## The Black Gold Tapestry





## CONATURAL GAS

1023

The Black Gold Tapestry by Sandra Sawatzky

A contemporary twenty-first century work of art, dramatizing the saga of oil through the power and beauty of embroidery. The Black Gold Tapestry publication

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### Glenbow

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## Contents

Acknowledgements	6
Patron's Message Sue Lyons	8
Foreword Donna Livingstone	11
Introduction Katherine Ylitalo	12
Artist's Statement Sandra Sawatzky	18
Black Gold: An Embroidered History Sandra Sawatzky	23
Creating The Black Gold Tapestry	43
Artist's Biography	45



# Acknowledgements

### Glenbow

Glenbow is honoured to exhibit The Black Gold Tapestry, a work of art that chronicles the use of oil by civilizations around the world and throughout history.

Our thanks and admiration go to the artist, Sandra Sawatzky, for the vision, commitment, skill and creativity she invested in the tapestry's creation. Looking at art is like having a conversation - it can powerfully inform your experience of the world. The Black Gold Tapestry is infused with layers of meaning related to how oil and natural gas have fuelled human ingenuity, prosperity and sometimes disaster. There are also other aspects of the tapestry that invite consideration: how stories can be told; how artwork from the past, such as the Bayeux Tapestry, has the power to inform and inspire us today; how the skills and finesse of the artist are woven into this work of fine craft.

Jean Merriman, a dear friend of Glenbow and former board member, first introduced us to Sandra Sawatzky and her tapestry. Our thanks go to Jean who recognized the importance of exhibiting this artwork at Glenbow with its potential to inspire and educate.

Sue Lyons has been a long-time supporter of The Black Gold Tapestry. We thank her for the financial support she has given to this publication and for her keen awareness that art flourishes when it has support and enthusiasm from individuals in the community.

Katherine Ylitalo is a gifted writer who, with her introduction for this publication, has beautifully situated the tapestry within Sandra Sawatzky's oeuvre and within an art historical context, enabling us to find deeper meaning in the tapestry's creation and its many layers of embroidery.

I would like to thank the incredible staff at Glenbow who worked on the logistics and presentation of this exhibition. Their extensive experience and utmost respect for artists and their artwork enables Glenbow to shine. As well, my sincere thanks to those who contributed their talents to this exquisite publication.

Melanie Kjorlien, Vice President, Access. Collections and Exhibitions. Glenbow

### **The Artist**

I want to thank the Glenbow organization, the staff who prepared the exhibition, President and CEO Donna Livingstone and Vice President of Exhibitions Melanie Kjorlien who guided it.

My husband, Brad Cariou, made it possible for me to achieve this dearly held goal through his thoughtfulness, counsel, love and support.

My daughter, Lucy Cariou, grounded me and lent a helping hand many times. Our conversations wove through the long hours of stitching as she grew from teenager to adult.

Sue Lyons championed the tapestry at the embryo stage. She supported the making of it and the publication of this book.

My friends from Stitch and Gather were my first audience, and advised me using their collective knowledge about all things textile.

Jean Merriman brought the tapestry to the attention of Glenbow and championed the work.

Jennifer Salahub and Katherine Ylitalo wrote articles about the work in progress.

Donny Lee photographed the tapestry's eight panels.

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Barbara Ballachey who said, "You have to have dinosaurs."

Marshall the cat who posed for three images.

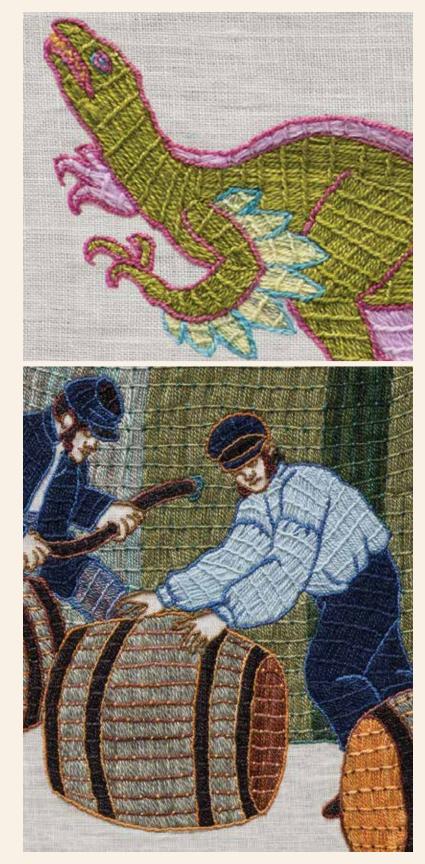
Mat Thiessen designed The Black Gold Tapestry logo and website.

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The Black Gold Tapestry was also supported with funds from the Alberta Creative Development Initiative, the ACAD Toronto Dominion Insurance Meloche Monnex Alumni grant and the Calgary Arts Development Artist Opportunity grant.

The last word of thanks goes to my parents, Velva and Ervin Sawatzky, who instilled a love of the arts in my sisters and me. 📧

Sandra Sawatzky



# Patron's Message

The beautiful *Black Gold Tapestry* is an outstanding work of artistic creativity and imagination. It is also an astonishing feat of discipline and endurance. It reminds us that one of the most important aspects of creativity is the capacity to eschew distraction and commit to the artistic process.

On our behalf, artists engage in heroic acts of self-denial, discipline and focus. The Black Gold Tapestry was nine years in the making. To complete it in time for the exhibition at Glenbow, Sandra Sawatzky stitched for nine-and-a-half hours a day, every day, for three years. Let that sink in a bit. Most of us become impatient waiting for Google to compile our search results, or for the barista to whip up our morning latte. We want things fast, and our technological, highly automated world is increasingly colluding with our impulsive, demanding selves. Art such as The Black Gold Tapestry invites us into a different relationship with time. It demonstrates, stitch by stitch, the truth about meaning and value: that neither arises quickly, and that both take patience and determination to evoke. An artist sees and engages with the world, is inspired by its complexity, is fascinated by its narratives, and then steps away from it in order to create, to show, to tell.

And what a story the tapestry has to tell us. Not the great conquest of one royal dynasty, one kingdom vanquishing another that unfolds in the panels of the Bayeux Tapestry, but humanity's ongoing efforts to harness the earth's resources so as to conquer, not an enemy, but our own puny limitations. Oil gave us mastery over nature, and it propelled us into the modern era. It brought us comfort, wealth and power. The discovery of oil and humankind's attempts to command it have inspired marvelous technologies and heroic adventures. *The Black Gold Tapestry's* stunning images create a powerful, visual narrative of the story of our pursuit of this iconic resource.

Perhaps for me the tapestry's most powerful message is that we do not yet know how the story ends. We are currently caught between two paradigms: do we change direction, relinquish what has taken so many eons to create, or do we obstinately carry on, extracting an increasingly limited and increasingly damaging resource? *The Black Gold Tapestry* is the beautiful mirror that reveals our actions and invites us to consider our future. K

Sue Lyons Patron, *The Black Gold Tapestry* 







## Foreword

The Black Gold Tapestry is one of Canada's most extraordinary works of art.

A hand-stitched tapestry more than 60 metres long. The relentless and breathtaking vision of a single artist who worked for nine years - 16,000 hours - to trace the story of how oil has impacted human civilizations around the world. A contemporary work of art that tells the story of the earth itself in a style reminiscent of the legendary eleventh-century Bayeux Tapestry.

Glenbow is honoured to be the first to exhibit this remarkable work of art which had its genesis in a chance creative exercise that the artist, Sandra Sawatzky, participated in at Glenbow in 2007. A few hours spent practising embroidery with her daughter in Glenbow's Discovery Room sent Sawatzky on the solo adventure of a lifetime. She became fascinated with embroidery as a form of artistic expression, as a traditional craft and as a surprising tool of storytelling. She drew on her skills as an artist, designer, illustrator, maker and filmmaker to create an epic story on linen.

Above all, Sawatzky is a storyteller. She has painstakingly researched each episode in the world's relationship with oil, from the ancient Egyptians embalming their dead with bitumen and its use as a weapon of war, to the development of the modern gasoline engine which led to today's automobile-centred society.

Calgary is the oil capital of Canada and it would be easy to say that this is a Calgary or Alberta story. But the story of The Black Gold Tapestry is much more than that. Great works of art transcend local meaning and offer universal insights.

The tapestry invites us to consider, not just humanity's relationship with oil, but the passing of time itself: the millennia it takes for oil to be formed, the centuries it took to understand how to use and process bitumen and the years Sawatzky worked to create each aspect of this global narrative.

We are grateful to her for involving Glenbow in this amazing story. When she first unrolled one of the embroidered panels on our boardroom table we were stunned. Until you actually see it in person, you can't fully appreciate what an incredible work of art it is. With each carefully chosen thread, neat stitch, firm knot and expressive gesture, Sandra Sawatzky offers new ways of thinking about the international impact of oil, the commitment required to produce fine craft, the pursuit of a nine-year dream and the beauty, history and random events that shape us forever. 📧

Donna Livingstone President and CEO, Glenbow



## **Introduction** by Katherine Ylitalo

In the lamplight, a young Corinthian woman traces her lover's shadow on the wall, knowing he must depart the next day. Holding charcoal from the fire, she creates a graphic image, marking a moment when desire and loss converge. The visual package compresses sensory experience and the intimation of mortality. Born of keen observation and carefully made by hand, the outline will serve as a trigger for memory. This is the origin of painting as told by the Roman author and savant Pliny the Elder in *Natural History*, his encyclopedic book that proposed to cover "the nature of things, that is, life."1

In 1995, UNESCO established the Memory of the World Register to preserve the world's documentary heritage. France recommended the Bayeux Tapestry. The eleventh-century embroidery provides a historical account of events related to the Norman Conquest of Britain and, more broadly, valuable information on life in the Middle Ages. "It is therefore a documentary record which employs particular narrative techniques and makes use of symbolism, as do many literary and artistic works of the Romanesque period. It is a unique work: there is no other similar document to compare it with. It retains to this day an element of mystery, and several questions have not yet been fully answered."<sup>2</sup>

When artist and filmmaker Sandra Sawatzky opened David M. Wilson's comprehensive, illustrated book, *The Bayeux Tapestry* (2004), she was captivated by the idea of telling an epic tale with contemporary relevance, using the historic work as a template. Telling a story through the lens of a dialogue between the old and the recent is a technique currently favoured by many contemporary artists. For example, Lisa Reihana, New Zealand's artist for the 57th Venice Biennale, enlists a "quasi-educational" neoclassical French wallpaper to form a gigantic panoramic video which tells a contemporary version of the story of contact between Captain James Cook and the Maori people.

Based on eyewitness oral accounts and written reports, the Bayeux Tapestry stands out in art history as a rare contemporaneous visual chronicle, an early form of newsreel from the victor's point of view. It tells the story of events that led to the Battle of Hastings in 1066, one of history's significant turning points. Sawatzky chose to narrate the human stories related to oil from her vantage point as an artist living in Calgary at the beginning of the twenty-first century. She took on the role of an embedded witness in this boom-and-bust town at the hub of the oil and gas industry in Canada, the world's seventh largest producer. The story she envisioned had yet to be told.<sup>3</sup>

The Internet gave her access to an increasingly vast library and archive of information to construct a storyline through a broad sweep of life on earth. Her insatiable curiosity is reminiscent of Pliny – exploring, following leads and confirming details from multiple sources. Tapping the Internet as an initial research tool led to the examination of books, photographs, newspapers, periodicals, literary, scientific and news accounts and, reconnecting to the study of art history, she threaded a web of interconnected events. The approach of the science historian James Burke, who wrote *Connections, an Alternative View of Change* (1978), became a springboard toward her way of constructing history.<sup>4</sup>

At the time that she began her work on *The Black Gold Tapestry*, Sawatzky was at a pivotal moment as an artist, assessing her future in filmmaking and on the lookout for sustainable options.



Still from The Belly Boat Hustle (1998); directed by Sandra Sawatzky

She had produced, written and directed five short films and one feature length film. She used dance and choreographed action to convey stories often without the use of dialogue, giving an upbeat nod to early silent films. Close attention to costume, well-considered settings and unabashed good fun were part of the mix. *Belly Boat Hustle* (1998), a smartly comedic short film about five businessmen who escape the city to go fly-fishing, was a runaway success.

Her feature film, *The Girl Who Married a Ghost* (2004), was the victim of a shift in support for independent film production, limited funds and uncertain distribution.<sup>5</sup> This prompted Sawatzky to examine her attachment to film. She had started in the industry at a time when part of the craft was to actually cut celluloid film to make edits. In a recent interview she recalls: "Technology changes so much, requiring transfers from one carrier to the next. ...I liked the idea that you can always look at a tapestry, even 200 years from now."<sup>6</sup>

The Bayeux Tapestry struck a chord that resonated for Sawatzky, and she adopted it as the basis for her most ambitious work to date. It offered an intriguing way to switch horses, effectively redirecting what she knew about telling a narrative using film to a form that was a precursor to film.

Cloth and clothing already held a special appeal for Sawatzky. Growing up, one of her favourite series of books was the Betsy-Tacy series by American novelist Maud Hart Lovelace. Each one featured the annual visit of a seamstress who came to sew new clothes for the girls. The linear style of illustration informed Sawatzky as she learned to draw figures and costumes.

A student of film, one of Sawatzky's favourite movies is *Lawrence of Arabia* (1962), particularly the scene as Lawrence goes into the desert alone to practise wearing his new flowing white robes. Entranced by his shadow, he becomes aware of the robes' translucence and the power of their beauty. When Sawatzky first moved to Calgary, she worked at Ant Hill Fabrics, an extraordinary store for fine fabrics, drapery and upholstery that retained a legendary status long after its closure in 2004. She sewed garments by hand for family and friends as a personal, and highly satisfying, labour of love. While digital technology accelerated and her experience in the film industry became more frustrating, she already had a deep appreciation for the touch and beauty of textiles. The crossover from film to fabric came naturally.



Lawrence of Arabia, ©1962, renewed 1990 Columbia Pictures Industries, Inc. All Rights Reserved. Courtesy of Columbia Pictures.

For Sawatzky, the allure of working with simple tools – needle, frame and scissors – and fine natural materials, wool and linen, was strong. Sewing reinforced a belief in the dignity of handwork that was rooted in the Arts and Crafts Movement, a humane antidote to the pressures of the Industrial Revolution that seemed worth reviving during the current acceleration of virtual technology. The centuries-old processes of drawing, tracing and sewing made sense to her.

Despite its name, the Bayeux Tapestry isn't a woven tapestry: it's sewn.<sup>7</sup> Anglo-Saxon needle workers (known in Britain as seamsters) were renowned for a particularly fine type of embroidery. Their exquisite ecclesiastical garments and church textiles were highly esteemed in Europe from the seventh through the eleventh centuries. Although it is not known where the Bayeux Tapestry was made, some historians believe that the embroidery workshops or nunneries of Canterbury or Winchester were enlisted to embroider the 68.4 metre long textile.

Sawatzky employed the same stitches as the medieval women who embroidered the Bayeux Tapestry: stem stitch for lines and outlines; laid and couched stitches for the solid areas of colour. The background and faces are not embroidered. The stem stitch lends itself to smooth, curved lines and its particular twist augments the sense of movement in the lines. What has become known as the Bayeux stitch is an Anglo-Saxon variation of the ancient technique of laid work with four steps: 1. Stem stitch: outline the shape; 2. Satin stitch: sew parallel lines of thread across the surface of the fabric so closely that the background cloth is completely covered, but keep the tension even; 3. Couching stitch: hold the threads down by sewing cross threads at staggered intervals; and 4. Stab stitch: fix intersections of the long stitches in place with a single stitch.

It's an economical and relatively quick method to cover a large area. The effect is a textured surface that is neatly restrained. Because the stitches have a directional element, the play of light enhances the relief of the threads and shades the colour.

If one colour is couched using another colour, there is an added sense of bulk and richness. Whereas the Bayeux Tapestry seamsters used only seven colours, Sawatzky enlists a wide spectrum of subtly hand-dyed colours. Whether she represents the skin of dinosaurs, the casing of machinery or the brocade of fine clothes, Sawatzky optimizes the colour and stitchery to create an opulent surface.

The Bayeux Tapestry is 50 centimetres high and is divided into three horizontal bands. The main events take place in the broad middle zone, represented much like a storyboard for a film. There is a running commentary at the top in Latin – an antecedent of today's breaking news bands that scroll at the bottom of the screen. An Anglo-Saxon bestiary of animals,



birds and mythical creatures inhabit the upper and lower margins, often in the bilateral symmetry that can be found in Byzantine carving and manucripts. Sawatzky populates the borders of *The Black Gold Tapestry* with dinosaurs from the Upper Triassic to the Upper Cretaceous periods.

The Black Gold Tapestry echoes the scale and construction of the Bayeux Tapestry and also employs some of its narrative devices, including interruptions in the border. Occasionally, the border design of the Bayeux Tapestry is interspersed with scenes of everyday rural life and hunting. At other times, images in the borders interact with the action of the middle zone. Subplots are acted out by figures underneath or alongside the main action, a form of continuous narrative that appeared in early paintings and manuscripts and can still be found in comic books and graphic novels.

The scene of Henry Ford riding his first motorized vehicle, a quadricycle, is a testament to ingenuity and problem solving, a theme that runs throughout Sawatzky's tapestry. The house in the background, based on one that Frank Lloyd Wright designed in the same year (1896), substantiates architectural advancement and gives a larger cultural context to the episode. But the small scene in the lower border tells a less heroic story; it is based on the report of the first car accident.<sup>8</sup>

Sawatzky was guick to spot the first known image of Halley's Comet as it crossed the skies in 1066 in the original Bayeux Tapestry. In a gesture of appreciation from one director to another, she gave it a cameo appearance in her own narration in reference to an asteroid that may have caused the demise of the dinosaurs.





Detail of the Bayeux Tapestry, 11th century; with special permission from the City of Bayeux

In common with various noted scholars, Sawatzky believes that the Bayeux Tapestry had a single designer. Evidence exists that it may have been the master illuminator Scollard who was head of the scriptorium at the Benedictine abbey of Mont Saint Michel before being called to be Abbot of St. Augustine's in Canterbury where he was at the time the Bayeux Tapestry was made.<sup>9</sup> Scollard would have been familiar with the visual sources for the Bayeux Tapestry. Interlaced patterns, animal and human figures and architectural structures referred to designs in other media such as manuscript illumination, metalwork and carving. Although the stylization of the design appears fairly consistent, there are some elements that can be deduced as being based on disparate sources, which Scollard would have known. For example, soldiers are depicted fairly flatly in a Byzantine mode, but horses in battle suggest a Greco-Roman source for the contorted positions.<sup>10</sup>

Sawatzky also draws on other stylistic conventions for *The* Black Gold Tapestry, such as those of Egyptian friezes or Chinese ceramics, to underscore the cultural content of the scenes. Another example of borrowing from a source that was itself borrowed is separating scenes of creatures in the borders with parallel lines, akin to the triglyphs that separate the metopes on the frieze of the Parthenon in Athens, a precursor to telling stories with film that is divided into frames.

The completion of the Bayeux Tapestry was probably timed for the consecration of the Bayeux Cathedral in 1077. Sandra Sawatzky also imposed a deadline for herself: to exhibit The Black Gold Tapestry during the sesquicentennial anniversary of Canadian Confederation in 2017. Fortuitously, the Glenbow stepped up. Sawatzky's project is especially topical as the urgency of global warming comes to the fore. It also fits with the museum's program of exhibitions and the scope of its collection, especially in the areas of historical documentation, early photography and contemporary response to the representation of narrative forms.<sup>11</sup>

Sandra Sawatzky's choice to use the Bayeux Tapestry as a template for a new narrative is visually seductive, luring us in while reminding us that history, news and memory are all constructed with stories. 💥

Katherine Ylitalo is an independent curator, writer, educator, horticulturalist and garden historian with extensive experience as a museum professional in Canada. She earned her BA (72) and MA (73) degrees from Stanford University.

- Stannard, Jerry. "Pliny the Elder, The Natural History, Preface, 13," accessed July 27, 2017. https://www.britannica.com/biography/Pliny-the-Elder
- <sup>2</sup> UNESCO. "Memory of the World, Bayeux Tapestry," accessed July 27, 2017. http://www.unesco.org/new/en/communication-and-information/memory-ofthe-world/register/full-list-of-registered-heritage/registered-heritage-page-1/ bayeux-tapestry/
- <sup>3</sup> Mark Kurlansky, author of Salt: A World History, published in 2002, opened the door on a form of social history that Sawatzky admired and that guickly became popular.
- <sup>4</sup> This book gave rise to television documentaries that proposed new ways of thinking, connecting the dots between seemingly disparate things. Throughout the process of creating her tapestry, Sawatzky kept a journal and often shared her process on a blog. She mentions her debt to Burke in her approach to storytelling in the blog entry of Nov 27, 2009. http://blackgoldtapestry.blogspot.ca/
- <sup>5</sup> Sandra Sawatzky, "Filming *The Girl Who Married a Ghost* or Dancing with Murphy's Law," Alberta Views, June 2005.
- <sup>6</sup> Skype interview with the artist, July 12, 2017.



- <sup>7</sup> The word *tapestry* denoted the large weavings used to cover castle walls. They often depicted narrative scenes of battles or people engaged in various pastimes. Because of its similarities to tapestries in its massive scale and the secular storytelling function, the word tapestry has long been used in the name of the historic textile.
- <sup>8</sup> Sawatzky, Sandra. "Henry Ford's original quadricycle," 2009. http://blackgoldtapestry.blogspot.ca/2009/11/henry-fords-original-car.html
- <sup>9</sup> Lebert, Marie. "The Mont Saint-Michel manuscripts through the ages," 2015. https://marielebert.wordpress.com/2015/10/25/manuscripts/
- <sup>10</sup> Fred S. Kleiner, Gardner's Art Through the Ages, A Global History, 15<sup>th</sup> ed. (Boston: Cengage Learning, 2014), p. 370. The text suggests a comparison with the representation of twisted horses in the "Alexander Mosaic (Battle of Issus)" originally painted by the Greek painter, Philoxenos of Eretria, but now known through the Roman mosaic copy at the National Archaeological Museum of Naples, rediscovered in Pompeii in the House of the Faun (Casa del Fauno).
- <sup>11</sup> In 2011, Glenbow hosted Watch Me Move, an exhibition on the history of animation circulated by the Barbican Art Gallery in London, England. In 2017 Glenbow exhibited Adad Hannah's The Raft of the Medusa, his recreation of the famous Théodore Géricault painting, The Raft of the Medusa (1818-19), as a tableau vivant, 200 years after the original event. In Glenbow's vast collection, the Minnesota Massacre (ca. 1863) is a panorama that depicts the news of the day in a series of 42 painted panels that were lit from behind: John Stevens (1819-79) toured the show through four states.

### Artist's Statement by Sandra Sawatzky

#### On October 8, 2008 I wrote in my journal:

"Everyone to whom I've told this idea loves it. And they can imagine me doing it. I believe it will be sensational. A gorgeous piece of embroidery that creates a fantastic impression. The words used to describe the Bayeux Tapestry are mysterious, mystical, spiritual. Well, I'd like the same kind of awe to be felt just for the beauty of the colours and yarn. I think that I can do it. Ten years in the making. That's what I figure. Very little capital needed. Just a few simple materials."

I was prepared to jump in with both feet. That journal entry encapsulates my ambition to make a work that translates the captivating qualities of the Bayeux Tapestry into an epic modern story – the story of oil. I was convinced I had the ability to use the medium of embroidery to good effect. The tapestry concept engaged family, friends and colleagues, and the clincher was that the outlay of cash and materials would be minimal compared to those of doing another film project.

Setting out on such a long-term project, one needs confidence that one can go the distance. I knew I had practice: a marriage of 40 years; parenting for 20; decades of daily running, writing and drawing; scores of detailed couture sewing creations; and completion of six films all schooled in me a commitment to "small steps" – daily action that builds resilience, dependability, patience and puts skin in the game. That discipline enabled me to complete *The Black Gold Tapestry*.

Sewing has been as much a part of my life as writing, art and filmmaking. The varied textures and weights, the variety of pattern and colour, the shaping of fluid fabric into three dimensions and the play of light on the fabric surface are all endlessly appealing.

I am drawn to the history of textiles and how sewing, weaving, spinning, embroidering and crocheting were areas where women could be creative, demonstrating their skills and learning new ones. Anthropologists Olga Soffer and J.M. Adovasio attribute the invention of string, yarn and weaving to the women of prehistory. These inventions made possible the crucial technologies of baskets, nets, rope, thread, yarn and cloth.

Textiles are as essential to survival as food, shelter, water and air. Capitalism and the global economy were born in the Industrial Revolution, which was itself kick-started by the invention of machines to make cloth. The Jacquard loom, invented in the eighteenth century, was, in turn, ancestor to today's computer technology as the punch cards controlling the raising and lowering of threads for weaving were repurposed to encode data in early computers.

When the Calgary fabric store Ant Hill Fabrics closed its doors, it was the end of an era for me. Every fabric, every button, every ribbon in the store had been chosen by the discerning owners. For me, strolling each aisle of the store was a lesson in harmony, beauty, thoughtfulness and astute merchandising that lifted my spirits from simply looking, touching and even smelling that tactile world. If Ant Hill had remained open and available to me, perhaps I would never have felt the need to embroider 67 metres of cloth. *The Black Gold Tapestry* is my rallying cry for that which I love – working with fabric. Initially, I did not know what epic tale the tapestry would tell, but I knew I wanted to engage both men and women. I thought a history of war might connect my creation to the Bayeux Tapestry. In searching for the thread to begin my tale I read about an Australian millionaire who invested his entire fortune in the search for oil in Persia, went broke, then borrowed more millions to continue the quest. That discovery allowed the British navy to refit their ships to burn oil instead of coal, thus creating a decisive advantage for them in the First World War.

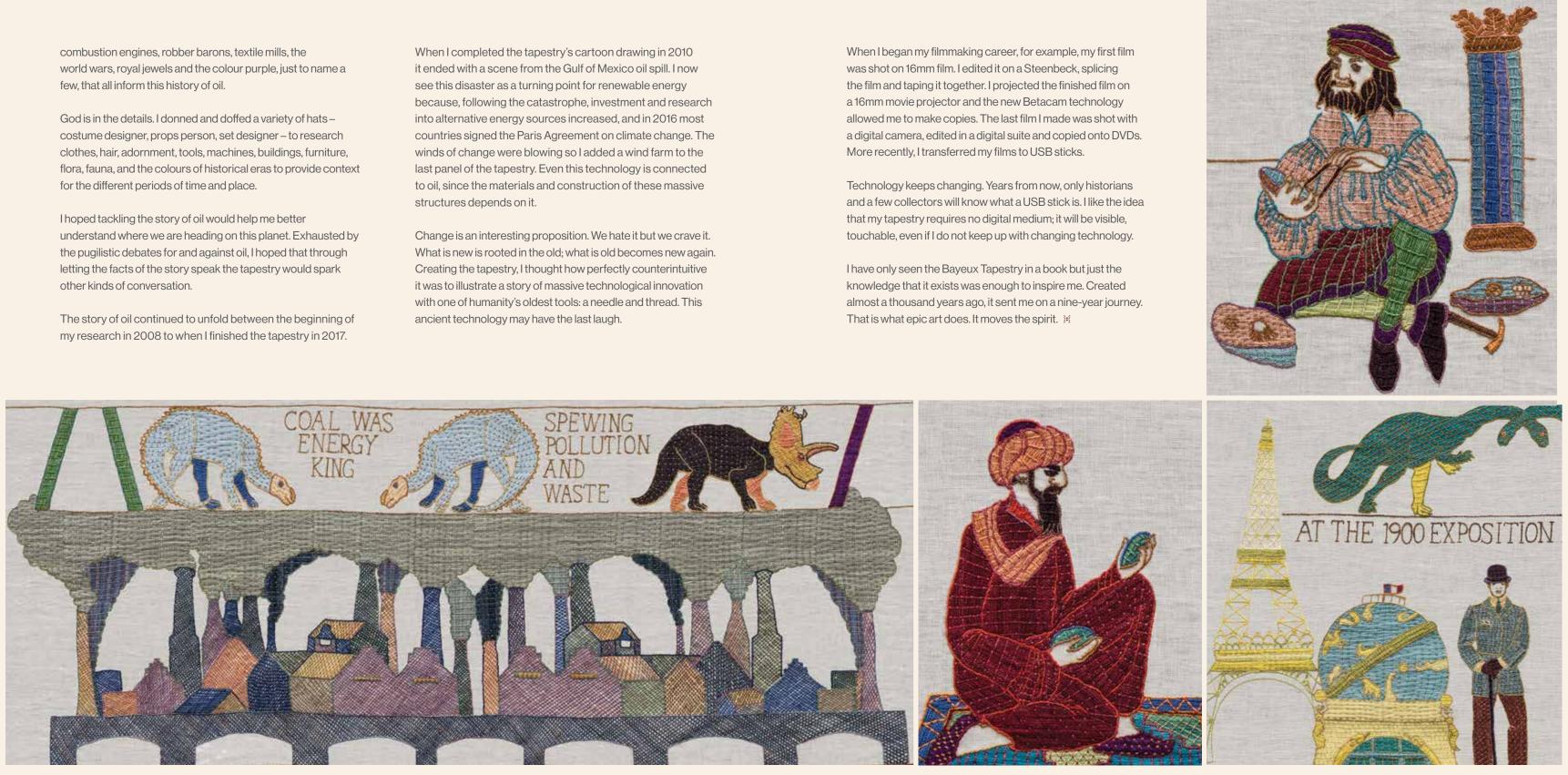
"As I read the story based on the Persian discovery, it was obvious to me that there was a real story behind it – a story of characters and adventurers and gamblers ... there was a time when the story of oil was the story of progress and a story we all embraced. That has all ground to a halt and now all of us are afraid that the world will end based on our fossil fuel consumption."

I went on to write in my journal: "I love the idea of a visual pictogram with a fantastic set of images that will be iconic – the origins of oil and where it is taking us. I think by creating the tapestry I will have an opportunity to see what I think about it all. The creation of the tapestry becomes a meditation on the subject."

As a source of fuel and a versatile resource for plastic and chemical creation, oil has profoundly shaped both our world and ourselves for better and for worse. I decided the tapestry would be about discovery, science, invention, adventure, consequences and the pound of flesh exacted from those involved. The story of the tapestry covers the globe and spans eons.

Since oil has become as divisive a topic as religion and politics, I wanted the work to be a balanced telling and approached the creation through photographs, artifacts and research of primary and secondary sources so that the tapestry's telling of the story of oil would bear up under scrutiny. That meant sifting through a staggering breadth of subjects – geology, paleontology, chemistry, mining, automobiles, aeroplanes, rockets, drilling, distillation, weapons, whaling, child labour,







## Black Gold: An Embroidered History by Sandra Sawatzky

The Black Gold Tapestry **ETTE** page 23

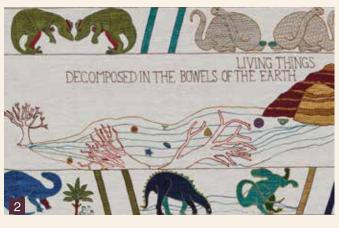




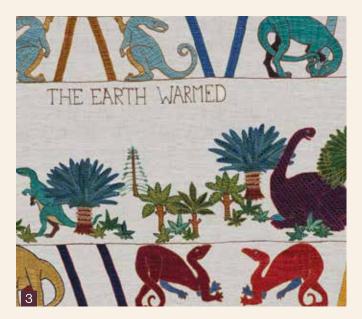




These three views of the earth show the relative positions her land masses had attained in the Triassic, Jurassic and Cretaceous periods. Tectonic plate interactions constantly create rising mountain ranges whose valleys fill with sediment and organic matter. Over millions of years, that matter slowly matures into deposits of coal, oil and gas.



Oil and gas are formed from the rapid burial of enormous quantities of aquatic microorganisms buried on the sea floor where oxygen is so scarce that the organisms cannot fully decompose. This lack of oxygen enabled this organic matter to maintain its hydrogen-carbon bonds which is key for the production of oil and gas. 2



Scientists have put forward a number of different theories to explain the extinction of the dinosaurs and other prehistoric life forms. Although most agree that an asteroid collided with the earth some 65 million years ago and that this event may have led to a dramatic increase in the number of volcanic eruptions around the world, the discussion about the precise sequence, the location and even the significance of these events continues. It appears, though, that climate change, however caused, may have had a role to play.



Oil seeped up to the earth's surface. Neanderthal hunters used oil to glue spearheads to wooden shafts. In the marshlands of Mesopotamia, people used bitumen that had seeped into the waterways to waterproof their boats.



Ancient artifacts from Mesopotamia depict humanoid clay forms with bitumen dots and stripes on them, suggesting that people used bitumen for medicinal and cosmetic purposes. 5



Ancient Mesopotamians mixed mud, bitumen and reeds to make bricks and developed masonry using bitumen mortar. With those basic materials they produced impressive architectural edifices. Ziggurats were massive structures built in ancient Mesopotamia and the Iranian plateau. They were part of a temple complex that included other buildings and could be up to seven floors high. 6



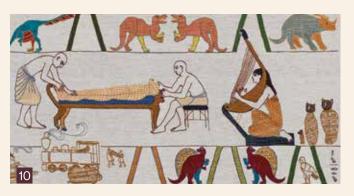
Glazed bricks were used to construct the Ishtar Gate that led into the inner city of Babylon constructed by order of King Nebuchadnezzar II, the most powerful king of ancient times. He advertised his power and authority by building Babylon and its renowned hanging gardens into a state-of-the-art city and an engineering wonder. 7



Bitumen from the Dead Sea became a traded commodity. Workers paddled boats through the oil seeps and brought the oil to shore where it was dried on mats and then transported. The trade routes were beset by cutthroat packs of bandits. 8



Since ancient times the Dead Sea has attracted visitors because of its healing powers; the presence of bitumen in the water was believed to be the ingredient that cured skin conditions such as psoriasis.



When Egypt began running short of resins for embalming the dead, they imported bitumen from the Dead Sea. Bitumen was used to coat mummy wrappings and fill body cavities. Along with humans, millions of cats, birds and other animals were mummified. 10

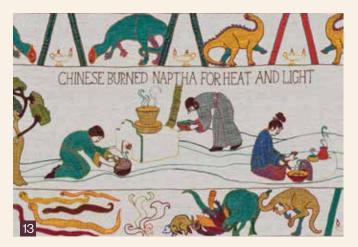


Our bodies need salt to function and it is valued in all cultures. By the second century AD, the Chinese used a spring pole drill to dig salt water wells up to 140 metres deep that would

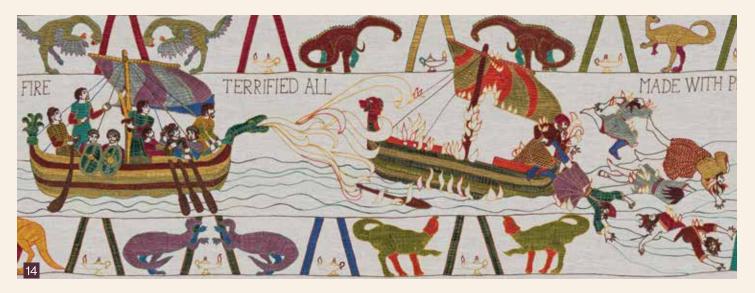
fill with brine. By jumping on the stirrup, the pole would rise up and lower the chisel at the end of the pipe, breaking up the rock and earth. A fishtail drill bit was used to create the initial hole for the wellhead. These drill bits are similar to those used today in exploratory drilling. 11



Drilling for salt often yielded natural gas that exploded, burned or escaped as an invisible gas, killing miners. The Chinese harnessed the gas and piped it to cooking stoves where they used it to cook down the salt brine. Hollow tubes of bamboo proved to be a perfect conduit for piping the gas to the ovens, and were also used to make parts for the spring pole drill.



Oil was a by-product of salt brine drilling and was known as rock oil. It was burned for light and heat.



In their hunt for immortality, alchemists learned how to distil oil and make petroleum. Their discoveries were traded only with other alchemists. The first chemical warfare was waged using Greek Fire, which was made from a secret recipe that included petroleum. The explosive and flammable Greek Fire, which burned on water, was used to great effect by the Byzantine Empire during naval battles. 14



Ibn Sina was a tenth-century Persian polymath who observed the natural world. Long before geology was a science, he was interested in the origin and formation of mountains, the sources

of water, the diversity of the earth's terrain and the origin of minerals. He developed fundamental principles of the earth's processes, major events and geological time.



Leonardo Da Vinci was a keen recorder of nature. In his notebooks he noted that fossils of sea creatures were embedded in rock formations. He concluded that the surface of the earth had changed over time and that mountains were once covered by oceans, casting doubt on the biblical story of the Great Flood. 16



James Hutton, a father of modern geology, came to believe that the earth was perpetually changing and that erosion and sedimentation provided the clues to its history. The eighteenth century saw more men and women exploring the natural world and sharing their knowledge. Geological observation and study came to be used to find coal and oil deposits. 17



The early textile machines of the Industrial Revolution were powered by watermills, which were replaced by coal burning factories that could be located anywhere since they did

not need a reliable source of water. Entrepreneur Richard Arkwright hired children as young as six to make up two thirds of his labour force. 18



Whale oil was used to lubricate machinery and provide light. Sperm whale oil was said to burn most brightly and did not have a disagreeable odour. Twenty-five to 40 barrels of whale oil could be collected from an average-sized sperm whale. More than a million sperm whales were killed between the eighteenth and twentieth centuries.<sup>19</sup>



Canadian Abraham Gesner was sympathetic to the plight of whales. He kept an apothecary laboratory, and, through experimentation with coal, bitumen and oil shale, he produced a thin, clear flammable fluid that made an excellent fuel for lamps and was less expensive to produce than whale oil. He called it kerosene. 20



Kerosene lighting was used in coalmines where labourers worked 12-hour shifts. Canaries were brought into mines to alert miners to deadly gases. Children as young as four also worked in the mines, working the same hours as men. Industry and towns grew up around mining areas and factory chimneys billowing smoke were an everyday part of the landscape. 21



Salt wells were just as important in the nineteenth century as they were to the people of ancient China. Entrepreneur Samuel Kier drilled for salt brine and, when his wells were fouled by petroleum, he dumped the useless oil into a nearby river. When it caught fire he began to think of ways that he could use it. 22



Though not a chemist, Kier was knowledgeable about how to use a whisky still and, following the same processes, distilled the petroleum from the salt water. His first products were a patent medicine and petroleum jelly – neither very profitable. Then he figured out how to make kerosene.



Businessman Charles Lockhart took a gallon of oil and a gallon of Kier's kerosene and sailed to England on the SS Persia where he demonstrated that it formed an economic and bright-flamed lamp oil, creating a market for the product.



Around the same time, Edwin Drake (using salt drilling methods) discovered oil on land owned by George Bissell. Since whale oil was soon being replaced by kerosene, the boom for oil was on. 25





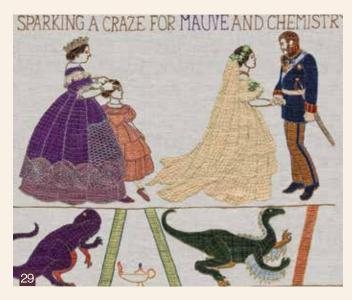
Whisky barrels were used to ship crude oil. By the 1870s, the oil refinery business in the United States was overbuilt and inefficient. Charles Lockhart saw the opportunity to consolidate refineries and went on to form the Standard Oil Company with J.D. Rockefeller. 26



Throughout the nineteenth century, Great Britain's factories burned coal, producing vast amounts of pollutants and waste by-products. 27



William Perkin, a young man who had studied chemistry, took the waste coal tar and tried to make synthetic quinine, commonly used in the treatment of malaria.

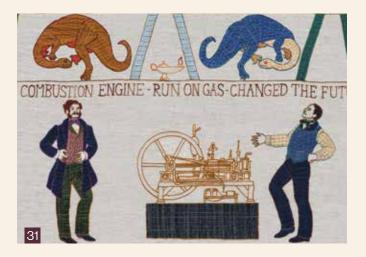


What Perkin got instead was a purple colour that he could market. Queen Victoria wore a dress dyed with the new colour to her daughter's wedding when Princess Royal Victoria wed

Crown Prince Friedrich Wilhelm of Germany in 1858. The colour became a sensation and mauveine, the first chemical dye, made Perkin a millionaire. It also marked the beginning of the petrochemical industry era. 29



Beginning in the late eighteenth century, inventors were trying to replace horse-drawn carriages with mechanical devices. The inventors used steam and electricity to power vehicles. At the same time, bicycles without pedals came on the scene.



In 1860 Belgian inventor Jean Joseph Étienne Lenoir produced a gas-fired combustion engine. Other inventors followed, making improvements to the basic design. 31



Gottlieb Daimler and his partner, Wilhelm Maybach, built small, high-speed engines; by 1885 they had produced the first internal combustion motorcycle which they named the Petroleum Reitwagon. 32



In 1885, without permission from local authorities and without her husband's knowledge, Bertha Benz drove her husband's newly constructed motorwagen 95 kilometres from Mannheim to Pforzheim to visit her mother. No one had driven so far, for so long, in an automobile. Once in Pforzheim, Bertha telegraphed her husband. Newspapers covered the story and made Benz famous. Once home Bertha told her husband that another gear would help the automobile drive uphill. 33



In the 1870s Robert and Ludvig Nobel bought a distillery in Baku, Azerbaijan and began distilling petroleum into kerosene. Their company, Branobel, pioneered pipeline transport. 34



Ludvig Nobel invented oil tankers and named the first one Zoroaster, after the fire temple of Baku. Branobel became the largest oil company in Russia before it was dismantled after the Russian Revolution of 1917. 35



Throughout the late nineteenth century, many kinds of automobiles were being designed. In 1896 American Henry Ford entered the competitive industry with the quadricycle, which used the wheels and steering of a bicycle. In the same year, the first motor vehicle accident occurred when a man drove into a bicyclist. The motorist went to jail for one day. 36



Although many engines ran on gas, Rudolph Diesel thought gasoline might run out one day so he invented an engine to run on peanut oil and showcased it at the Exposition Universelle of 1900 in Paris. 37



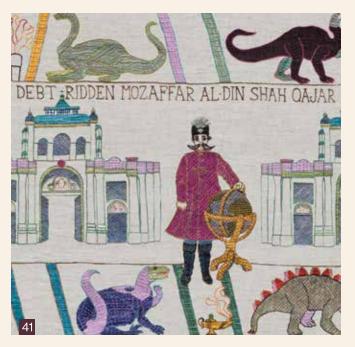
In 1903 brothers Orville and Wilbur Wright flew 260 metres after they lofted their gas-powered airplane by pushing it down a track made of 2 x 4 planks. The plane's lightweight gas motor was mounted on the wings. 38



By the beginning of the twentieth century, electric light bulbs had replaced kerosene for lighting. Oil companies picked up the slack in sales by promoting gasoline combustion engines for vehicles. J.D. Rockefeller encouraged Henry Ford to develop the gas engine rather than pursue an electric car. Ford pioneered the assembly line so he could build more cars faster, making them so affordable that everyone could own a Ford Model T. 39



The oil fields in the Middle East had not yet been discovered but Jacques de Morgan, a French archaeologist in the 1880s, made note of oil seeps that he encountered during his expeditions in Persia. 40



Representatives of the debt-ridden Shah of Persia offered millionaire William Knox D'Arcy Persia's oil rights for 60 years. D'Arcy sank his fortune into the search for oil and when he ran out of ready money he went to the British government to borrow more. They directed him to the Burmah Oil Company,

which had cut a deal to supply the British navy with oil (Britain was preparing for war and planned to update its navy ships from coal to petroleum). Burmah Oil gave D'Arcy the loan and took over the majority of the company's shares. Oil was discovered in 1908. The company became the Anglo-Persian Oil Company (subsequently British Petroleum), establishing the oil and petrochemical industry in the country now known as Iran. 41



In Canada, businessman Stewart Herron was investigating the seeps along the Sheep River near Calgary, Alberta. After confirming that the rotten-egg smell percolating out of the ground was associated with natural gas, he acquired the land and mineral rights, and began looking for investors to fund exploration and drilling. He invited prominent Calgarians James Lougheed, R.B. Bennett and Archibald Dingman to his property, and, according to legend, held a match to a fissure in the rock, lit the gas and used the flames to cook eggs. Following this display, the men were convinced to join him in forming the Calgary Petroleum Products Company, one of the key players in the subsequent Turner Valley, Alberta oil boom. 42



Long before the assassination of the Archduke Franz Ferdinand of Austria and his wife in Sarajevo in 1914, tensions were already high among European nations due to the production of new kinds of powerful weaponry. Germany feared increases in Russian armaments and Britain feared the build-up of Germany's navy. The result was an armaments race that pitted the alliance of Germany, Austria-Hungary and Italy against the triple entente of France, Russia and Britain. Countries on both sides had a vested interest in the advantages oil production would give the arms race and were willing to fight for it, making it a decisive factor in the outbreak of war. 43

energies were focused on building what would become the first gas-fuelled rocket – it was successfully launched 12.5 metres in 1926. Research in space travel developed after the Second World War and was accelerated by the space race between Russia and the United States during the Cold War.



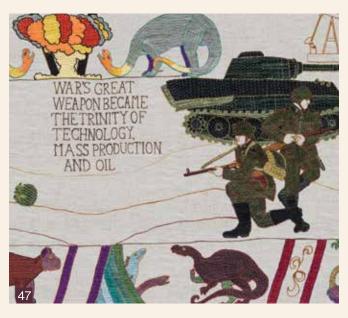
The twentieth century was the golden age for automobiles and the combustion engine. The first drive-in gasoline service stations were in place by 1913 and used a self-measuring gasoline storage pump. 45



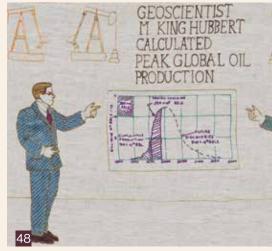
When he was only 17, Robert Goddard determined that he would invent a way to fly into space. From that time forward his



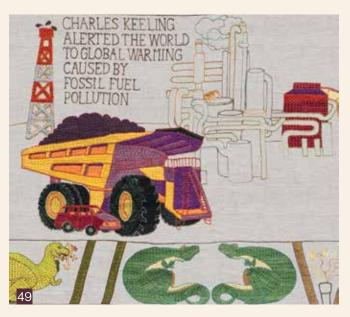
The manufacture of goods ramped up in the twentieth century and the energy required was most often supplied by oil. During the Second World War, posters and billboards promoted oil and gas rationing and ride sharing so resources could go to the fighting armies. Both sides did their best during the war to cut off oil and gas supplies to the enemy while protecting their own. 46



The Second World War pulled many countries out of the economic slump of the 1930s. The production of weapons, ammunition, tanks, trucks, vehicles, aeroplanes, ships and submarines gave people jobs, and provided the infrastructure that continued to grow after the war as governments and industry benefited from growing military might. 47



In 1956 M. King Hubbert, a geoscientist who worked for Shell Oil, warned that world production of oil would peak before the end of the twentieth century and that we would run out of easy-to-get cheap oil. 48

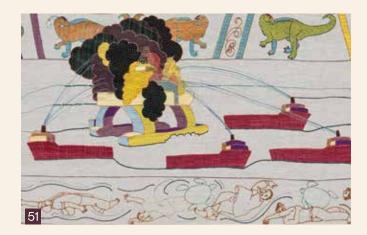


At about the same time as Hubbert's prediction, interest in hard-to-get oil took hold. The development of the oil sands in Canada began in the 1960s and has continued to grow, only slowing when the cost to produce exceeds the price of oil in the marketplace. Environmentalists cite the oil sands as an example of untenable ecological destruction. 49





In the late 1950s, Charles Keeling, a geochemist, began measuring levels of carbon dioxide in atmospheric samples and found they had risen since the nineteenth century. He concluded that the increase was due to the burning of fossil fuels and alerted the world to global warming and the effects of greenhouse gases. This was widely disregarded at the time. Although there are some who are not convinced, the majority of people, industries and governments today no longer resist Keeling's findings, and there is a growing effort worldwide to develop renewable energy industries to stem climate change. 50



The Deepwater Horizon oil spill in 2010 off the coast of Louisiana was the largest marine oil spill in history. Eleven men and countless animals and marine life in the area were killed. The U.S. District Court for the Eastern District of Louisiana ruled that BP was primarily responsible because of gross negligence and reckless conduct. 51



With a commitment from countries around the world to end greenhouse gas emissions that cause climate change, renewable energy is the new frontier for inventors, scientists and entrepreneurs. 52

# **Creating The Black Gold Tapestry**

Nine years in the making, Sandra Sawatzky's 67-metre, hand-embroidered tapestry tells the story of how oil has impacted human civilizations around the world, highlighting fascinating vignettes from the past and present. Here are some of the details on how this remarkable work of art was created.

### Fabric

The fabric for the tapestry is 100 percent flax linen sourced from Beckenstein Men's Fabric Czar in New York and The Wool House in Toronto.

### **Embroidery Thread**

The embroidery thread comes from The Thread Gatherer, a family company run by Cecilia Strickland in Boise, Idaho. The threads are a 50/50 blend of silk and wool fibres and are hand-dyed in small lots.

### Colours

The colour palette for each of the tapestry's panels references art and artifacts from different periods and places. The number of colours used per panel varies from 15 to 26. There are 69 different colours used throughout the tapestry, including Pharaoh's Gold, Wart Frog, Olive Branch, Athen's Teal, Walnut Woods, Chimney Sweep, Newt Green, Celtic Fog, Regal Orchid, Amethyst Anaconda and Winter Solstice.

### **The Process**

Before embroidering commenced, the entire storyline was laid out in a 67 metre pen-and-ink drawing (cartoon). The drawing was traced by hand in 91 centimetre sections onto tracing paper and then retraced onto the fabric.

A hand-quilting frame with high-density foam tape wrapped around the inner hoop was used as the embroidery frame.

There are four embroidery stitches used: outline, laid, couching and chain stitch.

Every part of making the tapestry tested Sawatzky's abilities, but perhaps the length of time it took to make it was the most challenging as it meant foregoing a normal life for nine years, and required over 16,000 hours of time.

The steps involved included: concept development (2008); sourcing and acquiring materials (2009); story research (2009-2010); drawing the cartoon (2009-2010); stitching the tapestry (2012-17); and intermittent blog posts documenting the tapestry's creation (2009-2017).

Equally important to accomplishing the project (and just as time consuming) was fundraising. There were many rounds of fundraising, some successful, some not, and if they were not fruitful in a direct way they led to different approaches.

### **Dinosaurs**

There are 434 dinosaurs in the tapestry. The study of dinosaurs and fossils grew up alongside geological surveying, which located likely sources for oil and gas deposits.

### People

There are 349 human figures in the tapestry beginning with Neanderthal man and following the history of many civilizations through time right up to today.

### **Divinities**

The nine divinities are symbols and provide commentary on the history of the world and the human drama.

- · Zephyrus, Greek god of the west wind and harbinger of spring, and his wife Chloris, goddess of flowers
- Quetzalcoatl, Aztec god of wind
- Boreas, Greek god of the north wind and winter
- Anubis, Egyptian god of the dead
- Egyptian Ba Bird, representing the human spirit
- Fuxi and Nuwa, Chinese god and goddess of creativity
- Li Bing, ancient Chinese engineer and vanguisher of the River God
- Pandora, first mortal woman in Greek mythology
- Janus, Roman god of transitions, beginnings and endings

### There are 19 scenes in the tapestry's margins that provide commentary on the scenes in the middle

- Panel 1: Bombing of Marsh People of Irag; Dam in Irag
- Panel 2: Slaughtered warriors; Dead Sea spa; Mark Twain's tale of burning mummies for fuel
- Panel 4: Noah's Ark being built; Fossil shells; Children working in coal mines; Canary in a coal mine
- Panel 5: Jet plane being fuelled with kerosene; Samuel Kier dumping oil into river
- Panel 6: Oil spill of the Exxon Valdez and cleanup; First recorded car accident; The mysterious drowning of Rudolph Diesel
- Panel 7: Assassination of Archduke Ferdinand and his wife Sophie, Duchess von Hohenberg; First World War Zeppelin; Sputnik; American astronaut on moon
- Panel 8: Eleven men who died in the Deepwater Horizon disaster

### There are 12 images based on works of art or architecture

- Sandro Botticelli's Birth of Venus
- The comet depicted in the Bayeux Tapestry
- The Great Wall of China
- Ziggurat of Ur
- The Ishtar Gate
- An Assyrian Horse Archer
- The Pyramids of Egypt
- The Eiffel Tower
- The Globe Céleste (Celestial Sphere) at the 1900 Paris World's Fair
- The Golestan Palace, Tehran
- The Renaissance city of Florence
- Isidore H. Heller House

### Other things you'll find in the tapestry

- 88 buildings
- 18 vehicles
- 17 boats
- 4 insects
- 7 flying machines



•48 mammals

6 reptiles







Growing up in a family who loved art, books, music, poetry, plays, movies, dance - where there was plenty of freedom to roam and seek adventure as long as everyone showed up at meal time - Sandra Sawatzky felt she was destined to pursue a creative life.

She determined she would be an artist when she was three. This ambition was solidified at age 10 when she says her aha moment was discovering how to mix yellow and red to make a satisfying gold-hued paint, and spending the summer designing, colouring and cutting out hundreds of highly detailed and accessorized costumes for a paper doll. Enthralled by beautiful fabrics, Sawatzky taught herself to sew at 13 and became a serious practitioner.

She met her husband when she was 16. They married when Sawatzky was 19 and moved to Calgary so she could attend the Alberta College of Art + Design where she specialized in illustration. After graduating with a degree in visual communications, she worked in commercial art and design before deciding to change course and attend film school at the Southern Alberta Institute of Technology from which she graduated with honours. For several years Sawatzky taught courses on the history of textiles, clothing and apparel design. She also co-hosted a weekly campus radio show about movies before becoming a full-time filmmaker.

# Artist's Biography

While working her way through different positions in film and television production at CTV, she learned the art of planning and preparation, eventually becoming a writer, producer and director for White Iron Productions and Shaw Communications. Beginning in the mid-nineties she began making her own movies and made her mark with narrative short films such as Passing Lane, The Water Cooler, Belly Boat Hustle, Swing Fling Thing, Indian Blue and then her feature length movie The Girl Who Married a Ghost. Sawatzky's films were distinctive in that they used dance and choreographed action with little or no dialogue to tell stories that had a comedic flair.

Her film Belly Boat Hustle brought together fly-fishing and high-flying corporate life in a choreographed piece that was compared to Monty Python at its best. The film was included on many festival "Best of" lists, both nationally and internationally. The Dance on Camera Festival from New York's Lincoln Center noted that Belly Boat Hustle showed a groundbreaking new direction for dance film and this inspired them to hold a Canadian dance film retrospective. Bravo TV presented the film at the Museum of Modern Art in New York in the show Workspheres.

In 2007 Sawatzky visited Glenbow with her daughter and saw an exhibition of needlework and embroidery made by pioneer women. This triggered a chain of events that led to Sawatzky determining that it would be a great adventure to fabricate a narrative on cloth, on the same scale as the 1000-year-old Bayeux Tapestry; Sawatzky's tapestry would benefit from the skills she had learned as a sewer, an artist and filmmaker. This was the beginning of a nine-year commitment to the task of telling the history of oil with needle and thread, describing it as a man's tale told through a woman's art. 💥



