Fine Art Hand Lithography Enrichment, Accessibility, and Sustainability

Chris Hagen

George Alexander Foundation Fellowship, 2024

International Specialised Skills Institute

THE George Alexander FOUNDATION

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Report by Chris Hagen
Typeset by Danielle Cull
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The International Specialised Skills Institute

1/189 Faraday St,
Carlton VIC 3053
info@issinstitute.org.au
+61 03 9347 4583

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01 Acknowledgements

The Awarding Bodies

The Fellow sincerely thanks The George Alexander Foundation for providing funding support for the ISS Institute and for this Fellowship.

The ISS Institute plays a pivotal role in creating value and opportunity, encouraging new thinking and early adoption of ideas and practice by investing in individuals. The overarching aim of the ISS Institute is to support the development of a 'Better Skilled Australia'. The Institute does this via the provision of Fellowships that allow Australians to undertake international skills development and applied research that will positively impact Australian industry and the broader community.

The ISS Institute was founded in 1991 by a small group of innovators, including Sir James Gobbo AC, CVO, QC, and former Governor of Victoria, who had a vision of building a community of industry specialists who would lead the up skilling of the Australian workforce.

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In 1972, George Alexander AM set up an independent philanthropic foundation as a way of sharing his wealth and giving back to the community. The focus of The George Alexander Foundation is supporting access to education for promising young people, particularly those from rural and remote areas. The George Alexander Foundation's aim is to help overcome barriers and make it possible for talented students to achieve their potential and go on to contribute to the Australian community.

The George Alexander Foundation (GAF) Scholarship Programs form the core of the foundation's work, operating in partnership with major tertiary institutions, while our Fellowships and other Education grants provide other enriching and challenging educational experiences.

George Alexander believed in the notion of 'planting seeds and hoping they grow into pretty big trees'. The programs supported by the Foundation endeavour to support this ideal and as GAF Fellowship recipients go on to contribute to the community, George's legacy and spirit lives on through their achievements.

Fellow's Acknowledgements

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- Australian Litho "State of the Field" Survey Respondents

Figure 1. Hagen editioning a work by Tim Mosely at Grey Hand Press. (Photo credit Claudia Husband)

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Executive Summary

George Alexander Foundation Fellow Chris Hagen is pursuing skills enrichment in fine art hand- printmaking, specifically stone lithography techniques. Distinct from the commercial printing field in this era, hand-printing pairs traditional methods with innovative approaches to make “original prints” in favour of reproducing existing artworks. Despite having dedicated the past fifteen years to study and practice in these art forms, there are lifetimes of knowledge in the field, and most centres of training are overseas. This fellowship allowed a much-needed consultation with apex practitioners at the Tamarind Institute in Albuquerque, New Mexico USA. Tamarind is a centre for training founded purely to keep fine art litho alive and constantly improving, instigated by artist June Wayne in the 1970s when a generation of qualified practitioners retired leaving the field at risk of diminishing in America. It has not only succeeded in producing ongoing generations of professional printers but serves as a nexus for technical excellence attracting attendance and consultation globally.

At its essence, lithography is based in the natural tendency of oil and water to repel each other. Images are composed on appropriate surfaces with grease-bearing or waterproof drawing materials. Chemical treatments are then applied to establish them durably in a state that will attract oil-based ink, while the areas left untouched by the image become attractive to water. As long as the surface is regularly dampened during printing, the printing ink can be applied by rollers over the entire surface, but only sticks to the image, rejected by the film of water. These simple principles have remained the core of the lithographic process since it was discovered by Alois Senefelder in 1796, experimenting with the locally-available stone to produce a more economical method of self-publishing his written work. Little did he know at the time that this limestone, partially metamorphosed into marble, was a near-globally-unique grade and purity that was ideal for the very process he invented. Our knowledge has grown considerably in the centuries since, but the Solnhofen stones sent around the world for commercial and artistic printing still form the backbone of many studio practices.

Australian lithography has reached a point where despite the best efforts of its leading practitioners, the costs of maintaining studios and securing materials are critical, and the impact of any failures in process are felt more keenly than ever. Many university programs have diminished their offerings if not discontinued them entirely due to concerns of toxicity, sustainability, but most pressingly, cost and scarcity of educators fully trained to maintain studios and programming. This fellowship explores routes to alleviate these concerns, while addressing one of the greatest challenges: accessibility of quality technical resources (primarily manuals and workshops) produced for Australian audiences. In consultation with Tamarind over a month-long intensive workshop and engaging with professionals in Australia, Hagen seeks to produce an up-to-date

reference text for students and professionals, written in respect of local supply chains and terminology.

During this month, Hagen stress-tested candidate materials to take the place of a critical component in the process, bitumen tar, which is regarded as a pinch-point for concerns of sustainability, toxicity, and availability. A teaching portfolio was prepared with examples of these alternatives in use, as well as sample images for educational programming that have not been possible to produce within a typical work schedule. Perhaps most usefully, this visit allowed a proper introduction to the current generation of staff and the start of ongoing collaboration with the Institute on future reference materials and programming. On return, Hagen initiated conversations with material importers and overseas manufacturers, produced a “state of the field” survey for Australian lithographer feedback, and initiated efforts for an exhibition of national litho practice.

This opportunity has significantly advanced the Fellow’s understanding of the most challenging topics within lithography, especially the chemical mechanics of the process, shaping their future teaching approaches and accuracy in relaying subtler details for aspiring students. Hagen finds himself more widely connected to the Australian print community than before, and has expanded his contacts abroad. The conversation sparked around supply chain pressures has led to interest expressed in cooperative solutions. Discussion is underway to develop a national touring exhibition showcasing litho practice, building awareness of the technique while recognising the strong Australian practitioners.

Hagen maintains an optimistic attitude, knowing that the litho community is resourceful and persistent, but is concerned that the communal and sectoral efforts necessary to improve accessibility, grow awareness attracting new practitioners, or endure new challenges will strain the already tenuous resources and scant time of its artists. Identifying philanthropic sources to develop the field is likely the most productive route: sponsoring exhibitions, establishing a fund to defray the cost of training locally or on acceptance to international programs such as Tamarind, and either developing local product lines or offsetting import costs.

The Fellow must acknowledge that most challenges facing their community are beyond the scope of any one person, institution, research opportunity, or grant. Improvement, let alone stability, will require time, and financial resources beyond their independent reach. It will demand community effort, engagement with philanthropic entities invested in advancing fine arts (likely beyond mainstream grant programs), as well as significant outreach to raise general awareness of the excellence and ongoing growth in our field. Despite all of these concerns, print has endured, grown, and indeed thrived on certain principles. First, it advances in response to the needs of its practitioners and demands of its market, sometimes making its greatest breakthroughs in sharp adversity. It balances a foundation of tradition with acceptance of change as a constant. Above all, the sheer tenacity of those who work in the field is its assurance of perpetuity. A consistent statement by colleagues throughout the Fellow’s outreach has been clear: “we will keep doing litho until we find it impossible.”

03
Fellowship Background

Fellowship Context

As a practice distinctly separate from the “commercial printing” of utilitarian documents (flyers, letterhead, etc.) and even the production of high-end posters or limited edition reproductions of original works in painting, drawing, and photography — there is a rich and expansive community of artists who carry out their original work in printmaking media. Often misunderstood by their fellow artists and the wider art market, the practice is largely known outside the fine art sector for screen-printed T-shirts and perhaps linocuts introduced as a youthful art assignment. To this day and the foreseeable future, there are strong aesthetic and conceptual reasons artists are drawn to what is termed “hand-printmaking” where at least some portion is reliant upon human contact with materials, individually handled and inspected, often using image-forming substrates (“matrices”) considered “traditional” but open to ways of making artworks that commercial presses are not flexible enough to accommodate. Within this sphere, some practices are yet further considered the more challenging, technically opaque, and limited in accessibility. Lithography is indisputably placed in this group — despite several useful published resources and a diverse range of existing practitioners, thanks to specialised materials in limited supply, simultaneous demands on intellectual rigour and manual capability, and perhaps above all a modest understanding of raw chemistry. For all that, its adherents persist for its sheer versatility, the undeniable hallmarks of analogue output, and certain aesthetic outcomes that can only be found by drawing on slabs of Bavarian limestone or grained aluminium plates.

That litany of hardships is only magnified for the Australian lithographer. Consider that the technique was invented in Europe, widely practised on a grade of metamorphic limestone only found sufficiently free of debris in one German quarry; practical knowledge primarily passed down in apprenticeships, university programs, and sufficiently-equipped cooperative studios; the sole professional training program dedicated to the media being found in America; the perennial Australian concern of being considered a small-market-populace so far from all of the above; and (with a few notable exceptions) the majority of reference texts having been written exclusively with a Northern-Hemisphere audience, supply-chain in mind… it takes truly resourceful and tenacious practitioners to achieve a quality work let alone a thriving practice. Professional training opportunities are even rarer — at the time of this publication, only the Australian Print Workshop (Melbourne) offers a limited three-year cycle of one-year apprenticeships funded by an ad-hoc grant. The studio Hagen co-founded, Grey Hand Press, donates a professional mentorship/internship training opportunity as an award for graduating Queensland College of Art & Design students. This is unfortunately likely to

be dissolved, given recent cuts to the printmaking program that will preclude students receiving sufficient training to merit the current structure. The Fellow hopes to open this program to a wider pool of applicants, pending philanthropic partnerships or sufficiently consistent, profitable work to underwrite operational costs and preferably offer a stipend to trainees, easing cost of living pressure while securing their availability during the internship. To date, there has not been projects that leave the studio sufficiently ahead to guarantee the level of programming it strives to provide, especially since COVID made the financial backbone of workshop income too volatile. Beyond these, most training is arranged in one-on-one or co-op studio apprenticeship models by a few passionate printers with sufficient time and resource to share.

It is especially illustrative that Australian litho practitioners who study overseas often make an effort to pursue further work and educational opportunities abroad rather than return when they realise how much harder the practice is compared to the wealth of resource overseas. Prior to and during this project, the Fellow has spoken and corresponded with several Tamarind graduates who originated their practice from Australia. One was sent by their tertiary institution to Tamarind to study expressly with the purpose of founding litho practice at the studio on their return. One returned for an opportunity to head a professional editioning studio, only to find that the local community continuously gravitated to more familiar media such as intaglio and relief, to the point that they re-defined their practice centred in these areas, largely abandoning litho practice. One manages a print studio for a university while running an independent publishing studio. The two most recent Australian Tamarind graduates the Fellow is aware of have remained in America, founding studios or pursuing academic ventures; thanks to conversations fostered by this fellowship, one of these printers now works collaboratively with the fellow's studio and is motivated to participate more widely in their home region.

Fellowship Methodology

Figure 2. Tamarind education studio

- Attend the Tamarind Institute Summer Workshop for skills refreshment and update to current best practices.
- Consult Tamarind staff regarding state of lithographic practice globally, and therefore its downstream effect on practice in Australia.
- Initiate discussion with Tamarind staff regarding opportunities for expanding relationship with Australian printmakers including input on future reference texts for international clarity and supply instructors to provide touring workshops in Australia.
- Initiate conversations with candidate international practitioners and Australian printmakers to gauge interest in “Visiting Printer” programs akin to “Visiting Artist” programs. While initially intended to guarantee an influx of contemporary, diverse professional practice into Australia, this could be arranged to be reciprocally available, sponsoring Australian practitioners to present abroad.
- Identify global practitioners undertaking synergistic research in alternative/adaptive materials and practices to respond to our changing supply chain and sustainability/toxicity motivations.

- Produce a “state of the field” survey for Australian lithographers of any skill level or background to indicate their views, priorities, interests, hardships, and current level of technical understanding to identify directions for future programming.
- Update working draft of an Australian manual of lithography based on Tamarind instruction, in preparation for publication.
- Initiate low-cost and increasingly accessible programming to demonstrate the artistic merits of lithography for prospective students, artists, and collectors not yet aware or undecided on whether to pursue more substantial commitments.
- Initiate an exhibition program showcasing contemporary Australian lithographic practice.

Figure 3. Delivering a “What is Litho?” session at Grey Hand Press. (Photo Credit Claudia Husband)

Fellowship Period

Coinciding with the launch of a new intensive curriculum in stone lithography offered by the Tamarind Institute, the 2023 George Alexander Foundation fellowships allowed Chris Hagen of Grey Hand Press (Brisbane, Queensland) to attend this learning opportunity. The month-long "Summer Workshop"[1] has no equal for sheer information-per-day, a staff composed of the most highly-trained printers, and a nexus of the printmaking community discussing adaptation to the most pressing and impending challenges for the field.

It was incredibly timely that an option for stone techniques would be offered, as the summer intensive has traditionally been taught on the use of aluminium litho plate. These materials are only prepared for fine artists by a few suppliers in the world, so the fellow had recently converted the program at Queensland College of Art to focus on stones as it was no longer viable to introduce undergraduates to plates with no mainstream distributor in Australia. This session would be an incomparable environment for personal skills enrichment, a comprehensive update to best practices, expert oversight of practical experiments, and engagement with a leading international institution.

On return to Australia, Hagen initiated a series of support activities. These include:

- A survey inviting regional lithographers to express their interests, hardships, and needs for ongoing practice.
- Communication with domestic art supply importers/manufacturers to assess the supply chain and opportunities to improve affordability.
- Hosting an inaugural Visiting Printer at Grey Hand Press, Sarah Plummer. An Australian Tamarind alumni currently running her studio in Los Angeles, Sarah presented on her experiences training, working at Gemini Graphic Editions Ltd. (Los Angeles), research of localised alternative acacia sources to mainstream Sudanese gum arabic, and participated in ongoing projects at Grey Hand Press. Sarah will return mid-2024 for further activities.
- Initiating a series of "What Is Litho?" demonstrations at low cost, eventually to be made available online.
- Refining an in-progress draft reference manual for Australian printmakers using local names for process materials and reflecting regional alternatives for the "mainstream" products.
- Initiating an exhibition of contemporary litho practice, likely launching at the Print Council of Australia gallery in Melbourne.

Figure 4. Research partner Sarah Plummer of Speck Editions, Los Angeles presenting at Grey Hand Press

1 The Tamarind "Summer Workshop" takes place in July/August each year, accommodating approximately eight practitioners to study and practise for four weeks. Entry into the program is a highly competitive application process, open internationally, with participants deliberately chosen to represent a spectrum of experience levels, backgrounds, and motivations for attending. Presently there are no scholarships available through Tamarind or its parent institution, the University of New Mexico, to defray the cost of attendance, placing financial burden on attendees for their tuition, accommodation, and travel — however, for the cost of tuition the sheer quantity of high-quality content, contact hours with staff, and studio access is unmatched and well worth the expense.

Fellowship Biography

Raised by a biologist and a journalist in the forested stretch of northern Wisconsin, Chris Hagen received a BFA in Digital Art & Photography from the University of Minnesota Duluth. Becoming deeply involved in printmaking during that time, he took a journeyman's path through Minneapolis with a year of co-op practice and a session of professional internship at the Highpoint Center for Printmaking. During his MFA at Illinois State University Wonsook-Kim School of Fine Art, he served as an assistant in Normal Editions Workshop attended the 2013 Tamarind Institute Summer Plate Lithography Workshop under 1995-2015 education director Rodney Hamon.

Hagen arrived in Brisbane, Queensland in early 2015, where he runs a collaborative & experimental printmaking studio, Grey Hand Press; supplies technical instruction at the Queensland College of Art; serves as a studio consultant to artists and institutions in printmaking, photography, and artists books; and is contracted to museums and galleries for artwork photodocumentation, exhibition build/install, and collection management projects. He has taught at the Brisbane Institute of Art, provided workshops for myriad local institutions, and facilitated classes across Queensland for the Flying Arts touring team.

Glossary

ASPHALTUM / BITUMEN. Used in lithography as a printing base for both plate and stone.

EDITION — Typically refers to a limited quantity of identically-printed images, prepared as the main selection to be sold or exhibited. There are uncommon exceptions: being unlimited (but still matching) or including specific elements which are allowed to vary between impressions. For each project, additional proofs with special designations become earmarked for the printer, the artist, the publisher (if funded by a third party), which are not included in the edition but also match identically.

GREASE RESERVOIR — A shallow, tenuous, but critical product of calcium carbonate in the surface of a litho stone with grease from lithographic drawing materials, which establishes the image. Also commonly referred to as the "ghost" of a previous image when apparent while resurfacing litho stones for new images and when problematically resurfacing during subsequent printing.

GUM ADSORB — Adhesion of a thin layer of gum molecules to the surface of the stone, which attracts and maintains a film of water on the non-image, allowing these areas to reject oil-based ink during printing. Unlike the "gum mask," this layer is chemically bonded to the stone and no longer water-soluble like pure gum arabic.

GUM ARABIC — The dried sap of the acacia tree. The sap is dissolved in water to form a thick, syrupy substance. This is an integral part of the lithographic process as the gum bonds on the surface of the matrix, attracting water to the non-image.

GUM MASK — A thinly-buffed dry layer of gum arabic achieved by the end of any etch, which protects the non-image from environmental factors during storage and serves as a physical stencil rejecting non-aqueous process materials (including non-aqueous solvents, printing bases, etc.), which only pass through and affect the image area.

IMAGE vs. NON-IMAGE — Terms used in the field to distinguish the grease-based and/or waterproof portions of a lithographic surface which will attract the oil-based ink (image) from the portions which remain raw limestone or aluminium to be chemically primed for attracting water during the process (non-image). The image is typically composed of specialised drawing products, but any material that will impart grease or interfere with the aqueous etching materials will register as image. Not to be confused with the actual subject matter as one would refer to figure/subject vs background, as there are countless ways to compose the actual artwork, and the non-printing portions may carry as much or all of the visual information as the "image".

IMPRESSION — Used in printmaking jargon to refer to any individual piece of printed matter, whether it is a unique work, an artist's proof, an individual from an edition, etc. as the term "print" often refers to the collective output of any one image.

LITHOTINE — Solvent commonly used for wash-out of litho matrices and as a tusche solvent in America. Not readily available in Australia, and best replaced with gum turpentine or white spirit. (For its cost, not worth attempting to source locally and generally considered a chronic toxicity risk.)

MATRIX — The surface or material from which an image is printed, or "pulled" as commonly termed in the field. Eg, copper, zinc, aluminium, stone, linoleum etc.

MODIFIERS — Products used in altering the properties of printing inks. These properties include viscosity, opacity, grease content, drying rate, etc.

ORIGINAL PRINT — An artwork originating within a printmaking medium rather than a printed reproduction of a previously existing work such as a painting. May be produced in limited (or in rare cases unlimited) editions, or as individually unique works.

PLANOGRAPHIC PRINTING — Printing from a matrix which remains entirely flat. Lithography and serigraphy (screen printing) are both planographic processes.

PRINTING BASE — a substance that is applied to the matrix to secure and stabilise the image, allowing the ink to adhere more durably.

TUSCHE — Specialised washes (water- or non-aqueous solvent-borne drawing materials) used in lithography to create textures and brushstrokes reminiscent of watercolour, oil painting, and ink washes. Often considered a defining and attractive material for lithography, its production is technically demanding and centred overseas, leading to extravagant prices in Australia.

04
Fellowship Learnings

The time at Tamarind was an invaluable update to technical practices and consultation on future challenges. Every generation of lithographers refines some area of knowledge, and the Institute is dedicated to developing that as thoroughly as possible. While the core principles stay the same, our understanding deepens, our practices become more efficient or circumvent the discontinuation of products. The current education director, Brandon Gunn, has been well placed over his career to specifically debunk myths within the process, passed down by generations of instructors simply because their instructors did so, with no widely-broadcast updates to correct them. This is a situation complicated by the well-agreed-upon maxim that there is no one way to carry out a lithograph, and each variation likely holds some merit — but studios like Tamarind act as the fact-checkers and emphasise maximum-quality output in the minimum amount of time required and their publications are treated as the primary resource.

However, reference manuals are slow to update and the best advice can take a long time to travel by word of mouth if it ever makes the rounds. Tamarind published their first manual of lithography in the 1970s, which was not updated until 2009 when the out-of-print first edition was being scalped for hundreds of dollars. The 2009 edition is an excellent resource, but several materials its procedures relied upon were soon discontinued, making the manual technically out of date just as the fellow was beginning to study printmaking. Tamarind staff regularly acknowledge its shortcomings and encourage updating one's copy by hand. 15 years later, they are finally preparing to publish a new edition, which will be discussed further later in this report. For the greatest degree of educational experience, including hands-on practice, supervision with direct feedback, and real-time troubleshooting, one must attend the studio in-person. This is no small endeavour, with a fee of now $3000 not including travel, accommodations, or paper, but well worth the cost. In return, participants receive 40 contact hours per week with the education director and related staff, 24 hour studio access, a pressroom with four litho presses from one of the finest manufacturers (Takach Press of Albuquerque), darkroom, all necessary consumables, high quality stones, a dedicated research library of relevant texts and the research thesis of every apprenticed master printer, and dedicated work spaces.

Figure 5. Education Director Brandon Gunn discussing stone graining.`

Figure 6. Education Director Brandon Gunn editing an image.

At least two thirds of the class days, which run 8am-5pm like clockwork, are dedicated to demonstrations and lectures, with the remainder either opportunities such as visiting the University of New Mexico Museum Print Archive or independent work time with staff assistance. Demonstrations are delivered with sufficient accessibility that a near-beginner will not be lost, but reach levels of detail that no other educational environment can regularly justify. For example, the practice of “graining” stones (removing the previous image with abrasives to reveal fresh stone for new drawing) might typically be allocated between fifteen minutes and an hour in most universities and workshops. In contrast, on day one alone we spoke for four hours on the tolerances, best practices, and clarified common misinformation. While the Fellow and their co-participants may never again have opportunity to relay this much information verbatim to a student themselves, we are prepared to relay the most pertinent information efficiently, backed up by a comprehensive foundation.

The curriculum covered the basic essentials necessary for any course in lithography, but in each case, to the same level of fine-tuned practice:

- stone graining
- paper choice & preparation
- registration (the alignment of printed colour layers to the paper and each other)
- survey of the fundamental drawing media (lithographic crayons; tusche washes; “shop black” — a mixture of bitumen, solvent, and printing ink used for solid areas and bold brushstrokes, et. al.)
- basic press operation for printing

- analog darkroom photo plates (unfortunately, not distributed in Australia as it has not yet been viable to import them, long abandoned by the commercial printing field)

Interspersed throughout the month, participants additionally received grounding in advanced techniques and theory (topics elaborated upon in this report are marked with an asterisk *):

- process chemistry to the current best research & understanding *
- treatment of stones for adding and deleting portions of imagery*
- ink formulation, colour mixing, and adjustments for multi-layer prints
- transfer papers: specially-coated paper for drawing or otherwise forming an image which is then offset to a stone or plate, allowing artists to compose images without the need for drawing the image “backwards” or to re-grain a stone if unhappy with their attempted work
- metal leafing and hand-applied pigments
- reductive “tint field” drawing techniques: starting from a black field and drawing highlights physically or chemically (“manière noire” and “acid tint”, respectively)
- Chine collé: the process of adhering fine, sensitive papers such as Asian washi tissues to heavier base papers for their colour, texture, and/or ink receptivity with the aid of a printing press (often simultaneously with printing a layer of ink); typically more challenging in lithography due to largely relying on the papers being entirely dry compared to intaglio where the paper can be used wet with liquid adhesives
- full-stone printing edge-to-edge, which results in the impression of the stone border as an aesthetic choice, but generally avoided in the field for its technical difficulty and the risk of breaking stones — therefore this demonstration was designed to encourage the best practice of transferring this impression to a larger stone or plate to be printed more safely and efficiently.
- leather inking roller restoration
- current ink supply chain concerns *
- business practices for professional studios
- “curatorial” concerns: within the printmaking, “curating” refers to the practice of assessing the quality and consistency of prints, especially in an edition. This includes the general cleanliness of the paper front and back, removal of registration marks, re-touching any minor gaps in ink layers, signing and numbering. This also extends to due-diligence documentation of artwork information including artist, printer, studio, dates of production, edition size and additional proofs, and even whether the matrices have been “cancelled” (effacing or destroying them to prevent breaking the “limited” edition).
- Framing, packaging, photographing, and shipping prints.

Even these are not exhaustive lists of the material taught and practised within the workshop, let alone what lithography is capable of. While much of the content was already within Hagen’s practice to varying degrees, new information was at least gleaned within every topic, where not substantially updated — but in several cases, truly illuminating with lasting impact on their artistic, pedagogical, or professional practice. Especially pertinent to this report are the following elaborations.

Chemistry Intensive

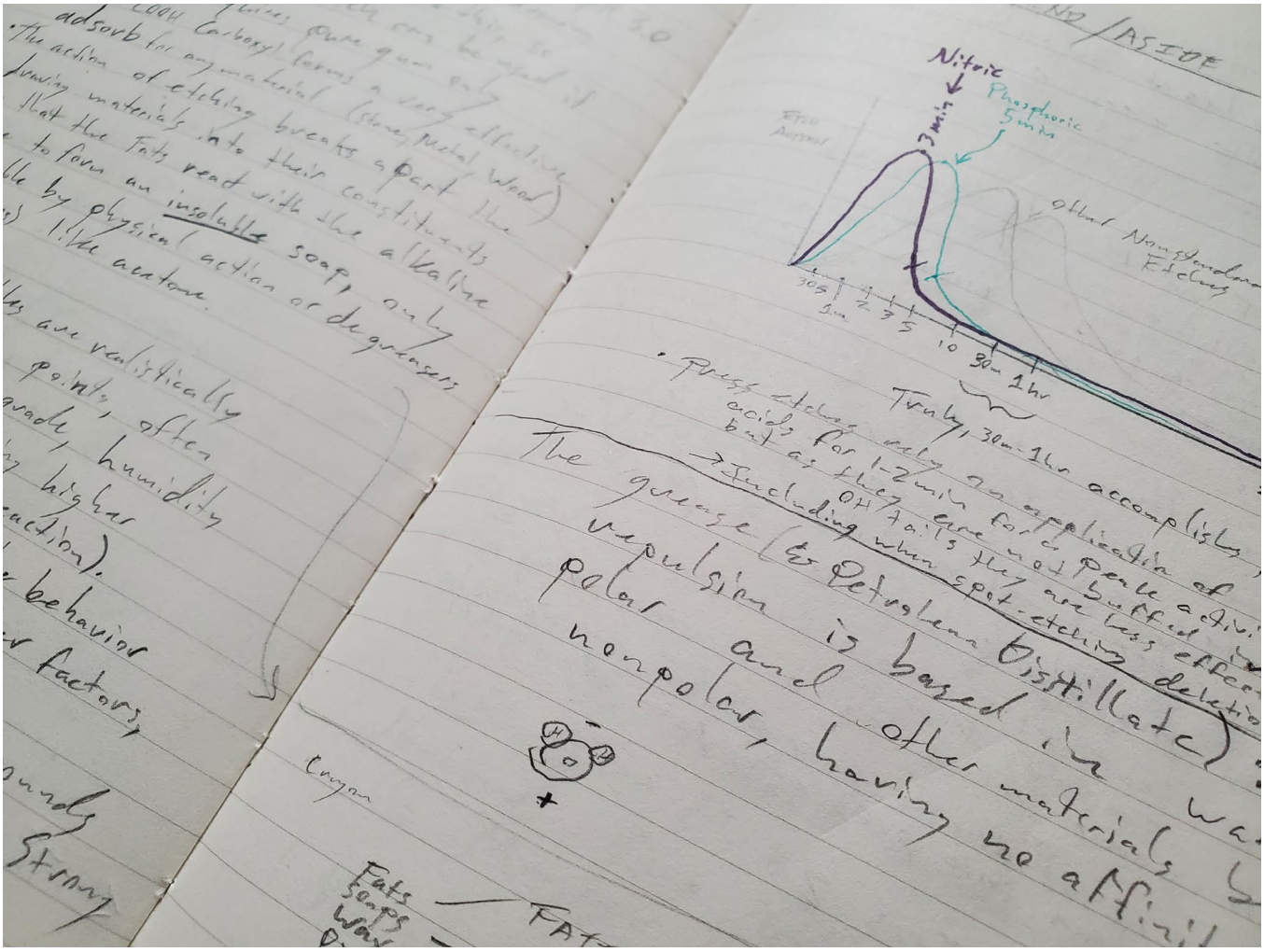


Figure 7. Lecture notes.

Lithographic process chemistry was dedicated an entire day of lecture and discussion, supplemented by regular addenda, serving both to assure that participants had a working knowledge of the roles played by every material in play and to dispel what borders on myth and superstition within the field. It is common to find practically alchemical pseudo-scientific descriptions of the process being taught and repeated even in academic institutions, simply thanks to generations of educators repeating the same variably-accurate information from their instructors. This is further complicated by the lack of readily-available scientifically-vetted resources available in forms accessible by artistic practitioners who may or may not have had scientific training to make use of them. While it is perfectly possible to produce a well-printed image purely by accurately "following the steps in the magic dance" as described by the Fellow's graduate professor Morgan Price[2], with no scientific understanding at all — a healthy understanding of at least the *purpose* of each step (if not the full chemical-mechanical underpinnings of each) allows an artist to both be more inventive and nuanced in their mark-making, and perhaps more

2 Morgan Price, Associate Professor at the Wonsook-Kim School of Fine Art; Illinois State University; Normal, Illinois USA

critically, troubleshoot a misbehaving matrix and rescue an image before it is lost entirely. In this light, Brandon Gunn detailed every step of the process, with the function of every material practically and chemically, taking pains to explore the inaccurate assumptions within the field.

For example, the process of etching is regularly cited as the most difficult aspect of lithography. Artists often comment that it is their area of least confidence well into intermediate and advancing levels of practice. Quite simply, the answer is often that one must learn by doing with an attentive and critical observation of the resulting image based on their choices and handling of the materials with each image, and educational failures are practically necessary to this growth. Yet, this is not made easy when there are many choices and considerations to even plan an etch, let alone carry it out, with several valid strategies to choose from.

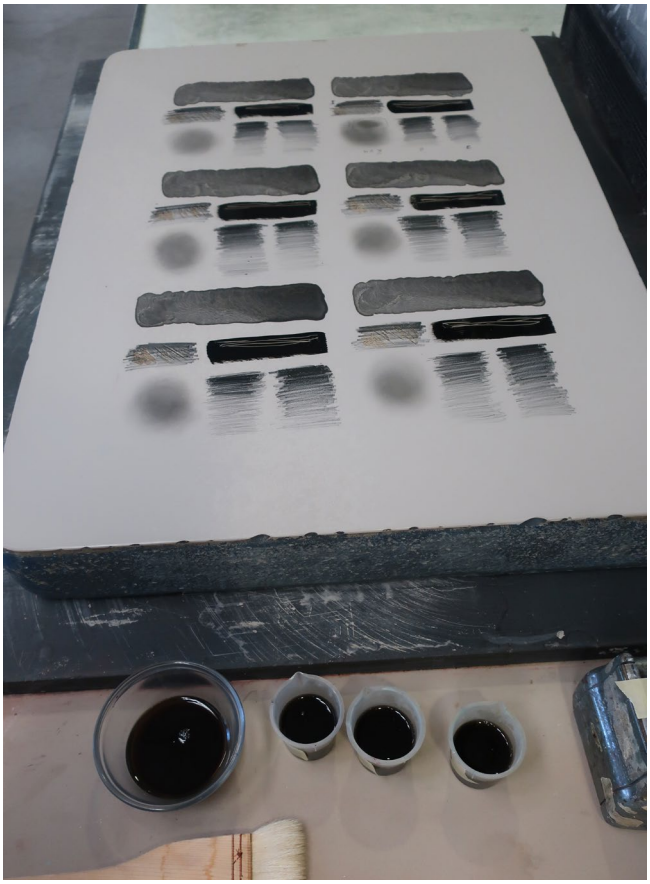


Figure 8. Applying etches to a drawing.

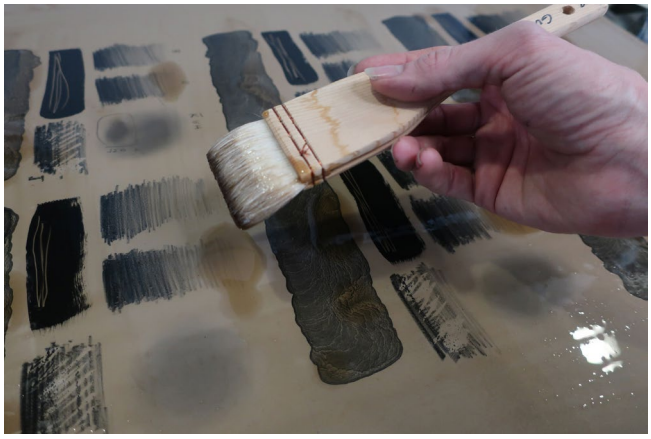


Figure 9. Applying etches to a drawing.

The purpose of an etch is not to cause topographical change such as the linework and texture eroded or physically scribed into the surface of an intaglio[3] plate, but rather to first establish the drawn elements as the “image” and untouched areas of the matrix as “non-image”. These distinctions are critical, as they behave radically differently in a chemical sense, and rely all but entirely on those chemical behaviours to dictate where ink will be attracted or repelled when the inking roller is applied, and ultimately transferred to the paper. As described before, this takes place largely on the planar surface of the matrix, with the image (in the case of a stone) inhered by an absorbed greasy deposit (referred to as the “reservoir”[4]) as thin as a playing card while the non-image is “protected” from ink by a film no thicker than a molecular bond,

3 Intaglio, the “family” of techniques commonly called etching, engraving, drypoint, aquatint, etc. typically composed on metal, acrylic, or collaged material “plates”. Printed by flooding the matrix with ink, then wiping the excess from the surface to clear the highlights and midtones while the recessed surfaces retain the desired ink; finally offset to paper (dampened for flexibility in contrast to dry printing in lithography) by pressure transferred through specialised woollen felts from the rotating drums of an “etching press”.

4 Grease Reservoir: the portion of the stone surface which was defined by the image-forming materials (crayons, washes, etc.), intended to attract ink throughout the etching and printing processes. Historically this has been misclassified and misunderstood by many practitioners, even the 2009 Tamarind Manual refers to its chemical composition as “oleomanganate of lime” when it is in fact a metallic soap insoluble to water, formed by the reaction of the calcium in limestone (calcium carbonate) with fatty acids, soaps, and other greasy components of lithographic drawing materials, reinforced by subsequent process materials including solvents and image “bases”.

the “adsorb gum film”[5]. This “protection” from ink in the non-image still relies upon being kept damp by regular applications of water whenever ink is applied, the water itself rejecting the oil-based ink, or it would stick to the dry surface of the stone universally, and only a well-treated adsorb will be able to release this undesired ink upon the prompt re-application of water. Maddeningly, or inspiring of awe depending on point of view, it will appear as though “nothing is happening” during much of the inking process, especially to the untrained eye, but ink is being built up on the image with every pass of the ink roller, and a missed pass of the dampening sponges will immediately result in a solid patch of ink where it was not intended.

Not only must an etch be carried out more or less correctly to establish the desired image and non-image in the matrix, but it must be carried out at least once again to make it stable enough to print. Between these stages of etching the original drawing materials are removed (“washed out”) with non-aqueous solvents that are rejected by a standing layer of gum arabic clinging to the adsorb film but penetrating the greasy and petroleum/terpene-soluble image.

Solvents: Lost in Translation

Figure 10. Washing out an image.

A standard solvent for this purpose in America is the trade-developed product “Lithotine”, a blend of Stoddard solvent (akin to Australian “white spirit”) with added fatty acid-rich oils such as castor oil, pine oil for cutting power, and pine resins intended to offer additional tack to the image deposit. It is critical to note this material in two regards. Firstly, it was intended as a “safer” alternative to traditional turpentine at the time of its formulation, but this truly has resulted in a worst-of-both-worlds product which risks triggering sensitivities in practitioners from either component where they may have tolerated one or the other. (Realistically, even the lowest-toxicity true solvents used in this process require a minimum of gloves if not further personal protective equipment (PPE), preferably extraction ventilation — and in best practices, a respirator.) Secondly, it has never been widely marketed in Australia (due in part perhaps to this toxicity but certainly through insufficient market size for import) and is almost uniquely American, with the resident Workshop Manager & Master Printer Valpuri Remling (originally of Finland) elaborating that almost no contemporary studios in Europe stock or use it in her experience. Of acute relevance to this fellowship is that to date the Tamarind manual

5 Adsorb Gum Film: neither strictly “adhered” nor “absorbed”, gum arabic (typically made more chemically reactive with added acids or in rare cases alkalines) bonds to the calcium carbonate in the limestone or the raw aluminium of a lithographic plate at one end of the molecular chain, leaving the hydrophilic (“water-loving”) tail to attract and maintain a standing layer of water whenever applied by a sponge during the inking process.

refers to its application ubiquitously with only minor references to alternatives in the main process, commonly leading to confusion when the text is relied upon outside of America. In every region, if there was not a standardised option predating the Tamarind manual, practitioners must conduct their own research on the appropriate replacement for their locale. Australian studios commonly (and inaccurately, by the Fellow's assessment) resort to "mineral turps" for its accessibility and affordability. Unfortunately the closest alternative would be gum turpentine itself, to bolster the grease reservoir, while excessive use of fast-drying mineral turps may actually have an opposite effect. As mineral turps often requires a larger volume or multiple applications to achieve a washout, this potentially strips out more of the established fatty acids, rendering the reservoir vulnerable to subsequent etches[6]. Mineral turps undeniably appears to work properly on the surface level, and would require additional study to quantify the risk of deleterious effects (complicated by its composition varying between manufacturers and supply chain changes). A compromise between the more toxic turpentine and mineral turps would be pure white spirit, similar in composition to Stoddard solvent. Mineral turps is marginally less expensive than white spirit (and one-fifth the cost of gum turpentine), and in some circles is perceived to be safer, but realistically the mainstream product is actually up to 70% white spirit, demanding the same care while being less efficient in application. While Hagen and others continue to test alternatives including eucalyptus oil and related domestic / non-petroleum products, the rising cost of these materials and similarly over-effective grease-stripping properties of some products remain significant points for consideration before they can be recommended widely. In the meantime, the Fellow is interested in standardising a ratio of white spirit and added vegetable oils that affordably bolster fatty acid content without going so far as to duplicate the full risks of Lithotine, with findings to be shared on the Grey Hand Press website and resources.

The confusion of solvent names extends further to broader process and sundry cleanup materials, a topic demanding frequent clarification during instruction. The development of chemical names through history coupled with regional differences leaves many artists understandably lost in a print studio, warranting at least one focused mini-lecture per course of teaching in the Fellow's experience. No regional system is perfectly clear, but without accurately translating American references with "denatured alcohol" to Australian "methylated spirits" or "mineral spirits" to our local "white spirit," students may critically damage expensive implements such as rubber inking rollers or compromise their artwork. Hagen devotes considerable effort to this disambiguation in every workshop and in the upcoming Australian manual.

Alternative Printing Bases

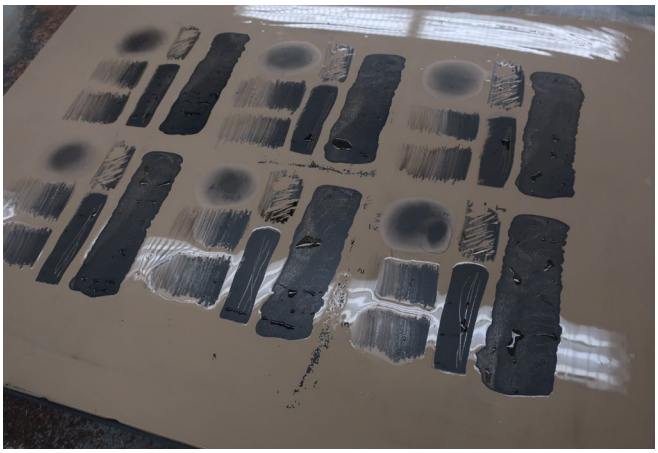
Following the removal of drawing materials, a "printing base" is buffed into the areas where the drawing materials were washed out. These materials have been a significant focus of the Fellow's research over the past year. As mentioned earlier, the traditional material used in this process with little variation since the invention of lithography in 1796, is bitumen tar. Referred to as "asphaltum" in America (again causing confusion when the Tamarind manual is used locally), reliance upon this material now faces several challenges. First and foremost, its toxicity has long been a concern. The

6 The Fellow also finds mineral turps contributes to excessive drying in rubber printing rollers, shortening their lifespan if not paired with restorative "roller washes". However, the alternative in many studios is to go fully "green" using vegetable oil, which poses two problems: that inexpert handling from new students often generates significantly more solid waste in rags and oil than efficient use of properly handled solvents, and insufficiently dried rollers may swell unevenly as they absorb leftover oil. Some studios follow vegetable oil with soapy water, which again introduces components that may damage rubber over time. Presently the Fellow's studio uses "Enviroprint" the lowest-toxicity commercial printing solvent locally available (stricter than EU standards), a blend of low aromatic petroleum solvents and citrus terpene designed to minimally strip the rubber, periodically followed by the similarly low-tox treatments to restore what oils have been removed. As of this publication the local supplier has concluded distributing solvents and the Fellow will have to seek new options by the time of restock.

carrier solvent for bitumen is typically white spirit, and while its use is fairly low risk with correct PPE and ventilation, along with Lithotine and similar solvents these products have led to lithography being sidelined or eliminated from some academic studios globally for their net risk as carcinogens and related hazards. Secondly, as a petrochemical it is inarguably unsustainable for the longevity of the technique. Finally, its accessibility has dropped considerably within the last few years. In America and Europe, there are artist-grade bitumen products available from printmaking suppliers, which have always been too prodigal a cost when imported compared to domestic roofing-grade bitumen sealant available from hardware stores at a realistic price which function equally well with minor adjustments to its consistency.

In similar foresight regarding chronic exposure risks, the roofing industry and its suppliers made a shift to discontinue raw solvent-borne liquid bitumen and instead use a water-based product with powdered bitumen suspended in rubber. While this is undoubtedly better for the construction trade, theoretically more sustainable, and still somewhat useful for some printmaking purposes, it is entirely useless as an affordable lithographic base. The aqueous binder would compromise the gum arabic mask and ruin the image instead of rendering it printable. This left the print community scrambling to find local suppliers that will still sell approachable quantities for personal and studio use, such as a one- or four-litre container rather than an entire drum at a time. To date only one supplier has been identified in Southeast Queensland where Hagen resides, a road maintenance supplier selling small domestic volumes as a sideline. This search would have to be made per community and entails substantial outreach to suppliers, often in vain, compared to previously finding reliable products at almost any hardware store nationwide.

As the material is used fairly sparingly within the process, depending on the size of a studio and number of practitioners, most studios the Fellow has consulted are still relying on their legacy stock of bitumen. In several cases, they have not been aware of the discontinuation of the product and have therefore put no thought into what they will source when their supply runs low. As the mainstream international bitumen products will undoubtedly come at a rising cost, and the irony of burning petrochemicals to ship “refined” petrochemicals internationally as an art supply should be considered increasingly ludicrous, the Fellow encourages testing and standardising domestically available alternatives before the supplies of bitumen run out and reserving legacy stock for where it is deemed critical. This makes the most sense in educational environments first, where edition sizes are smaller (reducing risk of bases “breaking down” under the actions of printing) and the work of entry level students often less challenging to maintain quality. Simultaneously, this offers the opportunity to explore alternatives with reduced toxicity, an added benefit for programs risking discontinuation on health grounds. In situations where flawless, minimum-risk work is expected including professional-level printing for and by established artists, conversion to alternative bases will require extensive testing on non-critical work before any candidate is treated as the primary option. Few studios are able to commit these resources among day-to-day operations, and despite the commitment of Hagen and his colleagues to this research, most studios must pick one or two reliable, mainstream choices for the majority of their work. A few minor tests were conducted at Grey Hand Press by the Fellow and their interns with reasonably promising results; the fellowship allowed for one intensive experiment while attending the Tamarind workshop.



Figures 11 & 12. Preparing to buff in base tests (above) and rolling up in ink (below). Note the strong repulsion of water by the image while the stone is excessively damp.

Based on the Fellow's experience and peripheral experimentation with beeswax products as acid resists & sealants, encouraged by publicly-shared trials by printer Gregory Santos using the US-available Johnson Paste Wax and related hardware-store-grade products,[7] Hagen brought three products from Australian suppliers to Albuquerque for supervised testing with Brandon Gunn. Hagen prepared a stone with test swatch groups with consistent drawing materials. These were:

- A beeswax in linseed oil and elm gum turpentine. Best choice for entirely domestic ingredients and production, ingredient transparency, non-petrochemical, and supporting small business, but therefore more difficult to source — currently only available through specialty antique restoration suppliers. At risk of discontinuation, to be confirmed.
- A beeswax in low-VOC petrochemical solvent. Very widely available, lowest cost, mainstream product from any chain hardware store and likely some independents. Manufactured overseas (China) for an Australian chemical company of sufficient size for longevity. Best choice for sheer accessibility, affordability, and lowest toxicity (solvent below SDS reporting thresholds) but therefore lack of full ingredient transparency.
- A carnauba wax (product of Brazil) in citrus terpene (D-Limonene). Available at most chain hardware stores, likely independents and specialty antique/woodworking suppliers. Highest cost, but non-petrochemical and full ingredient transparency. Technically D-Limonene is very potent and carries as much risk as any other full-strength solvent but has lower carcinogenic impacts in humans[8] and is renewable. Carnauba wax is very durable and relatively sustainable as an extract of carnauba palm leaves. However, this must be weighed against the carbon footprint of import from Brazil, and questionable but improving agricultural practices and labourer welfare,[9] which require further research before it is wholly recommendable. Produced by a premium Australian woodworking brand, currently owned by an Australasian multinational corporation. Best choice for ingredient transparency, manufacturer stability, and technically vegan ingredients.

7 Gregory Santos, Printmaking Director at Art Gym Denver, has shared his experiments in regular social media posts, primarily in his Instagram profile @mixedgrit. Discussed in correspondence with the Fellow, Santos likewise considers his tested products not yet suitable for "professional" work (likely due to poor material endurance over longer printing sessions) but he finds it useful for demonstrations at institutions that are limited to the lowest possible toxicity.

8 https://pubmed.ncbi.nlm.nih.gov/23573938/

9 https://uebt.org/initiative-for-responsible-carnauba

Figure 13. Trial proofing base test swatches.

One additional candidate was prepared, using the current shellac base recommended by Tamarind for aluminium plate lithography. Shellac-bases have been explored and widely utilised for plates as a low-toxicity alternative to the traditional plate base, vinyl lacquer, which is viewed as too catastrophically toxic for its benefits in most contemporary studios[10] and certainly not worth the import costs in Australia. The long-accepted recipe put forward by Tamarind in the 2009 manual, combining shellac dissolved in alcohols with enamel paint and white spirit (primarily as retarders to allow working time and colourants to verify even coverage) has been replaced by a simpler recipe of shellac in the slowest-drying alcohols available, either butyl or isopropyl. This recipe is preferable since the petrochemically-based paint and solvent likely formed an unreliable emulsion and complicated localised formulation (given that the original recipe was established with

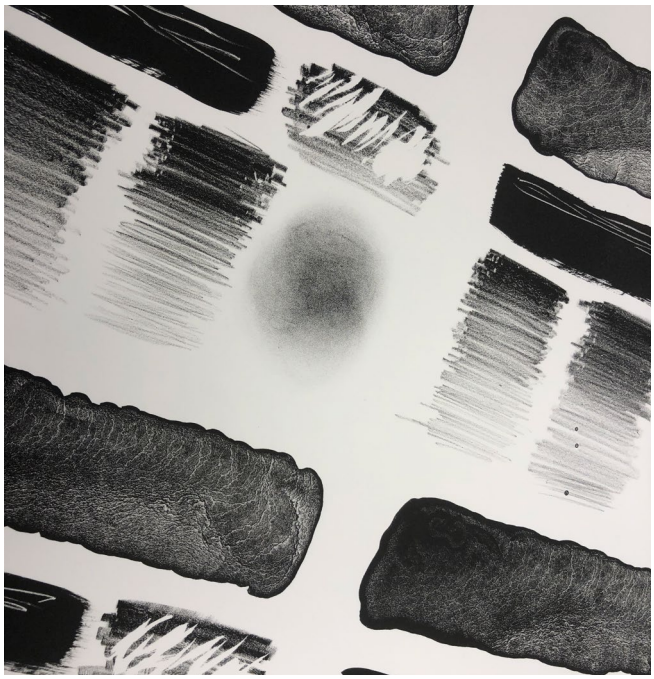


Figure 14. Trial proofing base test swatches..

10 Earning the colloquial nickname “Red Death” for its potent health risks, vinyl lacquer was once the mainstream plate base choice, especially prior to widespread understanding of its harmful fumes and the necessity of PPE/proper ventilation, it exacted a heavy toll on generations of practitioners. Its production quality has steadily declined in roughly decade-intervals, to where the contemporary product is not viewed as having the reliability of its predecessors while carrying

professional sign painting enamels — often lead-based — which have declined in availability and reliability. After several years the Fellow finally sourced a promising automotive enamel which served well in initial testing, they gladly welcomed the abandonment of paint and white spirit, given its marginal improvement in working time offset by a dramatic increase in curing time (up to 24 hours without curing by heat, best done in a dedicated oven or careful use of a heat gun). In America, a related alternative under the names “BioLac” / “BioBlac” have been marketed in the form of shellac dissolved in a food-/cosmetic-grade solvent, ethyl lactate, but it was not tested as this product will not foreseeably be imported to Australia and the solvent is prohibitively expensive.[11] With mainstream shellac solutions, the resulting base can be quite durable, providing up to 50 impressions before it should be re-applied to prevent loss of detail & tonality. This is far more than the average student or even contemporary established artists tend to edition without motorised offset proofing presses. However, despite its stability, it has one major drawback: its working time, which in this case means the amount of time one has to distribute a perfectly uniform film of the material over the entire image area, buffed down to a minimum, smooth, streak-less finish before it dries out. In arid, warm conditions this can be less than a minute; the larger the image the greater the challenge even with multiple pairs of hands working. Many beginners are simply not ready for this level of brisk, confident action without prior experience in more forgiving (slow-drying) bases, namely bitumen. With the Fellow having received anecdotal references to vinyl lacquer bases being used in rare cases on stones[12], it was deemed worth including in trials alongside the wax bases.

Each material was assigned to a swatch group with two groups maintained as bitumen control groups. From the point of washout, the same base was used consistently through stabilising etches into actual printing. Despite each material requiring different handling, curing times, and strengths of etch, all

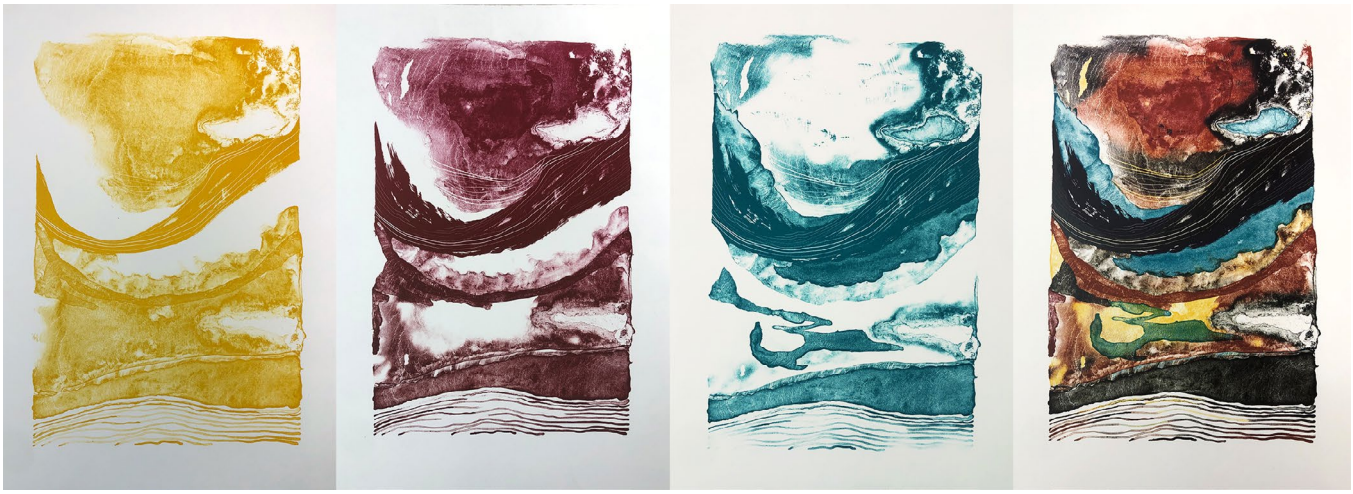


Figure 15. Separation and final proofs of a “Three Colour Black” palette.

a comparable level of health risk. For these reasons, even if one could import the product into Australia, it would not be worth the cost of doing so and few studios would permit its use on toxicity grounds. Most practitioners in America who still include it in their practice are actually relying on remaining or inherited legacy products until they are used up. Its benefit is in lasting up to four times longer than shellac bases with a considerably longer working time but most practitioners are content to pause printing and re-apply shellac if critical.

11 Formulated by C.S. Pogue Graphics, this product is intended to be minimally toxic to the point of being nearly innocuous, and has been demonstrated to be successful on stones and plates. Unfortunately, its current cost has been prohibitive for many practitioners even in America, and is sporadically marketed in Australia if at all. The Fellow respects the motivations behind its production but cannot currently recommend it over domestically available options. Its primary solvent, ethyl lactate, is considerably more expensive in Australia, precluding any plans to license its formula for local production.

12 Rodney Hamon, Tamarind Education Director 1999–2015 referred to use of vinyl lacquer on ghosty stones especially as an emergency treatment for stabilising images which are troubled by residual grease from prior images.

produced remarkably consistent results, which were stress-tested beyond 20 impressions in black ink. At this point it was clear an additional round of stabilisation would be required but would otherwise continue to perform appropriately. Hagen would have undertaken additional tests with sufficient time but this satisfied the needs of at least student use and indicated the candidates for professional testing. This will require considerable time and resources (namely, an investment of labour and ink) that is currently beyond the scope of the Fellow's finances and availability, but is very much part of the operations at their studio where possible.

Counter-Etching and Intensive Re-Work

The practice of "counter-etching", treating lithographic matrices to make them once again receptive to new drawing materials, is typically undertaken for corrections, such as restoring portions lost in stages of processing or additional drawing with the benefit of hindsight. Occasionally it is undertaken to create additional "states" of the image, typically for distinctly separate but related limited editions. This can be a daunting practice, as it is easy to either apply too strong a treatment and compromise the existing image, or insufficiently treat the matrix which risks the new drawing materials failing to establish new imagery consistently if at all — in effect a similar balance to the original etches, but with different problematic outcomes. Prior to the fellowship, an artist had approached the Fellow's studio to produce a suite of editioned variations on a drawing by selectively editing the same stone several times. This workshop was a prime opportunity to practise this mode of production while testing drawing products, inks, and colour strategies new to the Fellow with the benefit of expert oversight.

Figure 16. Spot-graining deletions while editing an image.

Over the course of the month, Hagen produced a multi-layer image purely through adding and removing portions of the image in the same stone. The primary version was approached with a goal of generating an educational folio including "separation proofs" during production, standalone samples of each layer, as well as "progressive proofs" illustrating layer combinations prior to the final 3-layer print. This image also employed a colour strategy referred to as "three-colour-black" wherein an artist achieves black in the final image entirely through the accumulation of layered colours and a reasonable range of intermediary colours with carefully chosen primary colour ink blends. Essentially, instead of an image composed of the familiar cyan, magenta, yellow, and black inks in the average digital printer, or even trying to get away with the result of that set minus black (which is usually brown or gray at best), one usually works with off-red, off cyan, and a warm yellow. It takes skill and experience to incorporate this strategy into a meaningful and satisfying artwork and its use is largely academic, but it served as a useful focus in developing a teaching tool for Hagen's aspiring students. A second version using the first two layers closer to the Fellow's palette was also produced in the available time to trial newly available inks.

Figure 17. Alternate colour state to trial new inks.

Lithographic Ink Supply Chain Concerns

Figure 18. Ink selection in the Tamarind studio.

The inks used in lithography arguably have the most challenging tolerances of any hand printmaking method, considering the far wider choice of manufacturers and choice of mixing strategies available to intaglio, relief, and silkscreen. First, the inks are exclusively oil- or resin-based for the process to even work, where other print techniques have access to water-based vehicles and fairly accessible “modifier” products for altering their properties. While commercial offset lithography inks may be adapted to hand-printing, offering a dizzying range of colours and properties, making the most of these inks takes a fair amount of experience as they are formulated for large-scale, high-volume, high-speed printing at the utmost economy. As such, with a relatively small pool of manufacturers making inks of appropriate purity, pigment density, colour-permanence, and vehicle composition, the litho community relies very heavily on carefully-picked trustworthy inks in a niche ecosystem. Within the palette, black inks play a crucial role, as much a chemical tool in the process of maintaining the stability and fidelity of the etched drawing as they are part of the colour-mixing palette. These inks are often mixed in specific combinations to fine-tune their grease content and density according to the nature of the image; stiff, grease-moderate inks are preferred for delicate linework and subtle tones, where inks that are greasier and looser greatly aid the richness and speed of printing large, bold, flat images. Three in particular are revered globally for this relationship: Graphic Chemical Crayon Black

(USA), the stiffest ink in production, typically aged for partial polymerisation of the linseed oil vehicle; Charbonnel Noir à Monter (France), the softest and greasiest, useful for bolstering weak images and boosting the grease content in any black ink; and “Shop Mix”, technically a name given to any combination of a stiff ink and a soft ink, with such constant demand that Graphic Chemical began buying bulk quantities of Monter from Charbonnel to pre-mix with their Crayon as a middle-of-the-road starting place to save printers considerable time and effort in mixing. Few contemporary alternatives to these inks perform to their exacting qualities, and some approximations pose risk in prematurely drying or harmfully matting the traditional leather ink rollers preferred for lithographic processing and printing. Several of these alternatives, appealing in their lower cost, have resulted in the expensive rollers needing intensive restoration or replacement. They are now relegated to use with the rubber rollers used with colour inks where they are cleaned off after printing compared to leather rollers being stored in ink between uses.

These issues would be concerning enough, but are compounded by the skyrocketing prices for inks, reliable or otherwise. Complicated by material shortages, COVID supply-chain pressures, and other hardships, the mainstream brands have become extravagantly expensive through domestic suppliers to the point that while prices also rise in their locales of manufacture, it is typically more economical for serious practitioners to order ink (and drawing materials) from overseas even with the cost of shipping and any import duties that are assessed. As of writing this report, a can of Shop Mix purchased from a leading American distributor would be $165 AUD including international shipping — the leading Australian distributor retails the same can of ink for $457 AUD without the interstate shipping cost. Even if one can afford these products from either source, their availability had become notably unstable even after the borders opened and supply chains incrementally caught up.

On consulting at Tamarind, the Fellow found these topics to have reached a crucial point not just for Australia but globally. “What are we going to do about ink?” was a question widely voiced and in active discussion, much of it networked through the Institute staff. Even the trust in standard Shop Mix was questioned as a series of batches arrived in dubious condition and was linked to a compromised roller. It was made clear that ongoing hardships were impacting the productivity and quality of one major supplier, leaving all their distributors waiting on stock already paid for; some manufacturers were becoming more insular and less responsive to their customers; yet another became far harder to access through any localised distributors, but increasingly accessible by ordering directly from their national exporter. These revelations were invaluable in understanding the existing challenges and possible routes to navigate them, but only so much to indicate a stable future for the industry. Most promisingly, Cranfield Ink (UK) has shown the most commitment to advancing their offerings in cooperation with practitioners. A relative newcomer to litho ink production, but with a long history in other areas of print and a strong technical background, they have emerged as a responsive producer putting effort into black ink variants that will fill the uncertain void. A range of their products are already distributed in Australia, but the Fellow had not had opportunity to try any let alone reason to stray from the trusted inks on hand. Encouraged by assurances from the education director and consultation with the Australian importer, Hagen looks forward to testing and ongoing conversation with Cranfield directly.

Press Maintenance

In the past four years, the Fellow has been approached by various institutions seeking assistance with repairing and upgrading their printing presses, with seven projects across three institutions in the past year alone. Thankfully these projects have been for intaglio and relief presses of relatively straightforward construction compared to the design of litho presses. Maintenance beyond

the superficial treatment and prevention of rust or perhaps lubricating working parts is rarely a conversation given time and resource in any educational environment. Involvement in serious upkeep, assembly, or repair is usually a matter of sheer chance timing in any studio, when routine or reactionary work is at hand. One typically gleans small instalments at each institution one visits, and while the Fellow received more than the average share thanks to working as a studio technician during his BFA and postgraduate degree, it is still rare to receive a demonstration of even basic maintenance and diagnosis from the ground up regarding litho presses. Takach Press, a pinnacle pressmaker and supply distributor in Albuquerque maintaining a close working relationship with Tamarind now offers a coaching session on request during the summer workshop, which the Fellow strongly appreciated. This demonstration included the fundamentals of press upkeep, levelling the frame, advice on relocating, and distinguishing what aspects are user-serviceable versus well worth contacting professional help. This demonstration followed a visit to the Takach factory where participants were given a full tour of press production from scratch among their other outputs such as rubber rollers and printing plates.

“State of the Field” Survey Findings

Initiated in 2024, this survey was designed to identify priorities within the practising community. Given its relatively small size within the general printmaking and art-making field, and that many lithographers work in specific community circles or entirely independently of social media / newsletter platforms such as the Print Council, it is difficult to source a large sample size within the scope of the fellowship.[13] In that light it was designed to run indefinitely, gathering results as it continues to spread essentially by word of mouth, while reporting on a snapshot of the results available by the time of publication. At the time of publication 27 entries were recorded, several of which were generously provided by persons considered long-practised contemporary champions of the field.

Respondents were invited to identify all criteria that applied to their perspective: approximately half identified as educators or representing academic institutions, one quarter as professional studios, and three quarters as artists. Those who indicated their location spanned the country including all states and one Australian practising overseas. A reasonable spectrum of ages and career points were represented.

- Well over half considered themselves fully confident, independent practitioners of the core, basic preparation, processing, and printing tasks.
- Fewer than half indicate fully independent practice on advanced drawing techniques or multi-colour printing.
- Half were unaware or had not had opportunity to try any photolitho techniques, unsurprising given that they have no mainstream import and distribution locally. In comparison, they are so commonly used in America, their manufacturer produces them in such commercial bulk quantities, that they can be half the price of a traditionally grained plate for hand drawing, the primary form imported to Australia. Likewise they are considered a standard practice staple in America and Europe, while Australian practitioners typically must establish relationships with commercial offset presses willing to fit in platemaking jobs alongside their workflow (using their direct-to-plate digital systems which are far outside the budget of a fine art studio or individual artist).
- Barely half indicated that they had any confidence in maintaining litho presses and rollers without oversight, indicating a need for maintenance training or services to be prioritised.

13 Invitations for survey response were distributed on the Grey Hand Press Instagram account, Print Council of Australia newsletter and social media, re-shared by local and international organisations, and direct correspondence to known practitioners.

- 80% indicated interest in a touring exhibition of litho practice, with additional encouragement towards a dedicated litho prize.
- Two-thirds would attend an in-person or online skill & resource sharing conference.
- 70% indicated interest in a touring workshop program, an equal number specified an intensive session run by Tamarind staff in the manner of their summer workshop.
- Several common themes emerged through the results. Respondents lamented the closures of major institutions which had championed litho practice among their programs, including the studios at Charles Darwin University, James Cook University, Goulburn TAFE, and Art Vault, describing their local and national impacts.
- One practitioner expressly described the strain on resources even in major population centres as comparable to the pressure traditionally associated with regional (rural) communities, a sentiment supported by others' accounts.
- Perhaps most rewarding was a regular voicing of appreciation that anyone was putting effort into outreach and connection of the litho field.

Extended analysis of this survey will be disseminated on the Fellow's studio website: www.greyhandpress.com

05

Personal, Professional, and Sectoral Impact

Personal

- A break from operating in a vacuum, with few fully qualified litho practitioners in the Fellow's city of residence actively practising.
- Temporary liberation from pressures of managing business.
- A rare opportunity to receive instruction among peers, after years of teaching largely entry-level students.
- Significant reinforcement and improvement in working knowledge and confidence in delivering instruction.
- Development of specific skills previously difficult to dedicate time for.

Professional

- Strong opportunity for greater connection to regional and international practitioners.
- Introduction to current generation of Tamarind administrators for ongoing consultation and collaboration.
- Expanded network of colleagues globally, potential workshop venues.
- Identified research partners in alternative materials, Sarah Plummer (gum arabic), Gregory Santos (alternative image bases), Arikah Lynne (updating legacy technical resources)
- Directly improved and streamlined instruction quality for Queensland College of Art / Grey Hand Press students.

Sectoral

- Improving accessibility and literacy in the field through updated references produced locally and for international publications.
- Working to expand visibility of litho practice through events and exhibitions. Current priority is to develop a national survey exhibition of contemporary litho practice, launching at the Print Council of Australia gallery and preferably securing a tour schedule to regional galleries nationwide. As of publication a proposal has been approved for the 2025 Print Council gallery program.
- Tamarind Education Director Brandon Gunn, manufacturer of leather litho rollers and Trilobite Workshop Tusche offers to sell his goods internationally discounted by the anticipated import tariffs

- Identifying options for healthier, more affordable, and more sustainable process materials
- Prior to this fellowship project, litho product importers had adopted increasingly inflated mark-ups on critical supplies to potentially cover the risk of infrequent purchases by artists. Drawing materials, inks, and consumables were being sold at prices over 200% higher than retailers in America, not including the mark-up from their presumed wholesale price. In many cases it was an inarguable savings to purchase in moderate quantities from overseas even with the shipping costs and potential import tariffs. However, in discussing the risk of reinforcing the “nicheness” of the litho market with these importers and the likelihood that the current models will cause practitioners to increasingly skip the Australian supply chain, the leading distributor (Heidelberg Fine Art Works) has generously arranged to:
    - restructure their wholesale pricing on critical inks making lower prices directly available to the public
    - periodically discount litho products
    - negotiate an import deal on Charbonnel litho ink with the exclusive Australian importer which has omitted these products to date.

06

Recommendations and Considerations

- Group co-op bulk orders for improved affordability; attempting local materials production.
- Identify philanthropic and grant-based resources to promote lithography (and printmaking in general), capable of sponsoring workshop costs for new and advancing practitioners as artists and professional printers. This could eventually lead to a national program adapted from the Tamarind model to suit Australasian regional practice and needs, complete with a team of trained educators that can supply workshops or consultations on demand to institutions in a similar fashion to the Queensland “Flying Arts” service.
- Identify an Australian or international funding body that would sponsor one or more applicants per year if accepted to the Tamarind Summer Workshop and/or Printer Training Program.
- Develop a fund employing overseas press manufacturers/servicers to periodically visit Australian studios for routine and substantial maintenance beyond the training of local practitioners, and if willing provide at least beginning and intermediate instruction to Australian studios.
- Identify funding and a cooperative effort to import qualified practitioners from abroad (visiting printer program) to guarantee an influx of diverse practices, especially Tamarind staff and graduates.
- Coordinate with museums and galleries to correctly identify lithographs in their collection, and encourage collection and display of excellent works. Hagen contacted a range of institutions to query what portion of their works on paper collections were lithographs and how many of these were made by current practitioners. What results were available by the time of publication shared indicated an unsurprisingly low portion relative to other forms of printmaking, but most telling was that most national-level institutions were contending with a backlog of catalogue records inaccurately or insufficiently identified to feasibly offer a report without expending significant resources checking individual records. Similarly, even in significant institutions, lithographs are regularly displayed which are actually poor-quality representations of print technique, despite being made by established studios with significant artists.
- Develop opportunities for Australian printmakers to demonstrate skills abroad, including participation in exhibitions, art fairs, and conferences.

07 Conclusion

The fine art lithography field faces great challenges for professional and emerging practitioners alike. The Fellow must acknowledge that most of these are beyond the scope of any one person, institution, research opportunity, or grant. Improvement, let alone stability, will require time, and financial resources beyond their independent reach. It will demand community effort, engagement with philanthropic entities invested in advancing fine arts (likely beyond mainstream grant programs), as well as significant outreach to raise general awareness of the excellence and ongoing growth in our field. We cannot dilute the efforts and finances of our practitioners across new efforts to a degree that we risk losing what we already have. Feedback through fellowship outreach and years of one-on-one consultation has clearly indicated that there is widespread support for proposed sectoral outcomes as outlined in this report but only a few representatives are in a position to contribute time or resources without risking their livelihood. Institutions fare little better on their current financial state. Although Hagen has received enquiries about workshops, studio rehabilitation, and other employment opportunities, they commonly do so with the caveat that their budgets will not support acting on them within the foreseeable future, including major arts colleges in capital cities.

Income from selling artwork itself is rarely enough in our field. While it has never been a reliable source of income and stability for the majority of practitioners, we do face a general art market downturn, especially post-covid. Even at the best of times, there are perennially divisive attitudes within art markets globally, which impose a hierarchical value to different media, often considering prints as being less valuable than sculpture or painting purely based on technique regardless of image or concept. This is unlikely to change dramatically in the near future, but progress can be made in guiding public and professional understanding of what hand printing offers in a digitally-driven culture and educating audiences on high-achieving lithography practice.

We must brace for our material costs to continue rising until new import models are in place or options for domestic production are explored. At present the majority of Australian lithographers favour securing the familiar mainstream products, which can be addressed by improving bulk purchasing power through group purchases and new efforts by importers to improve affordability. However, individual practitioners and educators already supplement these with local experiments, adaptations, and instruction on homemade equivalents, which may grow into mainstream options with encouragement, resourcing, and dissemination.

As most long-term artistic or professional service lithographers serve as educators for an income foundation, and consistently lament the scarcity of current best practice pedagogical resources, it is

critical to establish and circulate updated materials as soon as possible, minimising preventable student frustration or confusion that may lead potential future lithographers into better-understood techniques. The Fellow will prioritise finalising their existing Australian reference manual, secure publishing advice and partnerships, while consulting with Tamarind on future manuals and collaborative workshop efforts. Additionally, a resource page will be started on the Fellow's studio website sharing cost-saving supply directories and alternative material choices.

Despite all of these concerns, print has endured, grown, and indeed thrived on certain principles. First, it advances in response to the needs of its practitioners and demands of its market, sometimes making its greatest breakthroughs in sharp adversity. It balances a foundation of tradition with acceptance of change as a constant. Above all, the sheer tenacity of those who work in the field is its assurance of perpetuity. A consistent statement by colleagues throughout the Fellow's outreach has been clear: "we will keep doing litho until we find it impossible."

Figure 19. Private students and interns practicing at Grey Hand Press.

08 References

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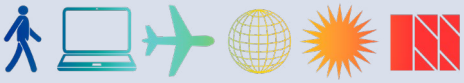

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