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DINARY**

Avi Yocheved's journey of self-empowerment
as a non-binary person in a gendered world

STORY **KENZIE FARRINGTON & DANA SPARKS** | PHOTOS **DANA SPARKS**

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Without thinking about it, Avi Yocheved put their red and grey men's swim trunks on underneath their clothes so they wouldn't have to change in the locker room. Despite their love for swimming, they hadn't been to the pool in two years. As Yocheved headed toward chlorine-filled waters, a mixture of nerves and excitement filled their body.

They left with a large group of their friends from the Gender Equity Hall at the University of Oregon. Like them, the others in the group hadn't been to a pool in a long time. "There's safety in numbers," Yocheved said. This was the thought that drove this group to participate in an activity that so many of them loved but had been barred from because of it being an inherently gendered experience — a situation where stepping outside the binary of being a man or a woman can have major social consequences.

There is a set of rules that governs behavior, expectations and identities called the gender binary; an assertion that there are two and only two genders. It dictates whether someone is given a pink or blue blanket when they are born, dolls or trucks to play with and eventually, what they can do or say. Yocheved is genderqueer, one of many gender identities rooted in the feeling that they don't fit the conventional "man" or "woman" category. Though data on genderqueer people is difficult to gather due to the gradations of identity in this group, this umbrella term is commonly used by non-binary people, who were officially recognized by the state of Oregon in January. Gender-nonconforming residents may now select "X," a third gender option on an application for a drivers' license, legally validating the identity of people like Yocheved.

Yocheved is 19 and a freshman majoring in pre-family and human services at the University of Oregon. They play the clarinet and are a slam poet and an event coordinator for LGBT student services. Their partner, who asked not to be named, describes them as someone who always puts their friends above all else: the type of person who "forgets to put their oxygen mask on first." After college, they want to help other individuals

by developing a type of therapy specializing in recovery and healing from traumas brought on by gender-related experiences.

Though Yocheved doesn't fit the gender binary, they live a lot like everyone else, with friends, hobbies and aspirations.

But as Yocheved and their floormates approached the locker rooms at the UO Student Recreation Center, their pool day became a lot more complicated. The task of choosing the women's or men's locker room can feel impossible when their identity lies somewhere in the middle of these two options.

Yocheved was set on avoiding the locker room because of past traumas associated with it. They were harassed and bullied in locker rooms throughout grade school, being called names and excluded by other girls. According to the 2011 National Transgender Discrimination Survey, this is common for gender non-conforming and transgender individuals. Fifty-one percent of respondents reported being harassed/bullied in school.

"I was constantly falling short of the 'girl box,'" Yocheved said. To them, the "girl box" was full of all the characteristics and behaviors that they were expected to embody. To avoid alienation from their high school peers, they adopted what they consider hyper-feminine characteristics. Society's demand for authentic girlhood meant living in a lie of makeup and boys in order to be accepted by the world.

Compensating with "hyper-femme" gender expression to find acceptance was deeply connected to their sexual identity too. They said that learning how to be feminine and fit inside of the "girl box" is linked to being heterosexual.

Yocheved was dealing with heteronormativity, the idea that heterosexuality is the social norm. In that construction lies a set roles for men and women, more commonly referred to as

PRONOUN USE

They/Them/Theirs

Like many non-binary people, Avi uses these pronouns instead of he/him/his or she/her/hers as they don't identify with male or female pronouns.



Yacheved sits on their bed in the Gender Equity hall. The details on the walls reveal parts of their personality.

“gender roles.” According to the Center for Disease Control and Prevention, 97.7 percent of U.S. adults 18 years or older identify as straight, making heterosexuality the overwhelming majority. With that being the most common sexual orientation, sexualities outside of being straight can become “othered.”

Heteronormativity and the gender binary go hand-in-hand, interlacing with one another and complicating life for those who find their true selves outside of heterosexuality or the gender assigned at birth. Yocheved’s self-described fumbling with traditional femininity in high school was their attempt to go along with the norm and meet society’s demands on their gender and sexuality.

This fumbling was, and still can be, a daily experience. Simple experiences like going to the bathroom are complicated for someone who doesn’t identify as man or a woman. Going to the women’s bathroom is accompanied by people peering under the stall to see if Yocheved is a man and being told that they’re in the wrong restroom until Yocheved’s soft, feminine voice is heard in response. But the solution isn’t just heading into the other bathroom.

“I quickly realized that the men’s bathroom is a no-go.” Yocheved said they have been threatened and sexually harassed in the men’s bathroom. They then began seeking out gender-neutral bathrooms—not because this was the identity they came up with themselves, but because they had been forced out of both male and female spaces.

In situations like these, Yocheved is still confronting the concept of the “girl box” — they don’t fit the characteristics of traditional femininity, nor do they conform to traditional masculinity.

But in their senior year of high school, Yocheved took a major step toward expressing the way they really felt. They cut off their hair and started dressing more androgynously. This self-liberation was the beginning of a long transformative process of healing. Part of this has been persevering in building their own narrative and withstanding the consequences of not quite fitting into what gender they were assigned to at birth. This, in essence, is what Yocheved hopes to help others do too.

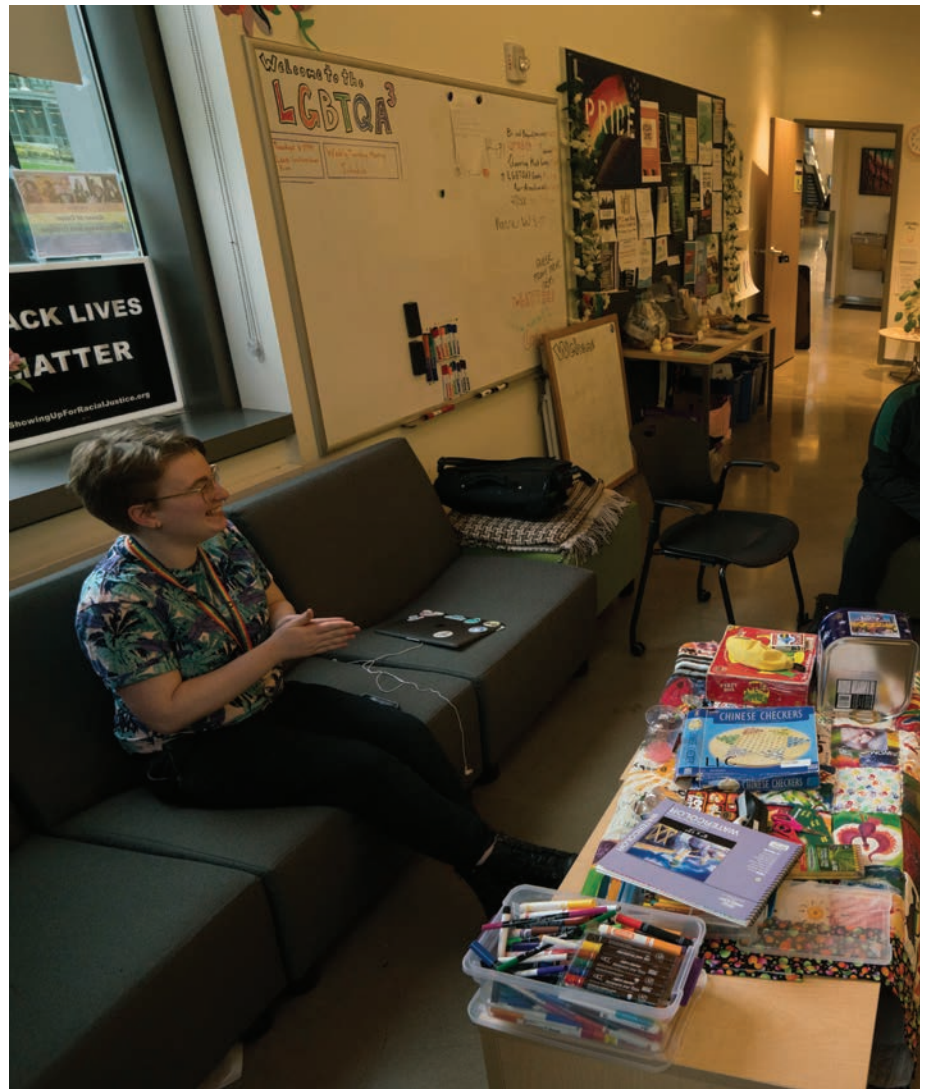
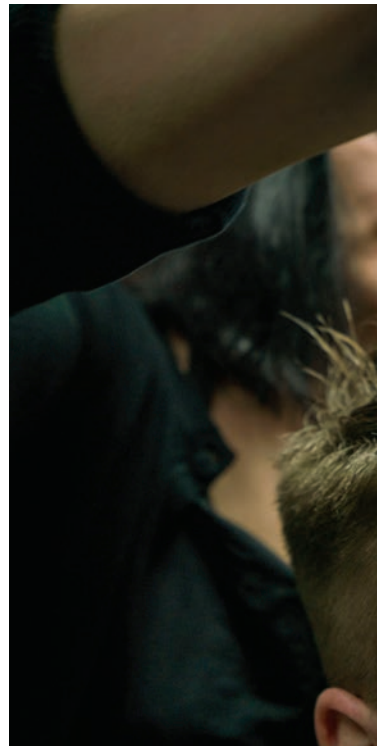
For a gender-nonconforming person, finding spaces to comfortably exist in is an ongoing process. They have found healing in expressing themselves more “androgynously butch,” identifying as genderqueer and finding community by living in the Gender Equity Hall. This hall is a part of the UO’s LGBTQIA+ Scholars Hall, an Academic Residential Community (ARC) where incoming freshmen can choose to live with

students who have shared academic interests and values regarding gender and sexuality.

Visiting the pool and locker rooms at the UO Rec Center started as an obstacle for Yocheved and some of their dorm-mates. But through the community they share and the strength they derive from one another, they all were able to face it.

As Yocheved and their group of queer friends made their way to the pool for the first time in two years, they were ready to skip the locker room altogether and head straight for the water. They didn’t want to deal with having to explain to people that they actually belonged in the women’s room. But when one of their friends was afraid to go into the women’s locker room alone, Yocheved stepped up and accompanied them without hesitation. They became so focused on friendship and having fun that they forgot about the gendered experience of the locker room.

Of that moment, Yocheved said, “I felt like we could take up that space; like we deserved to be there.”





▲ Yocheved walks with their partner, who declined to be named, in the afternoon light on the UD campus on the way to slam poetry practice.

Analog Barbershop in downtown Eugene, above left, is one of the places in which Yocheved takes comfort. There, they find affirmation in their identity without an uncomfortable focus on the identity itself.

◀ Yocheved hosts LGBTea Time in the LGBTQIA Student Center on UD campus every other Wednesday.

Following the day's lesson in orienteering at Mount Tabar Park in Portland, Timberwolf troop leader Alan Fryer congratulates Aida Foltz on earning a new merit badge for wilderness first aid. Between them lies the troop's mascot, a stuffed timberwolf.



Blazing a trail

Scouting groups in Oregon and beyond
forge a path to gender inclusion

STORY **EDWARD BURNETTE** | PHOTOS **MIRANDA DAVIDUK**

Scoutmaster Ethan Jewett woke up late in his tent. It was 2013, and the first day of a camping trip he was leading. He poked his head out of the tent and saw three of his younger scouts in a fire-building competition.

The morning was a rainy, northwest start to a day. The damp wood the scouts were using required them to follow a strict process to successfully build their fire.

As Jewett looked on, it quickly became clear that only one of the fires would ignite. The two boys floundering in their attempts to conjure flames chose to abandon their fires and pushed their extra kindling into the winner's fire. The fire grew larger in front of the victorious girl, and her two troopmates congratulated her.

"I think that it's absolutely magical to have an opportunity at that early age for boys to see the true capability and caliber of their female counterparts," said Jewett.

Jewett leads the 55th Cascadia troop of the Baden-Powell Service Association (BPSA) in Portland, which was founded in 2013. It's one of a growing number of scouting troops in

Oregon and across the country that are taking a more inclusive view of gender. Driven by social change, demand from parents and political pressure, even traditional scouting organizations such as the Boy Scouts of America (BSA) are finding ways for boys and girls to work together.

In October 2017, the BSA announced it would begin allowing girls into its youngest age groups of scouts, commonly known as Cub Scout dens. However, these dens would still be segregated by gender, only allowing girls to attain leadership positions over other girls, albeit now as part of the BSA. In May, the organization announced it will drop "Boy" from the name of the program for older scouts, which will be known as the Scouts BSA starting in February 2019. At that time, girls will be allowed in and eligible for the prestigious Eagle Scout rank.

"This is one of those cases where the United States is late to the party," said Jewett. There is very little sex segregation in scouts in other countries. The exceptions to this are Bahrain, Kuwait, Pakistan, Papua New Guinea and Yemen, among others.

Jewett, who's also a provost commissioner of the Western Region of the BPSA, said the growing number of inclusive programs are

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On a brisk morning in Pier Park in Portland, Atlas Bracken, wearing her troop's necker, does a two-finger salute during the Cascadia 55th Timberwolf Pack meeting opening ceremony. The Timberwolf troop consists of kids aged 8-11 and is part of the inclusive scouting group Baden-Powell Service Association (BPSA).



helping kids to develop empathy and other skills. "It's important for girls to experience that equality and that mastery alongside boys. It's just there for everyone to see and, quite frankly, it makes the boys bring their A-game," he said.

GROWING UP IN SCOUTING

The Baden-Powell Service Association began in 2006 and bases its ideology on traditional scouting. According to the organization's website, this entails "good citizenship, self-reliance, loyalty and outdoor skills" in addition to "empowering youth through hands-on practice" as laid out by Boy Scouts founder Robert Baden-Powell in 1907. Though modeled after the Boy Scouts, the organization has always allowed girls and members of the LGBTQ community into its ranks and introduced the Rover Scout program for people over the age of 18. The environment fostered by the BPSA creates dynamics of equality and diversity early in childhood and provides an alternative to the setting traditionally offered by the Boy Scouts of America.

Jewett grew up in California and was a member of the BSA troop in his hometown.

"Looking back, it's easy to see there were parts of me that were heavily influenced by the scouts," said Jewett. He was a patrol leader and, among other activities, went on backpacking missions, long hikes and trips to San Francisco.

By the time Jewett's son Travis was old enough to participate in a scouting troop, Jewett did not consider the BSA. "When my son turned five in the fall of 2012, I was definitely bummed with the Boy Scouts of

America," Jewett said. Though neither he nor his son is homosexual, Jewett wanted an all-inclusive environment for his son. At the time, the Boy Scouts of America was still a full year away from allowing gay scouts to join and two years from allowing gay scouting leaders.

Despite all the changes BSA has made since 2012, it wasn't the right fit for Jewett then, so he opted for an alternative. He and a couple other dads began taking their children hiking and camping in lieu of joining an actual scouting program.

Soon after, he says his wife brought to his attention an article about a charter group of the BPSA. "Within a day or two, Travis and I got on the BPSA website, broke out a credit card and filed a charter for our group in north Portland," Jewett said.

As the march towards equality, specifically regarding same-sex marriage, picked up speed in recent years, the Boy Scouts of America was faced with the growing problem of not allowing girls or members of the LGBTQ community to join.

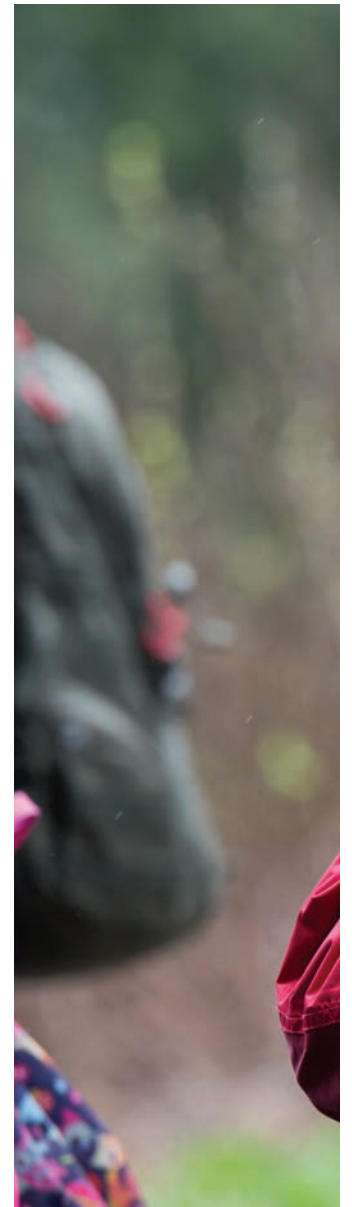
THE BOY SCOUTS EXPERIENCE

These issues were epitomized by the case of Geoffrey McGrath. He joined the Boy Scouts in central California when he was 7 years old and earned the status of Eagle Scout just before turning 18. He went on to become a junior assistant scoutmaster, taking kids to scout camp until he was 20. But a year later his relationship with the Scouts changed.

"I came out when I was 21 to the local scout troop," said McGrath. "I said I'd obviously still be happy to take the kids to camp, but my status had changed and I thought they should be aware of that. At which point, they

After completing the day's navigation challenge at Mount Taber Park in Portland, Wyatt Poe, left, and Henry Pilcher joke around while waiting for the meeting's closing ceremony to begin.





▲ Aida Foltz, above and right, and Kira Fryer, far right, read a compass and map to navigate a series of destinations throughout Mount Tabar Park in Portland as part of a lesson in orienteering skills for the Timberwolf Pack.

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It's about: Are you a good person? Do you care about scouting?
That's all we require.

ANGELA PITTALUGA

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just disinvited me from further involvement.”

McGrath, 53 now, spent over 20 years uninvolved with the Boy Scouts of America. During that time, he earned a master's degree in social work and began working as a countywide crisis manager for at-risk youth and those suffering from mental health problems in Seattle.

Four years ago, McGrath began working with the BSA again. He started a new scout group, Troop 98, in a neighborhood outside of Seattle. A majority of the kids that McGrath works with in his area are inner-city youth who rarely have access to the kinds of activities and opportunities presented in scouting programs. “A lot of the kids had never been to the woods before, have no swimming skills, have never canoed and done things like that. We were able to bring those kinds of experiences to them,” said McGrath.

He said the troop would not only bring scouting to inner-city youth but would also welcome all boys regardless of sexual orientation or identity. “When we started the troop, it was known by all parties that it would be inclusive, at least for boys, when it came to

LGBTQ issues,” said McGrath. “We started the troop and everyone was excited about it. About eight months later, the BSA ended our troop because of me being a gay scoutmaster and kicked out all the kids.”

After their expulsion from the BSA, McGrath and the kids went searching for a new program. “We saw BPSA as an inclusive option and were happy to make the change,” he said. “There are also no problems with having girls join, so we were able to be inclusive to LGBTQ and girls.”

THE BENEFITS OF INCLUSIVITY

Having boys and girls together, according to McGrath, can help create and foster an all-inclusive environment that appears to be a rarity these days. “It's really fun to watch our kids as they compete. Sometimes they'll self-segregate into boys and girls, but when they do it's interesting to see that girls usually beat the boys,” said McGrath. “It's great to see a little 10-year-old girl become the den leader of the boys and watch her really fill the role. Pretty inspiring.”

Jewett has voiced similar sentiments as he's



led his troop in Portland. “A thing I realized the very first time that I went out camping was that girls excel in the outdoors,” he said. “People who know the truth know that part of the game of excluding girls is to essentially make a safe space for boys.”

Jewett has spent most of his career working with children and believes an all-inclusive scouting program can be important. “Each [gender] will have a better measure of appreciation and respect for the other because they will have gone through these adventures and these hardships and seen the capabilities of each other, and that’s sort of how the real world is supposed to work anyway,” he said.

Scout law is laid out by the BSA as 12 goals to live up to every day, such as trustworthiness, helpfulness, bravery and cheerfulness. These notions are important to Jewett, who says his experiences in the Boy Scouts may have contradicted this promise. This is part of why it’s important to him to create a more inclusive environment. “My BSA summer camps were full of songs and jokes that were made at the expense of girls. So, one of the crazy things in the Me Too climate is the

sad way in which the boy-only culture of the BSA has not developed boys and men with the character that lives up to the scout law and scout’s promise, in so far as girls are not present,” said Jewett. “We need to protect a whole generation of boys from that. We need them not to be a part of it.”

Until August 2017, Eugene was not home to a BPSA troop. This changed when Angela Pittaluga wanted to find a program that both her 6-year-old son and 4-year-old daughter could participate in together. She joined the Rover Scouts of the BPSA, and as a scout leader was able to start her own troop, the 78th Emerald. Her son is a member of the Otter Scouts, while her daughter is a part of the still-unofficial Chipmunk Scouts. Though the troop only has four scouts at the moment, two girls and two boys, Pittaluga said she is confident in the experience she is giving the children.

“I knew that I wanted my kids in some sort of scouting program because I was in one and wanted to experience that with them. So I was excited when I saw the BPSA,” Pittaluga said. When she was in the Girl Scouts as a child,

her experience was much different than those of Jewett and McGrath in the Boy Scouts. “We mostly did arts and crafts. We went on a couple camping trips and went to Canada a couple of times,” she said.

Her experience with BPSA has been starkly different than those of her childhood with the Girl Scouts. “It’s a pretty even split,” she said. “It’s wonderful being a part of something that doesn’t really care [about gender]. It’s about: Are you a good person? Do you care about scouting? That’s all we require.”

For the future, Pittaluga has high hopes. “I want to foster equity and equality. Despite all our differences, we’re really all just the same. But we need to celebrate our differences while not excluding what makes us unique,” she said. Additionally, Pittaluga encourages the children in her troop to find whatever future they can conceive. “I use the motto ‘Follow your Bliss’ and I want to help people do that,” she said. ♣

Katie Sheehan and her teammates gather around a pinball machine during a tournament. Headquartered at Blairally Vintage Arcade, they meet every Tuesday to practice in the Eugene chapter of the Belles and Chimes pinball league.



BEATING THE MACHINE

The inside story of Eugene's first all-women competitive pinball league

STORY **SAMUEL BASS** | PHOTOS **HANNAH NEILL**

Arriving in Eugene five years ago, Katie Sheehan and her boyfriend Andy Marler had a mission: They wanted to find a fun way to plug into the community and make new friends. Blairally Vintage Arcade was only a few blocks from where they lived, so they stopped inside one evening. Marler was already a pinball player, but Sheehan had never touched a pinball machine. That night Sheehan befriended a competitive player and was invited to play. After several games she quickly found her passion for pinball and the community that surrounds this niche sport.

"It was fun, so I got more involved," Sheehan said. "But there were no other women playing." After that first night Sheehan competed for over four years and officiated for one year in mixed-gender leagues. With change in mind, in 2015 she helped usher more women into competitive pinball by co-founding the Belles and Chimes all-women's pinball league of Eugene with Kristine Morgan, another player. Working with Chad Boutin, owner of Blairally, they gained sponsorship for the Eugene chapter, which is the ninth addition nationally to the Belles and Chimes all-women's leagues.

According to them, a major benefit to an all-women's pinball league is that it provides women the freedom to play without men overshadowing them. For many years, pinball was mostly a men's competition. With women making up just 12 percent of players in the International Flipper Pinball Association, the game is still nowhere near equal. Competitive pinball, unlike most male-dominated sports, isn't won by physical strength, yet as Sheehan put it, "for a long time now this has been a boy's club." She said that in the past, men's aggressive style of competitiveness and preexisting pockets of sexism towards female players pushed women away from this sport. But that's changing. Women across the country are addressing this problem by starting women's leagues of their own and driving new interest in competitive pinball.

In past mixed tournaments, Sheehan and Marler said they witnessed some men being too forward in arcades around Eugene, making women competitors uncomfortable. But both further explained how these types of



players get sorted out quickly at places like Blairally where other players will step in and put a stop to any misconduct.

Another issue occurs when female players are treated as inferior. “Women’s skills aren’t taken seriously,” said Portland Belles and Chimes league member Zoe Vrabel. Vrabel is ranked third in the women’s IFPA World Pinball Player Rankings and 213th overall in the IFPA’s mixed league. Vrabel said women’s leagues create a more welcoming space compared to a mixed league’s. “We don’t want to be treated like we’re on Tinder when we’re just here to play pinball,” she said.

Getting hit on isn’t the only way women players are belittled. When Belles and Chimes Eugene was first established, Sheehan, 29, said she occasionally dealt with a male player at Blairally who was much older and more experienced. Over the age of 50 then, he had

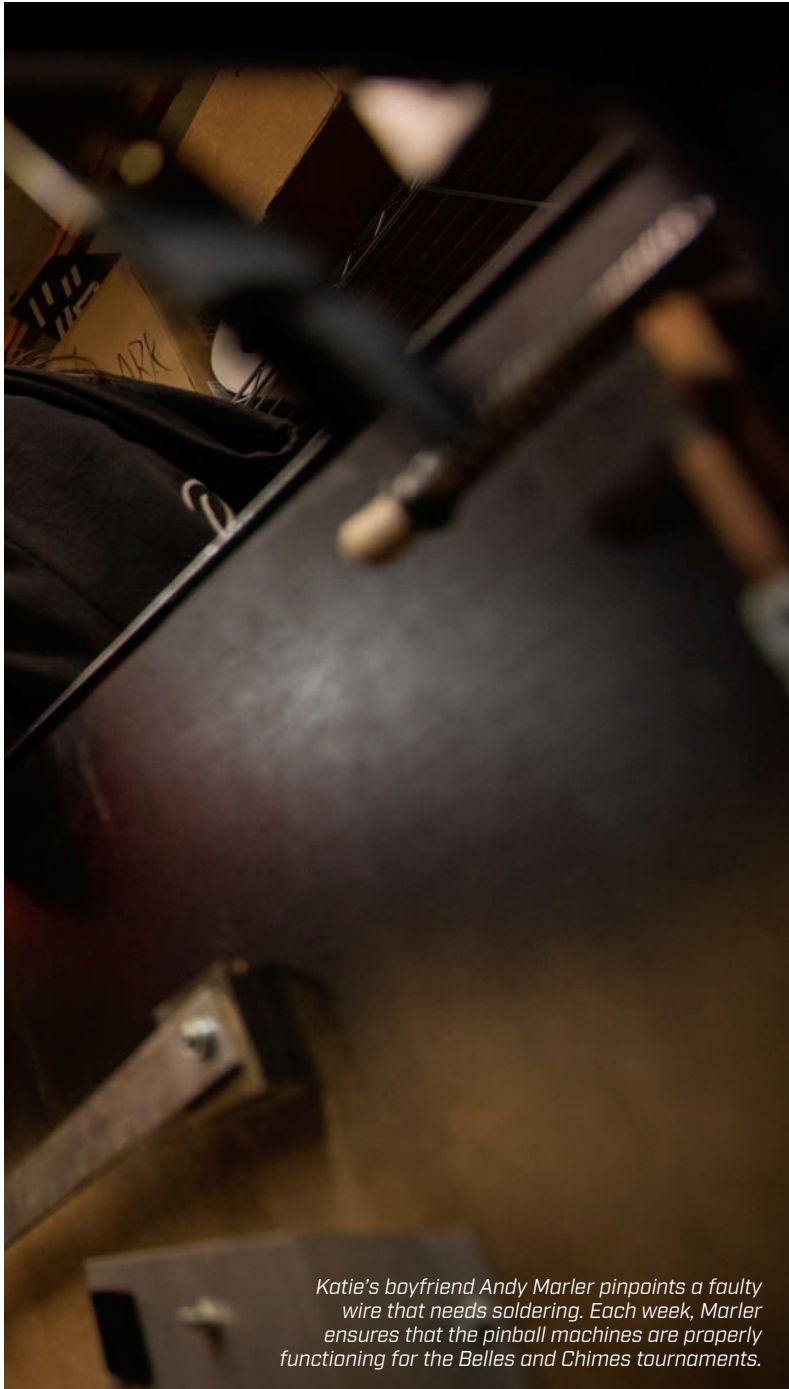
been playing since he was 10. Sheehan, and Marler said they felt he treated most new male players with respect. But he treated female players differently to the point of telling Sheehan that she wouldn’t understand his ideas on pinball when she asked for his advice on a machine. “He talked to me condescendingly,” she said.

During mixed tournaments, Vrabel witnessed men acting out aggressively and said they were often vocal with their anger. Many players, including Sheehan, felt these actions made women apprehensive about pursuing competitive pinball. But Vrabel said she enjoys the Belles and Chimes because “it’s a more warm and accepting environment.” She explained how some men she’d spoken with would also prefer the cordial atmosphere that women’s leagues like Belles and Chimes offer.

Travis Kerr, a mixed-league competitor at Blairally, said that “a deeper feeling of comradery is in the women’s leagues.” Eugene Belles and Chimes Facebook page makes this clear: “All women are welcome, free from labels or characterization.”

With the growth of women’s competitive pinball leagues, the IFPA decided to sanction women’s-only events in December 2016. Creating all-women’s leagues presents an opportunity where it didn’t previously exist. “The women-only angle allows women to get off the bench,” said Josh Sharpe, president of the IFPA. The first all-women’s championship took place in Las Vegas on March 1, 2018. The top 24 women with the most IFPA points competed for cash and reputation.

Some women in Belles and Chimes are just starting out, and want to learn in a welcoming environment. Sheehan explained



Katie's boyfriend Andy Marler pinpoints a faulty wire that needs soldering. Each week, Marler ensures that the pinball machines are properly functioning for the Belles and Chimes tournaments.

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Our league allows us to *have fun* in a more *relaxed environment*.

KRISTINE MORGAN

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that three members of Belles and Chimes Eugene only want to play in the women's league because “they don't feel comfortable playing with that level of competition and the number of players.”

Even if some aren't interested in competing outside of women's-only leagues, others want to win in both. “When I get better, I want to compete in mixed leagues,” said Eugene league member Alysha Shipley. She started playing with the Belles and Chimes about six months ago.

GENDER AND COMPETITION

Published in 2011, an economics article written by Stanford researchers Muriel Niederle and Lise Vesterlund titled “Gender and Competition” points to one possible reason women weren't previously thriving in competitive pinball: confidence levels.

This comprehensive study found that when it comes to competition in problem-solving tasks, men show significantly higher levels of confidence compared to women even though their abilities may be the same. It also found that confidence increases the likelihood of someone entering a contest. This results in more low-skilled men entering tournaments due to overconfidence. Meanwhile, high-skilled, under-confident women enter tournaments less often.

Sensory physiologist Dr. Jagdeep Kaur-Bala, who teaches in the psychology department at the University of Oregon, also pointed out that women will underrate their confidence while men will overrate theirs. According to Kaur-Bala, once in a competition, it's also been shown that men and women exhibit aggression differently. She said that research finds men and women to

be equally aggressive, yet men exhibit physical aggression while women exhibit instrumental aggression, a type used to achieve goals that is more passive. Despite men and women having different strategies, the lack of physical abilities required in competitive pinball means winning should be a matter of skill that anyone can achieve through practice.

Niederle and Vesterlund provide one reason behind varying levels of confidence. Evidence suggests that people's preferences for competition are influenced by the way they're raised as children—in other words, nurture, not nature. This points to another study written by sports psychology professor Linda Bunker and published in 1991 through *The Elementary School Journal*. Bunker focused on building children's self-confidence and self-esteem through the role of play and motor skill development. The results:

With an adult's healthy encouragement and proper corrective feedback for any given activity, a child's confidence will improve, which helps grow their skills. An environment such as Belles and Chimes is a later-in-life example of a more supportive approach to competition.

LEAGUE OF THEIR OWN

Luna O'Neal, a player who competes with Belles and Chimes Eugene, plays in both mixed leagues and all-women's leagues. O'Neal said she felt an obvious tenderness within women's leagues in comparison to the mixed leagues. "We're all human, so it doesn't matter to me. But there is a lot of testosterone in co-ed pinball," she said.

Jamie Blair, another Belles and Chimes member, doesn't like playing in mixed leagues because men have made fun of her in the past. She joined the Eugene chapter after she moved from Los Angeles over a year ago. "I was looking for something cool. I came for the pinball at Blairally, then Katie saw me playing and said, 'Hey, you're pretty good.'" Blair isn't a fan of computer games or anything resembling sitting around, but she's also not interested in extremely active sports. "I'm 39, I drink, and I smoke," she said as she smiled and took a sip of her beer.

Belles and Chimes co-founder Kristine Morgan had similar sentiments about playing in women's leagues. "Our league allows us to have fun in a more relaxed environment," she said.

During an early March 2018 mixed tournament at Blairally for IFPA points, everyone who took to the machines had their own runner's stance with one foot back and front knee slightly bent. Some players threw their hands up in anger when success escaped them after a rapid tapping of flipper buttons. One player even flipped off the machine as he walked away.

In mixed tournaments, Sheehan and Marler noticed some men hit the sides of pinball machines after losing. But Sheehan said this doesn't happen in women's leagues. She's never seen a woman "smash" a machine, though she did admit that occasionally "I put my hands up like I'm about to smash the

machine, but I just put them down."

On the final night of the season, the women of Belles and Chimes stood together inside Blairally. With excitement, they wore new team hoodies with their logo on the backside, which was inspired by the classic multi-pointed star that's painted on the top of pop-bumpers.

Jurassic Park was their first battleground that night. Pulling a spring-loaded plunger, the first contender released her fingers from the handle. A metal ball sped off. Lights started to blink, bumpers popped, bells rang; that shiny ball danced around the board with the unrelenting tapping of a woman's fingers behind two classic arcade flipper-buttons. To beat the machine, said Sheehan, "it only takes one good ball."



Visit fluxstories.com to hear a podcast about pinball machines, gender and competition.



We don't want to be treated like we're on Tinder when we're just here to play pinball.

ZOE VRABEL



Taylor Maiden consoles Katie Sheehan after a loss.

Katie Sheehan next to one of the pinball machines in Blairally Vintage Arcade.





balancing

the $\sqrt{\text{EQUATION}}$

How UO students are empowering girls to thrive in STEM fields

STORY **AUBREY BULKELEY** | PHOTOS **MIRANDA DAVIDUK**

Alice Greenberg, a UO doctoral candidate of physics, spends a Saturday afternoon in the dark basement of Huestias Hall in the CAMCOR lab. Greenberg co-founded the UO Women in Physics Group.





As graduate student Lisa Eytel marches into a classroom at the University of Oregon with seven elementary-aged girls following like a row of ducklings, she asks, “Where are the cookies?”

With this question, Eytel launches the hands-on science lessons for the day. She will teach the girls basic forensic science techniques to discover who “stole” the package of cookies in a program called Girls’ Science Adventures.

On this particular Saturday, the fourth-through-sixth grade girls learn how to analyze fingerprints and handwriting samples to eliminate cookie thief suspects. They also perform a process called chromatography, which separates the different components

of ink to determine the pen that was used to write the ransom note.

The program is a collaboration between Eugene Science Center and UO Women in Graduate Science, a professional development organization for which Eytel is an outreach coordinator. ESC Education Director Karyn Knecht said the goal of the six-week program is to “develop confidence and STEM identities with young girls.”

A 2013 study by the National Science Foundation found males scored slightly higher than females in science as early as fourth grade. This trend continued as students progressed higher in education. The NSF also reported in 2015 that only 28 percent of all workers in science and engineering occupations were women. Initiatives to address this disparity have increased in recent years. Groups like UOWGS are working, both within the university and outside it, to increase gender equality in the STEM subjects—science, technology, engineering and mathematics.

According to Eytel, the focus is on grades four through six because studies have shown this age range is “the most formative and where girls’ interest in the STEM subjects start to fall off dramatically.”

Girls may be less inclined to continue studying STEM subjects due to peer pressure at this age, Eytel said. They also do not see many representations of themselves within the STEM fields. “So our outreach programs are saying, ‘Hey look, there are people other than just cis white men in these fields,’” Eytel said.

HOLDING SPACE IN THE CLASSROOM

Eytel saw the issue of gender representation in her own educational experience. In elementary school her science teachers were women, but as she continued in her science studies men became more prevalent.

For her undergraduate work, Eytel attended Russell Sage College, an all-women’s school in Troy, New York. She said one of the determining factors for her choice was the school’s strong forensic science program. While there, she focused on chemistry and forensics, and because it was a small school Eytel took courses at a partner college that was co-ed.

One was an advanced genetics course that was nearly balanced in gender, yet in



▲ Dana Reuter, outreach co-chair for Women in Graduate Science, helps Emma DeCicco analyze handwriting during a girl’s forensic science workshop in conjunction with the Eugene Science Center.

► Kara Purdy rests her hands next to a mold of a wolf track at a geology workshop held by the Women in Graduate Science group and Eugene Science Center.



Aspiring plant scientist Kara Purdy, 9, observes a magnified fossil at the University of Oregon Museum of Natural and Cultural History.



“

There are laws to outlaw the *obvious*. Now we are left with the things that are more *subtle*.

”

SARA HODGES



her observation, the men dominated the discussion during class. The distinction between this course and all-female ones was obvious. “Men were the ones that were speaking up more and more... and that was just a stark contrast to what I had seen over the past couple years,” Eytel said.

During a lab discussion for the same class, Eytel said a male student answered a question incorrectly one day, and when a female student corrected him, “he snapped at her and made a snide remark.” This shocked Eytel because “any comments that have an inkling of sexism at RSC get knocked down immediately by other students and the women are taught and encouraged to ‘take up space’ in the classroom.”

After finishing her undergraduate studies in 2014, Eytel visited potential schools with PhD programs in chemistry, specifically those with synthetic organic chemistry labs. While comparing programs, she examined the male-to-female ratios in both the professor and student levels. She also looked to see if women were working in the labs because she felt it reflected the culture of the department.

On a visit to one university that was recruiting her, she asked a male grad student why “there was only one woman in the lab of 20 people.” He replied, “Well, girls don’t do organic chemistry.”

“I was flabbergasted,” she said. “I really wanted to argue with the student. I was angry

► *Kara Zappitelli, co-founder of UD Women in Physics and fourth-year graduate student in physics, prepares her sterile lab area.*





◀ In a basement preparation lab, third-year paleontology graduate student Dana Reuter cleans a pinniped fossil with a small grinding tool.

and shocked that I, a female who was doing undergraduate research in synthetic organic chemistry and hoped to pursue a graduate degree in the field, was told that I didn't belong by a fellow student."

These experiences made Eytel even more vocal. She said society discourages girls from speaking up and asking questions, and "that alone leads to fewer girls building the communication and the thinking processes leading into science." But leading programs like Girls' Science Adventures is her way of encouraging girls and influencing the next generation.

WHERE BIAS IS BORN

Sara Hodges, interim vice provost and dean of the UO Graduate School, has also observed gender bias. As a child, she would run through the halls of Vanderbilt University, where her father was a medical librarian, and count how many women were in each class picture of medical students. Women were significantly underrepresented in many of them. Hodges used this example to illustrate implicit bias, which is the result of repeated messages of cultural norms. If men are the only gender being represented in science, whether in schools, work or popular culture, then people will begin to infer that men are the only ones who can be scientists.

Today, Hodges holds a PhD in psychology, but she remembers when women weren't even allowed to enroll in higher education. Hodges acknowledged that implicit bias is a complex and intricate problem that is getting more challenging to solve. "There are laws to outlaw the obvious. Now we are left with the things that are more subtle," Hodges said.

Hodges has studied how perceived effort factored in the success of men and women in STEM fields. She explained that women tend to perceive that they put in more effort than both their male and female counterparts. This led them to have 'imposter syndrome' or the belief that they don't belong. Rather than thinking the challenges they faced were a normal experience that everyone went through, the women assumed the problems were ones that only they encountered.

"It's the moments of doubt that make the difference," Hodges says. "What are you telling yourself when you feel you don't belong?" This moment can be a



decision point as to whether a woman continues in a traditionally male-dominated field like science, or not.

Hodges identified the UO mathematics department, which currently has 13 women in its 57-person faculty, as one that is disproportionately male and may have something to share about the struggles involved with this disparity. However, the Association for Women in Mathematics' UO chapter declined to comment, saying, "it would be inappropriate for us to have this conversation publicly, due to the changing climate in our department."

WOMEN BALANCING THE BIAS

Of the 100 women who attended the 2016 Pacific Northwest Women in Science Retreat hosted by UOWGS, Alice Greenberg, Amanda Steinhebel and Kara Zappitelli were three of only five women from the physics field. According to Steinhebel, the three founded the University of Oregon Women in Physics (WIP) organization after the retreat to "create a supportive network of women in the department, so people feel like they belong and are not isolated."

UOWGS President Andrea Steiger said the group was founded 14 years ago in the chemistry department and is still "heavily linked" with it. She said the chemistry department is lucky.

"While we don't have many female faculty members, we have a lot of faculty members that are very supportive and really, really trying to get to a really good 50:50," said Steiger. According to her, most science departments at the UO, such as the physics department, are aware of the gender imbalance and are working to make it better.

Even though physics is making an effort, women are still notably underrepresented, both at UO and in the field overall.




According to the UO physics department website, there are two women tenure-related faculty members out of 34 total. In 2017, just 12 percent of the admitted graduate students in the department were women. This year, that number grew to 19 percent, according to Steinhebel. But the national average for women in physics is 20 percent. "We're striving for the bare minimum. We just want to be average," said Zappitelli.

It took the women time and a lot of conversations to start to convince the men in the department there was an issue. "Science people want concrete examples, but we don't have the perfect example," said Greenberg. Although according to Zappitelli, they had a good illustration of the gender imbalance two years ago when the physics department admitted zero women into the graduate program.

WIP has also been vocal about the need to hire more women faculty. "We've inserted ourselves in the hiring process," said Greenberg.

In January, the three women hosted the Conference for Undergraduate Women in Physics, a regional event hosted by a different university each year in conjunction with the American Physical Society. According to its website, the goal of the APS is to help undergraduate women gain "information about graduate school and professions in physics, and access to other women in physics of all ages with whom they can share experiences, advice and ideas."

Over 200 undergraduate physics majors from the Pacific Northwest attended.

Outreach like this is the positive momentum women in STEM need to overcome a legacy of bias against them. Hodges, too, believes in positive action to change implicit bias. She said, "To counteract it, we must do explicit things." 



Visit fluxstories.com to hear more of this story in a podcast about women reversing implicit bias in STEM.



From left to right, Emma DeCicco, Brianna Jecklin and Charlie Fox observe ink separation as part of a forensic science workshop.



We're striving for the *bare minimum*.
We just want to be *average*.

KARA ZAPPITELLI

