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Japan's Bullet Train: The design that caught my attention most from AskNature.org's collection of designs and engineering ideas developed from observing the natural environment, was the Shinkansen Train, developed by the Japan Railways Group. Engineers were able to successfully design a train that silently cuts through air. It uses 15% less electricity than most high-speed trains *and* travels 10% faster (Okorafor et al.). The train's streamlined aerodynamic form reduces noise and unnecessary movement. Personally, I believe that this is life changing for people like me who suffer from severe motion sickness and vertigo.

Biomimicry is essentially the study and application of natural life forms and their biological functions, and engineer Eiji Nakatsu, an avid birdwatcher, used biomimicry to achieve this drastic decrease in noise, specifically the splashless dives Kingfishers make into water and the silent flight of strigiformes such as owls. When kingfishers jump into the water from the air, they are moving from a low-drag medium into a high-drag medium. This means that while resistance in the air is low, resistance in water is high (Kobayashi et al.). Nakatsu noted that this same concept of aerodynamics can be applied to trains; which move through both low-drag open spaces into high-drag compact spaces such as tunnels. In addition, the shape of the train is modeled after a Kingfisher beak; streamlined to reduce impact. The pantograph's noise was then reduced further by the vortices the engineers added to the main foundation via small structures that mimic the serrations on an owl's wings (Bachmann et al.).

Biomimicry in My Community: As an avid birdwatcher myself, this drastically changed my view of how a simple activity I do for fun could inspire innovation and engineering. We generally don't think about just how vital nature is to human life, not just so that we can live, but so that we can create and innovate. So much of what we have achieved could not have been accomplished without nature, and I think it's important to realize that. In my own life I believe that the ability of geckos to see clearly in extreme light would be greatly beneficial to society. Many people, like myself, suffer from light sensitivity and migraines as well as poor eyesight. Biomimicry could help create a special type of lense that is able to help people that have difficulty with pupil dilation, maybe even clearer cameras. The possibilities are varied, and I think that's wonderful.

Works Cited

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