, the characteristics of which can help educate the viewer of the materials used in the print's production. Surface texture, the sheen or glossiness of the print, and tone can offer clues that indicate the print's structure and help in the identification of the photograph. To use sheen as an example, the presence of sheen on

a photograph's surface is symptomatic of a binder layer—the “coating of transparent material that contains the image”¹⁰. The degree to which sheen is visible can vary, but detection of even the slightest luster is a critical step in the identification of photographic processes. In noticing surface sheen, such matte-surfaced processes as the cyanotype and salted paper print can be eliminated from the list of possibilities. Significant characteristics—such as surface sheen—would have been obscured had a sheet of polyethylene been placed over the photograph's recto; thus, only thin strips of the plastic have been used, to expose the print's surface, yet secure it in place.

The cased objects are housed differently than the non-cased objects. Rather than being set into a window mat, the daguerreotype and ambrotype have been inset, side-by-side, into a thick piece of Ethafoam, which has been enclosed in a four-flap box made from library board (refer to Appendix D for a diagram of the four-flap box)*. Linen tape has been placed underneath the objects so that the user can easily remove them. Once removed, the user will be required to handle the objects' cases directly. This decision was based on two main concepts: first, the objects' inherent structure, and second, the tactile and interactive experience that comes with viewing cased photographs. As mentioned, one of the main goals of the window mat housing is to provide the photographic print with a direct layer of protection. The daguerreotype, with its image surface that is too unstable to be touched directly, and the ambrotype, with its fragile glass support, are very delicate objects. Thus, this class of photographs has customarily been presented in leather-bound cases, which take the place of the window mat as the

¹⁰ Reilly, James M. *Care and Identification of 19th Century Photographic Prints*, 60.

*Please note, although the four-flap box followed a diagram, the window-mat structures described above were not made using a diagram. Rather, they were conceived by the author, in consultation with Katy Whitman, Conservator of Photographs at the Art Gallery of Ontario

first level of security. In other words, the encapsulation of a window mat is less necessary for the already cased—and, thus, already protected—daguerreotype and ambrotype.

On the second point, handling and viewing a photograph in a hinged case is a very individual and personalized experience. There is an element of surprise and anticipation involved because the image is hidden, and an act of participation that is required by the viewer to reveal the image. This interaction is particularly true in the instance of the daguerreotype, which is at once a positive and negative image depending on the surface that is reflected on its image plate. As Geoffrey Batchen points out, the viewer's "hand and eye must work as one if a daguerreotype is to be brought into visibility; the look of the image comes only with the feel of its materiality"¹¹. The protective cases of the daguerreotype and ambrotype also add to the viewing experience. The soft leather exterior and the velvet pad on the case's interior are elements that safeguard the object, but are also elements that contribute to the object's sensory impact, elements that "stimulate the fingers as much as they delight the eyes"¹². Because of their unique structures and the unique way in which they are viewed, it is fitting that the cased objects are housed in a different way, allowing for their full essence to be appreciated.

All of the presentation set's sixteen newly housed objects, illustrating fifteen different photographic positive processes, are now stored together in one Solander box. A piece of acid-free interleaving tissue paper has been placed in between each object, to further protect from dust and light. This box will be kept on a shelf in the Prints & Drawings

¹¹ Batchen, Geoffrey. *Photography's Objects*. (Albuquerque, New Mexico: University of New Mexico, 1997), 3.

¹² Ibid, 2.

department's temperature and humidity controlled vault when the objects are not being used by the AGO's visitors.

Each of the project's applied components, individually and in conjunction with one another, work to increase the study collection's potential as an educative tool.

Expanding the collection to include a more comprehensive array of materials for the presentation set was an important endeavour that will enrich the user's knowledge about the history of the medium, its common materials and popular practices. Similarly, the labels provide the user with concise, process-specific (object-centered) text alongside the actual object, which gives the user a modicum of information with which to begin further research in the future. And finally, the archival housings encourage a kind of critical consideration of photographs as *objects*, addressing both the intrinsic qualities of a print and the visible evidence of its history as a social and cultural object.

Section IV: Concluding Remarks

In an ideal situation, the study collection in its entirety would be re-housed and bestowed with the same level of accessibility as the presentation set. However, with limited resources—both financial and human—for now, it was only possible for a portion of the collection to be addressed: the presentation set. This set highlights only fifteen of the seemingly countless examples of past photographic processes. And, while this is a good start to providing the user with basic knowledge to move forward in the study of photographs, this collection of objects represents only a fraction of the existing photographic examples, and thus, this set's teaching potential. It is my hope that in the future this presentation set will be expanded even further to include not only additional processes, but also more examples of the processes already accounted for in this project.

Even though the examples presented here are among the most common types of photographs that one might encounter in either a museum's collection or in a personal/family collection, there are still many variations of these popular processes that are not showcased here. For example, in order to conceal the inevitable yellowing of the albumen binder over time, occasionally dyes were added to Albumen prints; thus, it is not completely uncommon to find pink and blue-hued examples of this process. Because such variety exists, I decided to consult other institutions' study collections/presentation sets, using what they have included as a springboard to determine what other objects would further strengthen the usefulness of this teaching tool.

Recommendations: Further Additions

There are obvious groups of photographic materials/processes that have been purposefully omitted from this project, despite their important place in the medium's narrative. For example, digital photography and its products, which now dominate the industry, represent the last decade and a half of photography. Although digital prints are not reflected in this presentation set, they nevertheless comprise the most recent, and a very significant, chapter in photography's history. Similarly, photographic negatives, from which all photographic positive prints derive, have a very rich and varied history in themselves. In fact, many positive processes were made possible because of formulae and techniques that were first successful in the production of negatives. Yet, just because they are not included here, their significance in photography's past must not be ignored.

In keeping with the parameters set out for this project, there are a number of recommendations that I would make to further strengthen this set. Although I tried to cover the most recognizable processes, other considerably prominent ones that were not included here deserve mention, in hopes that one day they can be incorporated into the set as well. By consulting other collections and sets, I hoped to establish which processes were missing from this set—but still follow the set's primary guideline of "popularly used and circulated"—and make recommendations for future additions. The institutions whose collections I surveyed were George Eastman House (GEH) International Museum of Photography and Film in Rochester, New York and the Mira Godard Study Centre (MGSC), at Ryerson University, in Toronto, Ontario.

Through my investigation, I discovered that the George Eastman House does not have an active study collection—one that showcases all types of photographic objects—that is readily available for public use. It does, however, have such a collection for the study of photomechanical prints¹³. Joe Struble, Archivist of the Photo Collection at GEH, created this collection for the purpose of illustrating the different types of photomechanical reproductions contained in GEH's holdings. Featured prominently in this collection, but missing from my project's presentation set, is the collotype process. The collotype was very versatile, making it one of the most prevalent photomechanical processes. The process was favoured by nineteenth century publishers who used it predominantly for book illustration and reproductions¹⁴. Based on its strong presence in photographic collections, I recommend that the collotype be incorporated into the Art Gallery of Ontario's presentation set.

To illustrate an array of photographic formats and processes for an inquiring public, the MGSC makes available a study collection—or “process portfolio”—of twelve objects, all of which date to the nineteenth century. This group of objects includes most of the processes I have selected for the AGO's presentation set—an indication to me that I have made an appropriate selection. There was, however, one example that is not reflected in the AGO's set, and should be in the future: a platinum print. Like the cyanotype, the platinum print, or *platinotype*, is based on the light-sensitivity of iron salts. Introduced around 1880, platinum prints usually exhibit a steel-grey image tone, which made it very aesthetically pleasing, and thus a coveted, process¹⁵. Due to the rising cost of platinum around the turn of the century, the platinotype never became hugely popular.

¹³ Struble, Joe. Email message to the author, July 6, 2011.

¹⁴ Reilly, James M. *The Care and Identification of 19th Century Photographic Prints*, 59.

¹⁵ *Ibid*, 8.

Despite its modest use and circulation, the platinum print was an aesthetically influential process; many silver paper manufacturers—including those of matte collodion printing-out paper prints—attempted to mimic the process’ visual appeal¹⁶. So, although the platinum print was not as widespread as some of the other processes discussed here, it was and remains an important photographic process that I would recommend including in the AGO’s presentation set.

A presentation set, as a hands-on resource for the study of photography, is becoming increasingly significant. In an age where the currency of photography is measured in pixels, offering primary examples of historical photographs is an invaluable approach to the study of the history and function of photographic objects. The Harris study collection, in theory, can enable a hands-on learning experience, one that encourages making meaning from both the image content and the object’s materiality. Based on my survey of information, it appears that the study collection can bridge not only the gap between the viewer and the object, but can also bridge the gap that lies between the museum and the academic world. If the object is (or should be) always featured at the centre of museum education as Hooper-Greenhill suggests, and there is an obvious push for the treatment of photographs as material objects in current photography studies as illustrated by Edwards, Hart and their brigade of authors, then it seems clear that a photographic study collection/presentation set is a necessary and highly beneficial teaching tool for the history of photography in an institutional setting.

It is my belief that this presentation set will serve as a useful resource in the learning/teaching of identifying nineteenth and twentieth century photographic processes

¹⁶ Ibid.

to the Art Gallery of Ontario's Prints & Drawings department's audience. Further, I believe that the importance of this type of *original* object-centered resource in the study of historical photographs will become more and more palpable as photography—its materials and practices—continues to evolve.

Section V: Illustrations

1. Completed Archival Housing for Cased Objects: Daguerreotype and Ambrotype

a. Four-flap box, closed

b. Four-flap box, open

c. Four-flap box open, cased objects closed

d. Four-flap box open, cased objects open

2. Completed Archival Housing for Salted Paper print

a. Recto

b. Verso

3. Completed Archival Housing for Cyanotype

a. Recto

b. Verso

4. Completed Archival Housing for Albumen print

a. Recto

b. Verso

5. Completed Archival Housing for Tintype

a. Recto

b. Verso

6. Completed Archival Housing for Carbon print

a. Recto

b. Verso

7. Completed Archival Housing for Photogravure

a. Recto

b. Verso

8. Completed Archival Housing for Woodburytype

a. Recto

b. Verso

9. Completed Archival Housing for Gelatin Printing-Out Paper print

a. Recto

b. Verso

10. Completed Archival Housing for Collodion Printing-Out Paper print

a. Recto

b. Verso

11. Completed Archival Housing for Gelatin Silver Developed-Out print

a. Recto

b. Verso

12. Completed Archival Housing for Gelatin Silver Developed-Out print on Resin-Coated (RC) paper

a. Recto

b. Verso

13. Completed Archival Housing for Autochrome

a. Recto

b. Verso

14. Completed Archival Housing for Chromogenic print

a. Recto

b. Verso

15. Completed Archival Housing for Polaroid print

a. Recto

b. Verso

Section VI: Appendices

Appendix A: Didactic Label Template

Tombstone/Object Information:

- Artist (artist's nationality, dates)
- Title
- Date
- Medium
- Credit Line

History of Process:

- Credited inventor
- Time period and place of popular use
- Predominant purpose for its use

Physical Structure/Composition of Process:

- Component parts
- Common deterioration mechanisms that affect this process

Key identifying Characteristics of the Process: (in point form)

Appendix B - Didactic Labels

B.1 Daguerreotype

Artist: Unknown (American, mid-19th century)

Title: *Portrait of a young girl wearing gloves*

Date: c. 1855

Medium: Daguerreotype, 9th plate

Credit Line: Gift of John Richmond Harris, 2006

The daguerreotype was named after its inventor, Louis-Jacques Mandé Daguerre, and was the first publicly known photographic process to successfully fix an image to a photosensitive surface. Introduced in France in 1839, the daguerreotype quickly became popular as a medium for portraiture in Europe and North America, and remained in common use until 1860. The daguerreotype's image quality and detail is unparalleled by any other photographic process and remains the most permanent of all photographic processes.

A daguerreotype is a one-of-a-kind photograph. Its copper plate support has a highly polished silver surface on which its image appears in the form of a greyish-white deposit. The fine daguerreotype image is very susceptible to abrasion and tarnish, which are the most common types of deterioration in daguerreotypes. For this reason, daguerreotype plates were usually placed behind glass, in sealed cases, to help preserve them. When these cases are not sealed correctly, air pollutants come into contact with the silver surface, causing the plate to tarnish.

Key Identifying characteristics:

- The silver surface of the daguerreotype is reflective like a mirror; this key feature is probably the easiest way to distinguish the daguerreotype from other cased images
- A daguerreotype image can appear as either a positive or a negative, depending on what is being reflected off the plate, a dark or light coloured surface
- Some daguerreotypes may be lightly hand-coloured, or *hand-tinted*
- Often daguerreotypes are characterized by their finely detailed image and rich tonal range

B.2 Salted Paper Print

Artist: David Octavius Hill and Robert Adamson (Scottish, 1802 – 1870; Scottish, 1821 – 1848)

Title: *Hill and Castle in Scotland*

Date: c. 1843 – 1847

Medium: Salted Paper print from calotype negative

Credit Line: Gift of John Richmond Harris, 2006

In Britain, around 1840, William Henry Fox Talbot successfully captured images of nature using a camera obscura. However, the tonal scale of these images was reversed: the shadow areas appeared light and the highlights appeared dark. Salted paper prints were made using these “reversed” images, or *calotype negatives*. Unlike the daguerreotype process, Talbot’s photographic system could use the calotype negative to produce a multitude of positive salted paper print copies. Talbot published the findings of his two-part system and patented the process in 1840. The process was commonly used from the time of its introduction until approximately 1855, when albumen prints became a more popular printing option. Around the turn of the century, the Pictorialist photographers briefly revived the salted paper print process, as they were attracted to the grainy quality of the image.

A salted paper print is a positive photograph, made from a negative, with a plain sheet of paper serving as the support. The paper support is coated with a common salt solution and subsequently sensitized with the application of a silver nitrate solution; then, in direct contact with a negative, the paper would be exposed in a printing frame, and finally “fixed” to arrest the chemicals’ photosensitivity. Because of the small size of the silver image particles and the absence of a binder layer, salted paper prints are particularly vulnerable to atmospheric pollutants, which can cause fading and yellowing of the print.

Key Identifying Characteristics:

- The image tones of well-preserved (or new) salt prints range from warm brown to purplish brown
- Salt prints have a matte surface quality
- Prints are frequently faded and yellowed; this effect can be overall, but it occurs particularly at the edges
- The paper fibers are always visible in salt prints because they are made on paper that does not have a surface coating, such as a baryta layer

B.3 Cyanotype

Artist: Unknown (American or Canadian, 20th century)

Title: *Couple Posed with Child Beside a Canal*

Date: c. 1900

Medium: Cyanotype

Credit Line: Gift of John Richmond Harris, 2006

Invented in 1842 by English scientist Sir John Herschel, the cyanotype process is one of the oldest processes that utilized iron-salts, instead of a silver, as its light-sensitive material. The cyanotype process has been known for its relatively low cost of materials and simplicity of processing, characteristics that appealed to many photography hobbyists. As such, many 19th and early 20th century examples of the process—like this one—are the work of amateurs. Because of its blue hue, however, the process was not used for such practices as commercial portraiture; instead, cyanotypes were predominantly employed as a method of copying plans and drawings by architectural and shipbuilding firms. From this popular use of the process came the phrase “blueprint”, which is still found in today’s vernacular. Cyanotypes were used in these capacities well into the 20th century.

A cyanotype is a photographic print whose image is composed of a pigment called “Prussian Blue”. The cyanotype’s simple process involved sensitizing a photographic support—usually paper or textile—with an iron salt solution. This solution was comprised only of water and contained no binder material, such as gelatin, collodion or albumen. Thus, cyanotypes have a two-layer structure—the support and the image. Generally, cyanotypes are known for their stability and usually remain well preserved if stored in the dark. However, the blue pigment may fade if the print is exposed to an alkaline pH environment.

Key Identifying Characteristics:

- Usually identifiable by their blue image colour; however, some cyanotypes have been toned, producing varying colours
- Cyanotypes always have a matte print surface because they have no binder layer (gelatin, collodion, or albumen)
- Paper fibers are always visible in cyanotype prints because the paper support does not have a surface coating, such as a baryta layer

B.4 Albumen

Artist: Isaiah West Taber (American, 1830 – 1912)

Title: *Market Street, San Francisco, from Lotta's Foundation to First Street*

Date: c. 1890

Medium: Albumen print

Credit Line: Gift of John Richmond Harris, 2006

Albumen was the dominant photographic print material from 1855 to 1895; thus, albumen prints are some of the most commonly found photographs in any 19th century photographic collection. Louis-Désiré Blanquart Evrard presented the first albumen prints to the French Academy of Science in 1850. By 1855, photographers everywhere accepted this method of printing. Albumen was used for all genres of photography, especially landscape and architecture, and it eventually surpassed the daguerreotype as the popular medium for portraiture as well. Albumen's success rested on its inherent qualities: glossy surface, fine image detail and density, and a rich brown image tone. In the mid 1890s, albumen's popularity declined being replaced by industrially manufactured gelatin and collodion *printing-out papers* (POPs).

An albumen print is a positive photograph on a sheet of paper. Albumen refers to the binder layer—composed of hen's egg whites—in which the light-sensitive, silver image particles are suspended. Because albumenized paper is very thin and delicate, albumen prints were almost always mounted on a firm, secondary support such as cardboard. These prints were often toned with a gold solution, which gave the albumen image a rich purplish-brown tone. If the toning process was correctly administered, it would stabilize the print, retard the inevitable yellowing of the image tone, and reduce the risk of the image fading.

Key Identifying Characteristics:

- Overall yellowing of the image; this is the most common identifier of albumen prints
- Fading of the image in the highlights
- Networks of tiny cracks and fissures on the image surface
- Because the paper used for albumen prints was so thin, often albumen prints will be mounted on a secondary support
- Paper fibers of albumen prints are visible under low magnification

B.5 Ambrotype

Artist: Unknown (American, mid-19th century)

Title: *Portrait of a Man*

Date: c. 1860

Medium: Ambrotype, 6th plate

Credit Line: Gift of John Richmond Harris, 2006

Around 1850, Louis-Désiré Blanquart Evrard (founder of the Albumen process) noted that some of his collodion glass plate negatives appeared as positive images when viewed with a dark background. This method of viewing a was known as a collodion positive in Britain, but was patented by James Ambrose Cutting in 1854 in the United States where the process became widely used under the name “ambrotype”. Ambrotypes were inferior in image quality to daguerreotypes but could be produced cheaply and rapidly, and thus, provided an economical alternative to portraiture, which was the leading use of the process. Although ambrotypes became instantly popular with both studio and itinerant photographers, they were rarely used after the mid 1860s, when paper prints began to replace them.

Ambrotypes are underdeveloped negative images on glass supports that when placed against a black background, become positive images. This glass plate would be coated with a collodion emulsion and sensitized with a silver solution; the plate would then be exposed in the camera—as it would be to create a negative—but in the case of ambrotypes, the glass plate would be under-exposed and then treated with a chemical solution that would impart a whitish tone on the silver image. Like daguerreotypes, ambrotypes are one-of-a-kind photographs and were usually presented in the same way—in hinged cases, with a brass mat and protective glass covering the image plate.

Key Identifying Characteristics:

- Although often confused with daguerreotypes because of the similar presentation method, ambrotypes are grey and lusterless and do not have a reflective, mirror-like surface that daguerreotypes have
- Another way to distinguish ambrotypes from daguerreotypes is the relative lack of detail in the ambrotype image
- Unlike daguerreotypes, ambrotypes do not show a negative/positive image

B.6 Tintype

Artist: Unknown (Canadian or American, 19th century)

Title: *Dog - Seated*

Date: 1890s

Medium: Tintype

Credit Line: Gift of John Richmond Harris, 2006

Although the tintype was first described in 1853 by Adolphe Alexandre Martin to the French Academy of Science, the process was not used on a large scale until Hamilton Smith obtained a patent for it in the United States in 1855. Tintypes were extremely popular in North America from the late 1850s onwards, and to a much lesser degree in Europe, where they were referred to as *ferrotypes*. In the 1850s and 1860s, tintypes were produced in a studio, predominantly for portraiture; because of their durable metal base, tintype portraits were customarily sent through the mail to loved ones. In the following decades, traveling photographers produced tintypes anywhere – on street corners, at fairgrounds booths, even at the beach, because they could be made so quickly and inexpensively. Variations of the tintype process were used into the 1930s.

Despite its name, the tintype was not made of tin; rather, it was most commonly made of an iron support. The iron sheet was given a coat of protective varnish, usually a black or brown coloured lacquer. Next, the plate was coated with a collodion solution, sensitized with silver nitrate, and exposed in the camera. Unlike daguerreotypes and ambrotypes, tintypes were not always stored in cases with protective glass. Instead, they were mostly loose or stored in paper mats and, as a result, many tintypes show signs of damage including dents and scratches on the iron plate. Due to their metallic nature, tintypes might also exhibit rust spots from any exposure to moisture.

Key Identifying Characteristics:

- Often made of iron, a tintype's plate will usually be attracted to a magnet, which is probably the easiest way to identify the process
- Tintypes can also be identified by "rust blisters" on the image surface
- Tintypes were occasionally presented in cases similar to daguerreotypes and ambrotypes, but often they were uncased and loose. A loose tintype will often exhibit dents and scratches on its surface from years of handling and use

B.7 Carbon Print

Artist: Thomas Annan (British, 1829 – 1887)

Title: Close no. 122, Saltmarket, Glasgow

Date: 1868 – 1877; printed in 1877

Medium: Carbon print

Credit Line: Gift of John Richmond Harris, 2006

Although Louis-Alphonse Poitevin is often credited as having invented the carbon process in 1855, other individuals are also recognized in the history of the process for their important contributions to its development, including J. Pouncy and J.W. Swan. Throughout the 19th century, alternatives to silver print materials were explored due to silver's instability and tendency to fade. Carbon prints—being pigment based—presented a solution to the impermanence of silver print materials. Because of carbon's reputable stability, as well as the image's fine detail, dense shadows and lack of grain, carbon printing was used extensively from the time of its introduction until approximately 1930.

The carbon process falls into the *pigment* category of photographic processes, because it is based on the light sensitivity of bichromates, rather than the sensitivity of silver compounds. A carbon print is comprised of a sheet of paper that is coated with gelatin containing a pigment—often carbon black—with potassium bichromate. When this paper was exposed to daylight with a negative, dense areas of the negative blocked out the light, leaving the gelatin underneath soluble, which would eventually be removed during the washing stage; in the lighter areas, the gelatin hardened and remained on the paper, comprising the final image. Thus, a slight relief effect can be seen between the lighter and darker areas of a carbon print, as the thickness of the gelatin layer corresponds to the density of the image. While the image in a carbon print is very stable, the gelatin component is less so and may, over time, exhibit minor cracking in the thicker parts, or might change shape, exerting some pressure on the paper support.

Key Identifying Characteristics:

- Carbon prints frequently exhibit a rich, chocolate brown image tone
- Slight contour, or relief effect, especially evident at the edge of a highlight and shadow
- Carbon images, being made from pigment, will show no signs of image deterioration or fading

B.8 Photogravure

Artist: Thomas Annan (British, 1829 – 1887)

Title: Close no. 122, Saltmarket, Glasgow

Date: 1868 – 1877; printed in 1877

Medium: Photogravure

Credit Line: Gift of John Richmond Harris, 2006

The photogravure is made by photomechanical means—where final image is comprised of ink and is produced using a mechanical printing press. Although the photogravure was introduced in 1858, it was not until Austrian printer Karel Klic made significant developments to the process, that it became commercially available in the 1880s. Due to its fine detail and the mechanical nature of its production, the photogravure was used largely for book illustrations and prints of topographic imagery. The tiny holes on the left side of the paper support suggest that this example was, at one time, bound in some type of illustrated book or album. Pictorialist photographers in the United States during the 1890s and early 1900s also notably employed the photogravure process for high quality reproductions of their work, to include in the publication *Camera Work*.

The photogravure process is based on the principle of intaglio printing, where small pits are etched into a plate, to create an image. These pits are different depths according to the tonal density of the image—the denser shadow areas have deeper pits. During printing, these pits are filled with ink and, thus, the tonal range in the image is produced through the varying amounts of ink. Like most photomechanical prints, photogravures will not exhibit signs of image discolouration or fading; however, the paper support is susceptible to staining.

Key Identifying Characteristics:

- The surface of the print will have a matte quality
- A plate mark—an embossed outline from the printing press—may be visible on the paper support of a photogravure
- Most photogravures will have an *aquatint grain*, where the ink is deposited on the page in a fine, irregular pattern—this is usually visible under examination with a loupe

B.9 Woodburytype

Artist: Samuel Robert Lock (British, 1822 – 1881)

Title: *Sir John Hawkshaw, Civil Engineer*

Date: before 1870s

Medium: Woodburytype

Credit Line: Gift of John Richmond Harris, 2006

Patented in 1864 by Walter Bentley Woodbury, the woodburytype is not considered a true photograph because its image is not based on the principle of light acting on photosensitive materials. However, woodburytype prints do not exhibit any grain or image structure and resembles a true photographic process so closely that it can be difficult to distinguish between them. During the 1870s and 1880s, woodburytypes were commonly used for book illustrations and for the large-scale production of high quality reproductions of artworks. The process was predominantly used in Britain and the United States, where it was known as *woodburytype*, and in France, where it was referred to as *photoglyptie*. These types of prints were always mounted to a secondary support, and the word “woodburytype”—or “photoglyptie”—is often found printed as a caption. Woodburytypes declined in use around the end of the 19th century, mainly due to the high cost involved in their production.

The woodburytype falls under the category of *photomechanical processes*—where the image has been transferred onto the paper support. The process begins with a bichromated gelatin relief made from a photographic negative. The degree of relief in a woodburytype corresponds to the density of the image: the thicker areas of gelatin refer to the image’s shadow areas, and the thinnest areas of gelatin, the highlights, or least dense areas. This profile is pressed against a sheet of lead, creating an image mold, which is then coated with pigmented gelatin and stamped onto a paper support. Because woodburytypes are photomechanical reproductions, they do not exhibit any signs of image deterioration, but the paper support is vulnerable to damage and deterioration.

Key Identifying Characteristics:

- The simplest identifier is the word “Woodburytype”, which is frequently included somewhere in the printed caption
- Usually woodburytypes are a brown to purplish-brown tone
- The imprint from the mechanical press is usually visible around the image in a woodburytype print

B.10 Gelatin Printing-Out Paper Print

Artist: Abel-Marie Nicolas Boulineau (French, 1839 – 1935)

Title: *Chambery – Le Bourget*

Date: 1903

Medium: Gelatin printing-out paper

Credit Line: Anonymous Gift, 2005

Although they were introduced in the early 1860s, printing-out paper (POP) prints did not experience any immediate success, as photographers preferred the familiarity of albumen prints. Decades later, in the 1880s and 1890s, the process began to be widely used when the introduction of simpler camera systems fueled the need for modern, ready-to-use printing papers. Printing-out paper prints soon surpassed albumen as the leading print material; they were used predominantly for commercial portraiture, and were typically mounted on cards, in the *carte-de-visite* or *cabinet card* formats. Both gelatin and collodion POPs continued to be used by professional and amateur photographers until around the First World War, at which point gelatin silver *developed-out* papers became the prevailing photographic material.

Collodion POPs and gelatin POPs are virtually indistinguishable as they are so similar in composition and appearance; the only way that they differ is the emulsion layer material—one is comprised of collodion and the other gelatin. Printing-out paper prints—both gelatin and collodion—were unlike previous photographic prints because they included a baryta layer beneath the image layer. The baryta layer—which is a mixture of gelatin and barium sulphate—gave the print a smoother, more reflective surface. Although greater stability was achieved through toning, which was almost always applied, POPs are still susceptible to various damages and deterioration. For gelatin POPs, some common signs of deterioration might include a loss in highlight detail, some overall fading, as well as an overall yellowing of the print.

Key Identifying Characteristics:

- Characteristically, gelatin POPs exhibit warm image tones, ranging from reddish-brown to purplish-brown
- Due to the presence of a baryta layer, the paper fibers of POP prints are not visible
- Usually have a glossy print surface
- Absence of fine surface scratches that reveal a white sub-stratum, as is the case with collodion POPs

B.11 Collodion Printing-Out Paper Print

Artist: Mikhailovich Nicolaiev Shepelev (Russian)

Title: *Portrait of Peter Nickel*

Date: c. 1880s

Medium: Collodion printing-out paper; carte-de-visite*

Credit Line: Gift of John Richmond Harris, 2006

Although they were introduced in the early 1860s, printing-out paper (POP) prints did not experience any immediate success, as photographers preferred the familiarity of albumen prints. Decades later, in the 1880s and 1890s, the process began to be widely used when the introduction of simpler camera systems fueled the need for modern, ready-to-use printing papers. Collodion POPs were introduced in a glossy finish, but also became available in a *matte* finish around 1895, in an attempt to imitate the aesthetic qualities of the popular platinum prints. Printing-out paper prints soon surpassed albumen as the leading print material; they were used predominantly for commercial portraiture, and were typically mounted on cards, in the *cabinet card* or *carte-de-visite* formats, as seen with this example. Both collodion and gelatin POPs continued to be used by professional and amateur photographers until around the First World War, at which point gelatin silver *developed-out* papers became the prevailing photographic material.

Collodion POPs and gelatin POPs are virtually indistinguishable as they are so similar in composition and appearance; the only way that they differ is the emulsion layer material—one is comprised of collodion and the other gelatin. Printing-out paper prints—both collodion and gelatin—were unlike previous photographic prints because they included a baryta layer beneath the image layer. The baryta layer—which is a mixture of gelatin and barium sulphate—gave the print a smoother, more reflective surface. Although greater stability was achieved through toning, which was almost always applied, POPs are still susceptible to various damages and deterioration. For collodion POPs, these include the tendency to scratch easily, because the collodion emulsion is prone to abrasion; and the tendency to display tiny cracks resulting from the inflexibility of the collodion layer under changing environmental conditions. These cracks are visible only under microscopic examination.

Key identifying Characteristics:

- Because the collodion layer is so thin, there is usually a presence of fine scratches, which reveal the white baryta layer under the image layer
- Collodion POPs exhibit reddish-brown to purplish-brown image tones
- Due to the presence of a baryta layer, the paper fibers of POP prints are not visible
- Usually have a glossy print surface

**Carte-de-Visite*: Also referred to as a CDV, the carte-de-visite was a popular format for photographic portraits, where the print was pasted to a small cardboard mount, measuring 4 ½ x 2 ½ inches. Introduced in 1854 by Andre Adolphe Disderi, these small photographic objects were inexpensive to make and were widely traded and collected in both Europe and North America.

B.12 Gelatin Silver (Developed-Out) Print

Artist: Byron Harmon (American, 1876 - 1942)

Title: *Waterfall – Canadian Alpine Series – Takakkaw Falls*

Date: 1908

Medium: Gelatin silver developed-out print; stereograph*

Credit Line: Gift of John Richmond Harris, 2006

Commonly known as *gelatin silver prints*, or simply “black and white prints”, the developed-out paper (DOP) process has been the dominant black and white photographic print process for the last century. Introduced in the 1880s, developed-out paper was based on the same gelatin-emulsion system that was already being applied in the production of dry plate negatives, wherein the exposure time was very brief and was followed by several stages of chemical processing to reveal a latent image. In addition to the shorter exposures times, other advantages to using developed-out papers included: its low-cost, because the process did not require toning, which eliminated the need for precious metals; and its reliability, because the material was more light-sensitive, which meant that the photographer no longer needed to wait for a sunny day to make prints. For these reasons, DOPs were appealing for both commercial applications and amateur use. Throughout the 20th century—and still to a limited extent today—gelatin silver prints were the standard photographic process, and were used to produce everything from artistic photographs to press photographs.

Early examples of gelatin silver prints are “fiber-based” prints, which are comprised of the paper support, a thick baryta layer, and the image-carrying layer. The image particles in gelatin silver prints are suspended in a gelatin emulsion on the paper’s surface, as opposed to being embedded in the paper’s fibers. These prints are called “developed-out” because during exposure, the paper registers a latent image and this image is made visible when *developed* in a chemical bath. Some gelatin silver prints were toned—with either sepia (sulfide) or selenium; and although toning stabilized the prints, gelatin silver prints do show signs of deterioration, the most common being silver mirroring, which appears as a bluish, metallic shimmer in the dark areas of the image.

Key Identifying Characteristics:

- Near neutral black image tone, which distinguishes them from the warm tones of printing-out papers
- The presence of silver mirroring; particularly in the dense, shadow areas and near the edges of the print
- A (relatively) thick baryta layer, thus the paper fibers will **not** be visible under magnification

**Stereograph*: A photographic format that presents two images side-by-side, which, when viewed through a special device (a stereoscope), appear in three-dimensions. Stereographs were used for education and entertainment from the time of their introduction in the 1850s until the 1930s, when they began to be replaced by motion picture.

B.13 Gelatin Silver (Developed-Out) Print – Resin-Coated (RC)

Artist: Justin Wonnacott (Canadian, b. 1950)

Title: [*Storefronts – Morrison's Beauty Salon, Henry Feller*]

Date: 1970s

Medium: Gelatin silver developed-out print on Resin-coated paper

Credit Line: From exhibition "EXPOSURE", 1975, Art Gallery of Ontario

Many significant developments were made in the gelatin silver paper market throughout the process' long history. Because of these changes in the industry, later examples of gelatin silver prints look considerably different from earlier examples. One important development occurred in the mid 1950's, with the incorporation of *optical brighteners* into photographic papers, an addition to the paper's composition that enhanced the brightness of the image highlights. Arguably the most significant change, however, occurred in the late 1960s with the introduction of resin-coated (RC) paper. RC papers were originally manufactured for the military during World War II in an attempt to produce a paper that required less time for processing. Because of their strong laminated structure, RC papers could endure very harsh processing conditions, which led to the implementation of mechanized processing practices. These practices and characteristics of RC paper gave way to the "while-you-wait" photo-printing industry, which is still in operation to a limited extent today.

In gelatin silver prints that were made using a resin-coated paper support, the gelatin emulsion sits atop a paper base that is encased in polyethylene—a durable and flexible synthetic resin. The impermeability of the resin-coated paper reduced the amount of chemicals that were absorbed by the paper, and thus, reduced washing and drying time. Unlike fiber-based papers, which contain a baryta layer, the white pigment used in RC papers is titanium dioxide. Deterioration problems in resin-coated prints stem mainly from the structure of the paper. For example, the titanium dioxide has been known to increase the chances of cracking and silver mirroring, while the durable polyethylene coating around the paper has a tendency to trap air pollutants and residual chemicals into the paper, causing discolouration.

Key Identifying Characteristics:

- Near neutral black image tone, which distinguishes them from the warm tones of printing-out papers
- Frequently have a glossy finish
- RC prints do not curl up at the edges when drying the way fiber-based gelatin silver prints do; thus, unframed or unmatted RC prints will usually lay flat

B.14 Autochrome

Artist: Unknown (American or Canadian, 20th century)

Title: *Garden with dried trees*

Date: c. 1910

Medium: Autochrome; stereograph

Credit Line: Gift of John Richmond Harris, 2006

The autochrome was introduced and patented in 1904 in France by Louis and Auguste Lumière, the brothers who are best known for their groundbreaking work in cinematography. Three years later, in 1907, the process was made commercially available in the United States and in Europe, where it was commonly used until around 1935. Although the autochrome presented some drawbacks— it was fragile, impossible to duplicate as it lacked a negative, and was costly to produce, which restricted them to wealthy amateurs—the process did dominate the colour photography market until it began to be replaced by the chromogenic colour process, in the mid-1930s.

An autochrome is a unique transparent colour image, usually on a glass plate support. To create the image, potato starch granules are divided into three separate segments and then dyed orange, green, or violet. These dyed particles are then spread thinly over a glass support, which has been covered with a sticky substance, and then a fine black powder is applied to the plate, creating a colour screen. Finally the glass is coated with a photosensitive, gelatin bromide emulsion, exposed from the back, and developed. When the plate is viewed from the front by transmitted light, the image depicts the original colour of the photographed scene. Autochromes are subject to the same type of deterioration as other silver-based photographs, such as silver mirroring; however, due to the glass support's fragile nature, autochromes are also susceptible to breakage. To strengthen the autochrome's structure, a cover glass was often placed atop the image glass, to increase its durability.

Key Identifying Characteristics:

- Autochromes are easily identified by their colour image on glass, with a cover glass, structure
- Tiny coloured dots—the dyed potato starch granules—are visible to the eye, with close examination

B.15 Chromogenic Print

Artist: Robert Watson (Canadian, b. 1952)

Title: [Elderly couple with mobile home]

Date: 1970s

Medium: Chromogenic print

Credit Line: From exhibition "EXPOSURE", 1975, Art Gallery of Ontario

Chromogenic prints were the predominant form of colour photography in the latter half of the 20th century. Countless attempts had been made throughout photography's history to obtain images in colour, but early colour processes were expensive and difficult to master, and achieved only moderate success. Colour photography did not become a widespread, mass-market phenomenon until the early 1940s, with the introduction of the chromogenic colour process. While Agfa invented the first colour negative film in 1939, Kodak invented the first commercially available chromogenic paper in 1942. During the 1970s, as prices of colour materials began to decrease, colour photography started to replace black-and-white photography as the standard practice in the industry. Not only was the chromogenic process used on a mass scale by amateurs, artist-photographers began creating large-scale works using chromogenic colour as well. Since the late 1990s, when photography shifted largely to digital, the chromogenic process has been relegated to a niche-market, but is still available and used today.

The classification *chromogenic* is designated for those colour photographs whose image is comprised of three distinct gelatin layers. Each layer consists of a light-sensitive silver halide emulsion, as well as cyan, magenta or yellow dye molecules, which together, form the final image. The paper support of most chromogenic colour prints is a polyethylene-coated or resin-coated (RC) paper base. Chromogenic prints are susceptible to fading and colour shifting, even when kept in dark storage. Additionally, chromogenic prints suffer from yellowing in the highlights over time, which is particularly evident in the (previously) white borders of the print.

Key Identifying Characteristics:

- Frequently, there will be a manufacturer's brand printed on the verso of a print indicating the material; occasionally, there may be a stamp from the photofinisher indicating the process
- Most chromogenic prints will exhibit some overall change in colour balance
- Chromogenic prints will also exhibit an overall yellow stain due to the loss of blue dye

B.16 Polaroid Print

Artist: Unknown (American)

Title: Untitled [Wedding Reception]

Date: 1970s

Medium: Polaroid SX-70 print

Credit Line: Gift of Max Dean, 2011

When Edwin Land, American physicist and founder of Polaroid Corporation, announced the first black and white “one-step” (or instant) photography system in 1947, and the subsequent instant colour system in 1963, he effectively eliminated the need for any technical knowledge of photography to produce photographs. The instant photography system was a novelty item, which revolutionized picture-making and changed North American consumer-culture in the following decades. Because of the process’ convenience and ease of use, the dominant market for Polaroid instant photography was the amateur and hobbyist photographer, to whom it was heavily marketed. Although other camera and film companies, such as Kodak and Fujifilm, introduced their own versions of instant-film over the years, the process became synonymous with Polaroid, which prevailed over the industry from its inception until the discontinuation of its products in 2008.

A special Polaroid camera is needed to produce Polaroid prints; these prints are based on the principle of “diffusion-transfer” of silver salts through a number of carefully controlled layers. The prints themselves are a “sandwich” structure, and are comprised of various elements including: two rolls of paper—the light-sensitive negative part of the film and the chemically treated positive part—and a chemical pod containing a gelatinous reagent, which is a mixture of the chemistry needed to develop and fix the print. The development of Polaroid prints does not include a washing stage, which inevitably results in chemical residue; this leftover chemical has led to various deterioration problems with Polaroid prints, including yellowing or discolouration, fading, and cracking of the image layer.

Key Identifying Characteristics:

- Polaroid SX-70 prints are recognizable by their white border that is considerably thicker along the bottom edge
- Most Polaroid prints are faded and have some degree of colour shift
- Most prints will include the Polaroid manufacturer’s brand printed on the reverse

Appendix C: Tools and Materials Used

All of the materials for the housing component of the project are archival quality and were purchased from various art supply stores around Toronto, including Woolfitt's Art Enterprises, Aboveground Art Supplies, and Curry's Art Store. Below is a list of the supplies and implements that were used in the construction of the housings:

Supplies:

Maidstone 4-ply, warm white, archival mat board
3M double-sided tape
DuraLar™
Gummed Linen tape
PVA adhesive
Ethafoam
Library board
Linen Tape

Tools:

Scissors
Cork-bottom metal ruler
Exacto-blade
Pencil/Eraser
Weights
Cutting mat

Appendix D: Diagram of Four-Flap box enclosure

Source: Archives of Ontario Preservation Services (handout) 1992

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