

The Icon Explore: Outdoor Adventure for the Disabled

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Christian Bagg, of Calgary, Alberta, competed at the semi-professional level in both mountain biking and snowboarding. An injury sustained at a snowboarding competition in 1996 left him paralyzed from the waist down. His training as a machinist has led him to invent a range of solutions for his own mobility over the years. He has worked at the Southern Alberta Institute of Technology as an instructor in the manufacturing and automation department and at the University of Calgary, managing complex projects for engineers developing adaptive equipment. He has also led a design team at Stryker Corporation, and holds numerous patents in the adaptive mobility field.¹

In 2010 Bagg established the company, Icon, together with his business partner Jeff Adams, who is one of Canada's most decorated athletes, having won 13 Paralympic medals.² Bagg was interviewed for a recent airing of the PBS News Hour Weekend edition to discuss his invention of the Icon Explore.³ The Explore is essentially a cross between a mountain bike and a motorized wheelchair.

The Icon Explore

Bagg's invention, the Icon Explore, is a three-wheeled electric mountain bike. He began experimenting decades ago by putting mountain bike tires on his wheelchair. Over the years, he has advanced his design. Two years ago, his experiments and design lead him to finally create a wheelchair that enables him to ride with his friends on the rugged mountain bike trails of the Canadian Rockies near his home in Alberta. He has also ridden trails throughout British Columbia, including the challenging terrain of Squamish and Whistler.

The Explore is not cheap, with one buyer shown on the PBS airing having referenced the cost as relatable to that of a new Toyota Corolla. This has largely to do with the fact that Bagg is currently making the Explore in his basement, which has been converted into a machine shop. Bagg arrived at the design with the help of a sophisticated 3D printer, and the printer is now creating many of the parts by printing what he referred to as a carbon filled nylon.

"But the real breakthrough wasn't printing," interviewer Christopher Booker explained, "it was design. For years, the problem had been flexibility. To endure the mountain terrain, the bike had to be rigid, but hitting rocks and stumps with a stiff frame, Christian often ended upside down. Developing what he calls an articulating framework, something that allows the bike to lean as the rider moves their torso, the front wheels function like knee joints. So if one area of the ground is higher than the other, the bike maintains its balance, so if you hit a tree stump or rock the bike won't tip over. Coupled with a battery and small drive motor, Bagg's bike was now ready for the mountain terrain."⁴

¹ Icon Wheelchairs. Homepage - Management Section. Available at: <http://iconwheelchairs.com/managment/>. Accessed on January 29, 2019.

² Horner, Doug. Freakin' Eureka: Paralyzed adventurer invents mountain bike that gets him back on the trails. Calgary Herald. Updated: October 6, 2017. Available at: <https://calgaryherald.com/life/swerve/freakin-eureka-paralyzed-adventurer-invents-mountain-bike-that-gets-him-back-on-the-trails>. Accessed on January 29, 2019.

³ Booker, Christopher and Rothman, Mori. "Paralyzed outdoorsman designs bike to cycle woods again". PBS News Hour Weekend. January 20, 2019. Available at: <https://www.pbs.org/newshour/show/paralyzed-outdoorsman-designs-bike-to-cycle-woods-again>. Accessed on January 29, 2019.

⁴ *Ibid.*

Broader Applicability

Obviously, not everyone with mobility issues aims to hit the mountain bike trails like Bagg. But, it's easy to see how the device, or some derivative form of device, may be desired by a wider range of customers.

One of Bagg's customers, J.P. Middleton related a moving story of his three-year-old son going into their backyard saying, "daddy, come play." Middleton explains: "I look beyond, and there's stumps and roots and grass and rocks. And I sat there and— you know, a tear rolled down my eye. And I thought, 'There's just no way I can get out there.' When the bike arrived, the first thing I did is I put Evan on my lap and I bombed out the backyard through the woods, over the stumps. And it was just the most phenomenal feeling."⁵

The News Hour Weekend anchor, Hari Sreenivasan, relayed a World Bank statistic at the start of the story: "(O)ne billion people – that's 15 percent of the world's population – experience some form of disability, with one-fifth experiencing significant disabilities. As the population continues to age, this number will rise, and so will demand for technology that allows the disabled to live the lives they want to live."⁶ It's hard to think of another device in existence that affords this growing demographic a greater level of independence and mobility in areas – and activities – generally considered outside the realm of possibility for many. And, it's not hard to imagine how this device, or it's derivative technology and design could be a tremendous asset in helping to serve these needs and desires moving forward.

⁵ *Ibid.*

⁶ *Ibid.*