THEATRE DESIGN & TECHNOLOGY

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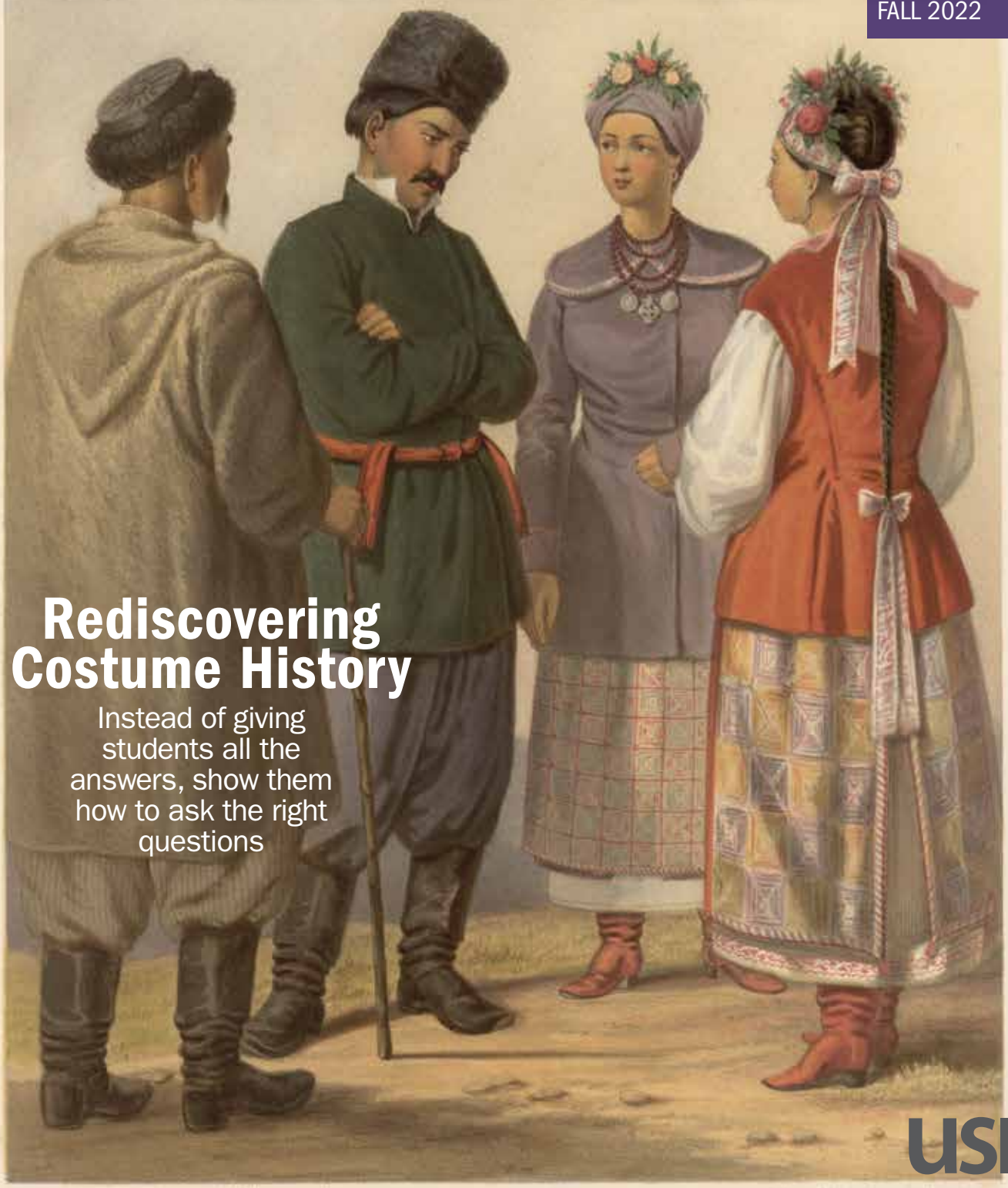

Rediscovering Costume History

Instead of giving students all the answers, show them how to ask the right questions

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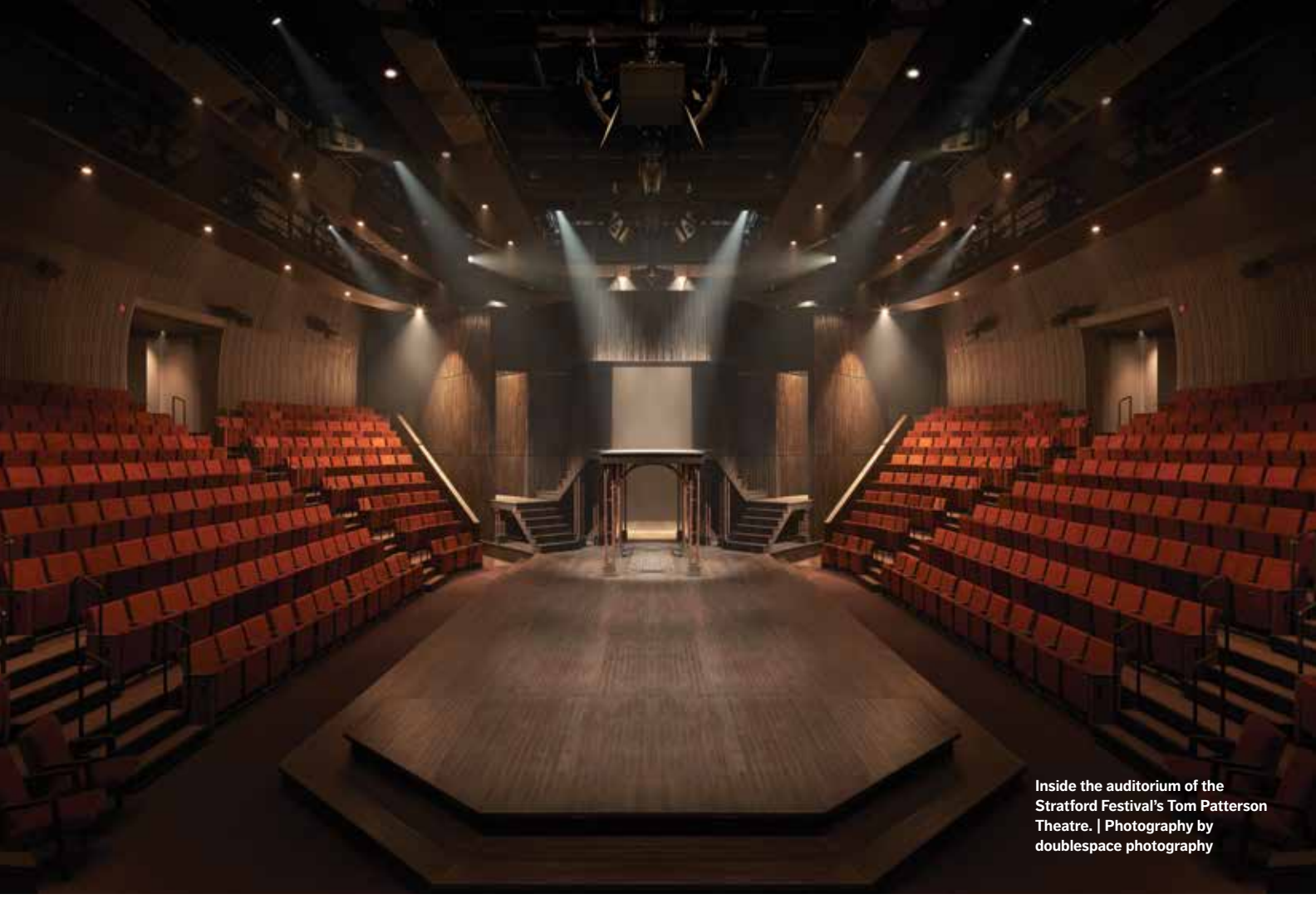
Outside the Spriet Members' Lounge at the Stratford Festival's Tom Patterson Theatre. | Photography by doublespace photography

REINTRODUCING THE

TOM PATTERSON THEATRE

Collaborative approach enabled this talented team to rethink literally everything to create a sustainable building and fully inclusive experience

BY PAUL FRENCH, WITH DORON MEINHARD, GREG DOUGHERTY, AND JOSHUA DACHS



Inside the auditorium of the Stratford Festival's Tom Patterson Theatre. | Photography by doublespace photography

The highly anticipated Tom Patterson Theatre (TPT) at the Stratford Festival opened in the spring of 2022, replacing the beloved but inadequate former TPT. The project was delayed by two years due to the pandemic, giving those curious time to press their faces against the attractive, undulating glass facade and imagine the possibilities held within.

The $53.7 million project marks a milestone in the Festival's 70-year history. Now North America's largest repertory theatre company, Stratford ushers in this award-winning design as it sets course for the next chapter in its evolution. The new Tom Patterson was conceived to be a shining beacon not just of sustainable architecture but also to advance theatre technology and enhance the theatre-going experience in every respect.

In addition to the main 600-seat auditorium, the new theatre houses a second performance and multi-use space for 260; a dedicated workshop for new play development and education outreach; public spaces that engage the remarkable riverside setting and dissolve the line between indoors and out; a beautifully appointed members' lounge; a full complement of back-of-house facilities; and a stunning recreation of the former namesake theatre's singular attraction– the unique elongated thrust stage now surrounded by state-of-the-art production facilities and vastly improved levels of comfort, sightlines, and acoustics in this most intimate performance hall.

The winning scheme in an international competition was designed by Siamak Hariri, a founding partner of Toronto-based Hariri Pontarini Architects. The building's design takes inspiration from the flow of the Avon River and presents an organic, curvilinear form, creating quiet eddies of encounter across a sequence of warm and elegant public rooms. Against this movement, the solid drum of the brick-lined auditorium grounds the inner sanctum and contrasts the vibrant connection to nature and daylight in the public spaces with the precise theatrical

atmosphere of the performance space.

As Bob Campbell of Fisher Dachs Associates notes, "For theatre designers, one of the biggest challenges in planning and designing a new theatre building is developing project goals and overall design concepts with no end user in place. Designing the new Tom Patterson Theatre offered the entire team an opportunity to grapple with some very big questions, including overall room planning, seating geometry, flexibility, and how to harness the magic of the original Tom Patterson Theatre, while also making needed upgrades to the technical capabilities and patron experience. The true success of the TPT is the high level of collaboration and cooperation that was made possible through engagement with the entire project team."

Key players in the design and operation of the Tom Patterson Theatre participated at the recent Canadian Institute of Theatre Technology conference in Calgary: Doron Meinhard, associate partner at Hariri Pontarini Architects; Greg Dougherty, technical director of the Tom Patterson Theatre; and Joshua Dachs, principal at Fisher Dachs Associates. Highlights of their talk are excerpted here.

Doron Meinhard:

"Our 30-year-old firm is well-established with many noteworthy projects in our portfolio and the Tom Patterson Theatre was our first for the performing arts. Let's say it was a steep learning curve, but we were more than up to the challenge when the jury selected our design from a list of more than 90 candidates.

"We reached out to some of the world's leading theatre consultants and had lengthy conversations with each of them. This, of course, resulted in a wide variety of opinions about the future direction of theatre and the many kinds of considerations that should be taken into account today when designing a new venue for performance. However, Josh Dachs' voice stood out by allowing us the confidence to start with what the Festival had already achieved in the unique stage design of the former Tom Patterson, and with a few purposeful modifications to really listen to that space and explore how we could improve it. Beginning with the elongated thrust and the barrel-vaulted intimacy of the old curling rink, we set out on a journey to honor the TPT through refinement and innovation."

Joshua Dachs:

"The previous TPT was an unprepossessing building. It was basically a Quonset hut with spray-on fireproofing as the interior finish and a sort of pseudo grand porte cochere stuck on to celebrate its entrance. There was no lobby to speak of and it was really quite sad looking. The building had been used for a variety of things, from curling to badminton over the years, and when the Festival took it over in the early '70s, they experimented with different ways to act in it. Over time, the stage settled into an elongated U-shaped form, inspired perhaps by the thrust stage at the Festival's main venue, the Festival Theatre, but modified to fit the building. Against the odds, it worked, and became a favorite venue of actors and audiences for its intimate, if uncomfortable, environment.

"There was absolutely nothing in the

building to make it easy for production. Overhead in the long barrel vault were just some dead-hung pipes that had been installed for something and left in place over the years, and you had to work entirely from a ladder on the floor. There were some very strange features, like the seating rake, which was extremely steep scaffold risers with very narrow row depths and non-rising seats. As you moved along a row past people, you almost felt like you were going to topple over because there was so little legroom.

"Despite its inadequacies, it had the wonderful energy of a found space in which a performance space had been improvised, which can be a great thing for a theatre company. So here was this building that had a very raw character, which had become beloved over the years. We had the enormous advantage of a strong in-house artistic and technical team that had lived with the space for a long time and knew what they liked and didn't like about it. So many of the buildings that we design are buildings for new institutions where the staff won't be hired until three months before it opens In this case, we were able to tailor the project to the users' preferences, which was fantastic."

Main lobby of the Stratford Festival's Tom Patterson Theatre. | Photography by doublespace photography.

Greg Dougherty:

"At the Festival, we have very high standards, which drove every decision we made. For example, establishing the appropriate rise of the seating resulted in months of painstaking investigation, for which our artistic director, Antoni Cimolino, said he lost a lot of sleep right up until the first performance. It had to be correct. It was very much about the experience of the patrons and the people working in the building, the performers, the crew. Ultimately, the focus was all about the show we're putting on and how this needed to be serviced by the theatre.

"I came on the scene when we started to outfit the room and take this beautiful space we were given and make it a working theatre. I knew going into it we couldn't screw it up. There was so much thought put into every detail of the building that the last thing we wanted to do was diminish it with inappropriate or excessive technology that wasn't going to work to the standards established at the outset of the project.

Meinhard:

"We wanted to leverage and refine the uniqueness of the old theatre and to pay homage to its rich and vital heritage at the Festival with an innovative design where we could perfect the details to recreate the experience of the old in a vastly improved setting. The early meetings of the project were held in the theatre where it was demonstrated to us how they could not achieve the real magic of silence in the room. If you couldn't get the room to be quiet enough, either visually from lighting distractions, or audibly, where noise came from many different sources, it was really hard to create the kind of magic the Festival sought. From these meetings, the mission became clear: The rest of the building had to enrich and support the experience of attending a performance while the auditorium was going to provide new levels of comfort and acoustic excellence."

Dachs:

"Together, we looked together at the Circle in the Square, a theatre my colleague Jules Fisher did back in the '70s in New York that has very similar geometry to the Tom Patterson. And we had a lot of great conversations along the lines of 'what do we need to preserve about this room that gives its unique character? What's important and worth keeping, what do we need to get rid of?' So many new buildings sterilize the personality of an existing company, so 'how do we hold on to the special personality of this place?'

"We discussed the seating geometry and whether to keep it segmented or smooth it to a curve, for example. Was the barrel shape of the roof in the original important? We all decided that it was really important because of the way it hugs the audience and gives a sense of compression and focus. This became a strong driver of the interior.

"There were so many questions we explored that translated into hundreds of drawings: 'Should the catwalks be all the same elevation? What if they are stepped down as they approach the perimeter? What if there's three on either side? What if there's four on either side? Do they continue the geometry of the seating, or do they do something else?' Similarly, we had lots of questions about the rigging strategies and trap room strategies, and the rake of the seating. The previous steep rake wouldn't pass today's standards for safety and comfort and the original steepness would have required railings between every row, which we didn't want because of the way it separates people.

So, we started to suppress the steepness of the rake a little, while maintaining excellent sightlines, and calibrated exactly the right slope that was going to echo the personality of the former theatre without having railings between rows."

Meinhard:

"The festival wanted all the flexibility, all the opportunity, of a black box but without any of the compromises. We were able to create a super-focused, intimate design around the stage. We wanted to honor and complete the shape of the previous room and the idea of a basket came into play—this idea that the whole auditorium could be like a woven basket. It would be made of wood with a varying rhythm that could be nimble enough to create the double curvature needed to create this barrel, but also be open to absorb acoustics where needed or closed to reflect sound. We chose a dark, stained walnut that united the whole room in almost one material. The catwalks would create a second tier that defined another ceiling within the vaulted barrel form. We treated the catwalks as a ceiling feature, not just technical design and we clad the undersides and part of the sides of them in the same walnut that was used on the ceiling.

"Designing the circulation was the result of six or seven months of hard work by Lindsay Hochman in our studio and Bob Campbell at FDA. They went back and forth with drawings, revisited the rake and risers from the competition, and tested the sightlines with a three-dimensional model to see what it would be like. We actually tried a slightly parabolic version at one point and landed on equal risers throughout. A lot of the exploration came from this back and forth between drawings and testing through mock ups. To meet the desired capacity of 600 seats in three-quarter configuration, we arrived at eight rows where not one seat is more than 30 feet away from a portion of the elongated thrust stage. The rake of the rows of seating was established at 20 inches to ease the climbing and descending of the stairways with three steps for each row. Patrons enter at the top row, which is at grade, and descend to their place in the auditorium. In this way, the building was lowered into the ground in order to keep the massing and roofline in proportion with adjacent properties.

"We developed custom seats with the Quebec firm Ducharme that I would call elegant and honest but not too comfortable. As Antoni Cimolino would like to say, 'You don't want people to fall asleep.' The color of the fabric is a really important decision. It frames the space. We didn't find exactly the right fabric we were looking for, so we worked with a fabric manufacturer to create our own. To complement the wood tones in the room, we settled on a beautiful, warm orange color.

"As we were designing the auditorium, there were variances to the building code that needed to be addressed. It's not that the building code in Ontario is overly restrictive, but there were quite a few provisions that would have created barriers for this design—primarily, the idea that you have a deluge system or a fire curtain between the stage and the audience. This was not going to work with the elongated thrust configuration, so we had to work around that. We hired a code consultant to do smoke and time egress modeling to show the building department that we were in compliance with life safety issues.

"We also wanted to keep the space very quiet visually, which meant extinguishing the exit lights during performance. They would be activated only with a fire alarm. The number of access points into the auditorium allowed the room to be designated a stadium rather than a theatre, which permitted this important feature to be included."

Dougherty:

"As mentioned, we were striving for excellence in every aspect of the room. With the expertise in-house, we did not outsource stagehouse design or construction and built it to our specifications. But we went on quite the journey to come up with the proper surface for the wood stage. We looked at oak. We looked at maple. What we wanted to assess is how does it feel to walk on, to dance on, and how does it reflect light? A glossy stage of this configuration would blind portions of the audience. So we beat the wood samples with chains to see how the surface could be dimpled to deflect light.

"We landed on Canadian birch. It took the stain differently from Russian birch, which was at the time the most widely available of that species. More than 1,500 square feet was required just for the deck. It wasn't available. The solution was to locate and buy a woodlot in Ontario and have the wood kiln dried and milled. This spawned a rumor that we farm our stages, which is not entirely the case. But it does underscore the lengths to which we went to ensure our teams had the right tools to work with."

Meinhard:

"We worked with Aercoustics and did a lot of exploration to find a way to meet the desired sound level of the room. Acoustician Payam Ashtiani stressed the importance of gauging the client's tolerance for acoustic targets. So, we did a mock-up in the former TPT to get it as quiet as we could by turning off all the systems and introduced a hum that replicated the NC30 rating, took it down to NC25, then NC20, then NC15, and even that didn't satisfy the client. From this, we discovered the target had to be better, towards NC10. With this information, Aercoustics went off and built their models.

"The stage configuration added complexity to the acoustic solution. With actors projecting in one direction, an audience member across the room has to be able to hear even a whisper and that sound has to get to them in a very direct and quick way so it's not muddled by other reflections. So, we looked at zones in the ceiling to determine where we needed reflective and absorptive surfaces. We needed to create certain reflections to get the sound across the room in the opposite direction of the speaker projecting.

"Here's where the catwalks do double duty. The first two inner catwalks have reflectors angled in different ways to be able to pick up enough of the sound from the middle of the stage and bounce it quickly to the back rows. This was a breakthrough in directing unamplified voice for this stage."

Dougherty:

"Acoustic considerations were a main driver of this space. The room today is so quiet that when we turn on the very few incandescent source floors that we have, you can hear the filaments from backstage. It's that silent. We set out to find equipment that was going to be the best that we could get for our designers and our team and meet the high demands not only for acoustics but also energy use.

Lazaridis Hall inside the Stratford Festival's Tom Patterson Theatre. | Photography by doublespace photography

The Tom Patterson Theatre is LEED Gold registered and energy conservation informed all the design decisions.

"Lighting and sound equipment had to properly fit the room. We couldn't have anything that was hanging down too low or that was going to be too noisy, so it started a year's worth of searching with our AV consultant, Horizon Solutions, and Fisher Dachs. This was an international search for equipment and processes that would get us to our goal.

"When speaking to manufacturers about moving lights, my first question was, 'How do your lights sound?' This kind of baffled them. I said I actually need to know how they sound first. Because if they sound like they're noisy, I'll never turn them on. In which case, I'll never know how they look.

"We scheduled a demonstration day with manufacturers and did a shoot-out. It was important to us that we got the manufacturers and distributors and the suppliers on site. We wanted them to be part of this project as much as we were and they were very supportive. There were 20-30 people at the event, all there to pitch us the gear that was going to launch this theatre into the 21st century. In the end, we chose the High End Systems' SolaFrame Theater by ETC. They're liquid cooled, so they don't have fans in them at all, which makes them silent running, which was exactly what was needed for this room.

"Follow spots are typically big and bulky, hot and loud. And there were no positions for them in our building anyway. So we went with the ROBE Robo spot system, which is remote controlled. The operator could be at the bar, frankly, with their flight controller and operate the spots from there.

"For the house lights, we wanted to have a dim glow at the top of the show. We went with an ETC system, all LED. With this system, it turned out the beam angle was too wide, so we purchased 3D printers and made our own honeycombs to fit in the lights, which was a better solution than trying to modify anything else that was available.

"I've worked in theatres where I've had to say to designers or creative teams, 'no we can't do that' or 'the room doesn't let us do that' or 'the theatre is not equipped for that sort of thing.' At Tom Patterson, 'no' was not an option, from the way the room was designed to the equipment we decided to put into it. The answer always had to be 'yes.' Yes, I can hang something there. Yes, I can fly something. Yes, we can light it that way. Yes, we can put a trap there. Yes, you can enter from here. Yes, you can have an actor in the catwalks.

"The original idea for the audio system was pure acoustic—all we wanted was a bit of reinforcement. And then as we got deeper into the project, the concept of musicals came up, which took audio decisions in a new direction along the robustness of the sound system required to use in other ways. So working with Horizons Solutions, our distributor for the project, we went with D&B, their new A series.

"We bought it on spec, never having heard it in 2018 when it was still in drawings. It gave us the dispersion we needed. The whole array is 10 boxes, two boxes deep, with a down stage and off-stage shot direction. We have a 24-channel surround box, we have 24 M4s in the deck discretely channeled so we can send sound anywhere. There are areas in the catwalk as well so we can isolate zones of sound. Nothing is tied together; it's all individually channeled so we can send to specific speakers. It's all driven with Digico ST7 and is used largely for distribution; we don't do any mixing with it. For that we use a D-10.

"The reason we needed the big driver was in the event we do a musical. If you have a performer upstage on a 60-foot thrust, it's a small enough room that the acoustic energy will reach the audience but the speaker is 60 feet closer than that performer, so we have a delay problem there. When that performer starts to move, that relationship is changing for every seat in the house and we have to actively re-bus everyone's output on the fly. That's part of our mixing strategy. And the SD7 was one of the only consoles that we could program for this. As a result, we are very discrete in our ability to send sound places to the point where we're considering the Constellation system for that room because it is already set up. We kept all the old sound gear from the former TPT (Tanoys) which we employ in the voms and upstage.

"We were striving for perfect acoustics and it was so important to get it right. And we did. But almost to a fault. Remember we were supposed to open in 2020 and when the cast finally started rehearsals this spring two years later, it took a matter of hours to realize we had some fine-tuning problems. And at this point we are full steam ahead.

"In the first three rows, there was something like a faint echo, where consonants were heard twice, almost like the performer had a stutter. There was a true concern there had been a flaw in the construction based on all the theoretical computer models and mock-ups. Doron and Payam came the next day to investigate and there was some good news. We found the problem and it was fixable.

"What was happening was the sound was leaving the performer, going up to the ceiling and being bounced down to the catwalk. Because the room is so perfect, that sound continued where it should have died in the rafters. It bounced back off the steel catwalk and down to the audience. So where you were getting that beautiful reflection of the reflectors that was doing the right timing, there was this rogue reflection that was doing a double bounce and hitting the audience a few milliseconds later. It really was only because the room is so quiet that we were able to hear it. And the solution we tried was very simple. We carpeted the catwalk and added some drapes, and like that, the rogue reflection was gone."

Meinhard:

"At the old theatre, intimacy came at the expense of accessibility. The steep rake made it awkward and unavailable to many. So, it was a high priority to design the new theatre to be welcoming and inclusive for everyone. The new Tom Patterson provides for a range of mobility devices with front-row spaces available to wheelchair users that are easily reached by an accessibility-dedicated elevator. There are also places at the upper level with room for conveyances and accompanying guests. There is storage for walkers and other mobile devices should patrons prefer to sit at side transfer chairs, which allow for ease of transition from mobile devices to the theatre's plush seating. Equal consideration was given to back-of-house amenities for performers and staff and include accessible dressing rooms, green room, and rehearsal hall.

"The public spaces flow from one room to the next, all on the same level. Access to the terrace is universal and washroom stalls are not only spacious but also twice the number required by local building code regulations. Gender-neutral and accessible facilities are located throughout the building. Signage indicates those facilities that are for use by 'everyone.' There is a first-aid room with a stretcher and private washroom.

"The theatre has two locations for drop-off and designated handicap parking and the gardens are designed to be accessible to all mobility devices. In being considerate of the patron experience across a wide range of accessibility challenges, we took the standard building code not as a checklist but a baseline from which to augment facilities to make this theatre a clarion call for 21st century universal design.

"We also treated the acoustics in the public rooms as an accessibility issue. If you can't carry on a conversation in a convivial place like a theatre, the experience is compromised. The hickory wood-lined ceiling adds to the overall aesthetic and conceals the work being done behind. There are perforated metal panels lined with fabric below and insulation above. Sound travels through the slats of wood and is absorbed to dampen the room ambience. At the same time, the wood has to be fire-rated. Large 10-foot-by-two-foot panels are fastened on clips and can be removed to gain access to the sprinkler pipes, lighting, and speakers with strong points for additional hanging if required.

"Theatres are not the most energy-efficient buildings. Treating the air supply for a large volume that is alternately full of people and then empty requires a lot of mechanical equipment. Stratford wanted this theatre to be a leader in sustainable design and we set our sights on LEED Gold. A comprehensive design approach enabled this ambitious goal, starting with a fortunate site orientation.

"The front facade, which is fully glazed, faces the Avon River to the north. The high-performance window wall system and building envelope has little direct impact from the sun's intense rays. The south-facing facade is back-of-house program with minimal glazing.

"Low-energy lighting is deployed throughout and is especially notable for the LED stage lighting system already mentioned. Building materials were selected on the basis of durability with a priority for renewable materials and a high recycled content. Local suppliers were sought where applicable.

"Throughout the public spaces, with the exception of the Dinner Rooney Workshop whose sprung floor would not accommodate it, radiant in-floor heating minimizes heat loss and directs a comforting, indirect source of heat to occupied areas. This also allows for reduced air handling use during the off season. The mechanical systems are configured to optimize theatre and non-theatre energy demands, while also meeting the acoustic requirements of the auditorium.

"An underground cistern gathers rainwater for stormwater management and irrigation. The extensive landscaping features plants selected for drought tolerance with an emphasis on native species. The deciduous tree plantings provide shade for outdoor spaces in summer and additional daylight penetration in the winter. We connect the theatre with the city and riverfront park with pathways that join existing pedestrian and bike routes, and bike racks are in place at the theatre for those who choose to pedal to a performance."

Paul French, works in media relations at Hariri Pontarini Architects.

Doron Meinhard is associate partner with Hariri Pontarini Architects. His extensive experience on cultural and institutional buildings includes managing the complex and multi-award-winning Bahai'i Temple of South America. In addition to the Tom Patterson Theatre, Meinhard has led signature and large-scale projects including the Richard Ivey Building at Western University and The Welcome Project at the Royal Ontario Museum.

Greg Dougherty is the technical director of the brand-new Tom Patterson Theatre at the Stratford Festival. He is thrilled to have been a part of constructing and opening Stratford's new venue. Dougherty has been technical director of Canadian Stage, Theatre Aquarius, Opera Hamilton, as well as working with several Canadian music artists on shows around the globe.

Joshua Dachs is principal at Fisher Dachs Associates, a leading theatre consultancy in New York. FDA's work on the Tom Patterson Theatre included planning sightlines, spatial organization, equipment and rigging, and design of the theatre lighting control system. Dachs has worked on major performance venues including Lincoln Center and the Stephen Sondheim Theatre in New York.