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Reconstructing Isotelus rex

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Reconstructing Isotelus rex

Brian White

Background

- Trilobites were some of the most prolific and diverse groups of arthropods to have existed in the paleozoic era. They came in a wide range of shapes and sizes and had members which were among the largest arthropods known to existence.
- The largest trilobite currently known was the Isotelus rex. At 720mm in length, it inhabited the oceans during the Ordovician Period 485 million years ago (Rudkin, 2003).
- Despite being known as the largest trilobite to ever exist and having almost complete remains, it is relatively obscure in the eyes of both the public and scientific community.

Goals

1. To restore Isotelus rex digitally with a 3D reconstruction utilizing the programs Blender and ZBrush.
2. To make the reconstruction as accurate as possible, studying the current fossil records and anatomical drawings of related taxa.
3. To bolster the visual database for Isotelus rex and boost its public awareness.

Methods

Extensive research on life appearance of Isotelus rex, as well as research on its close relatives for features that were not preserved in Isotelus fossils.

Begin basic 3D modeling of body in Blender

UV map of 3D model in Blender

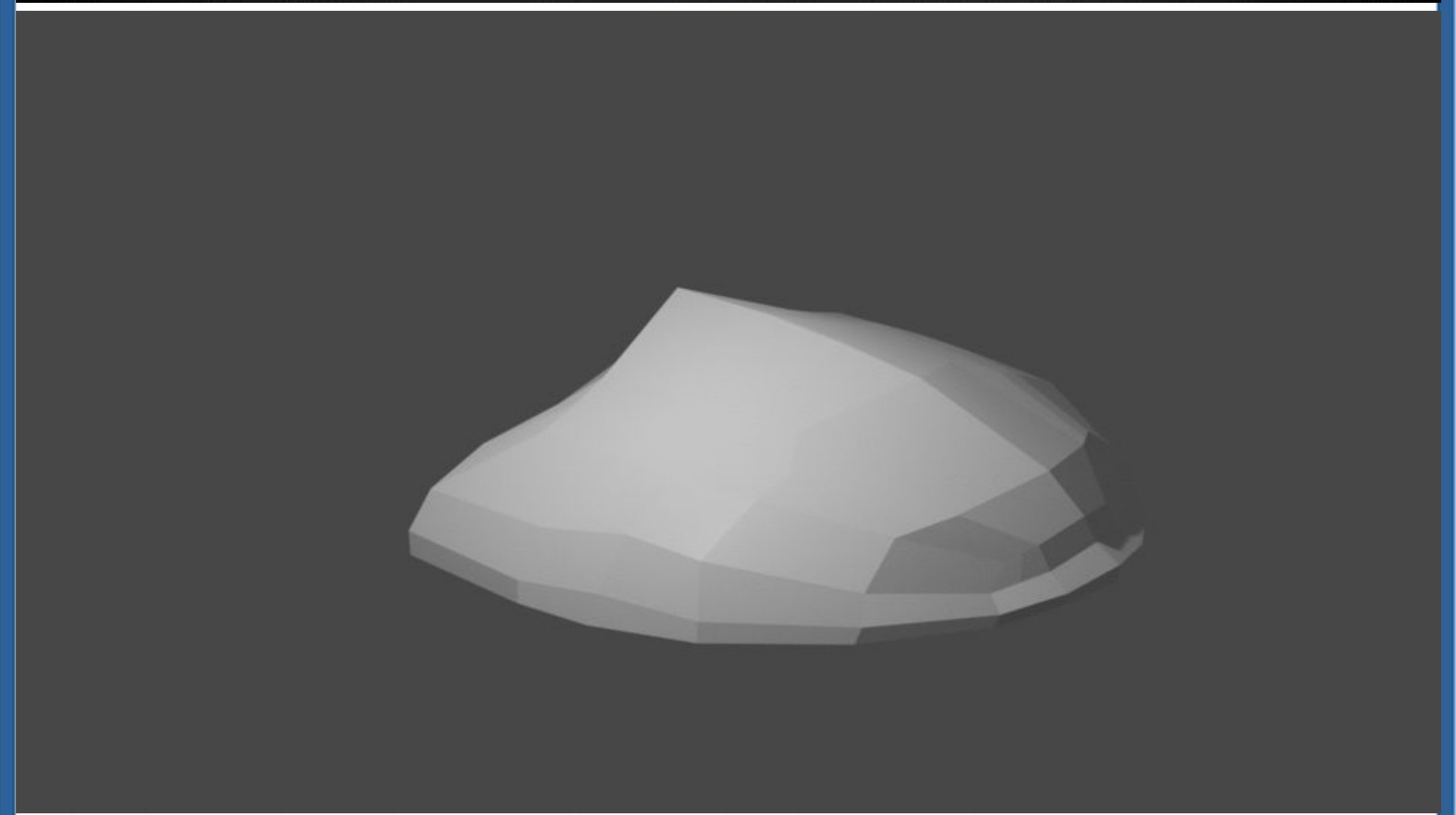
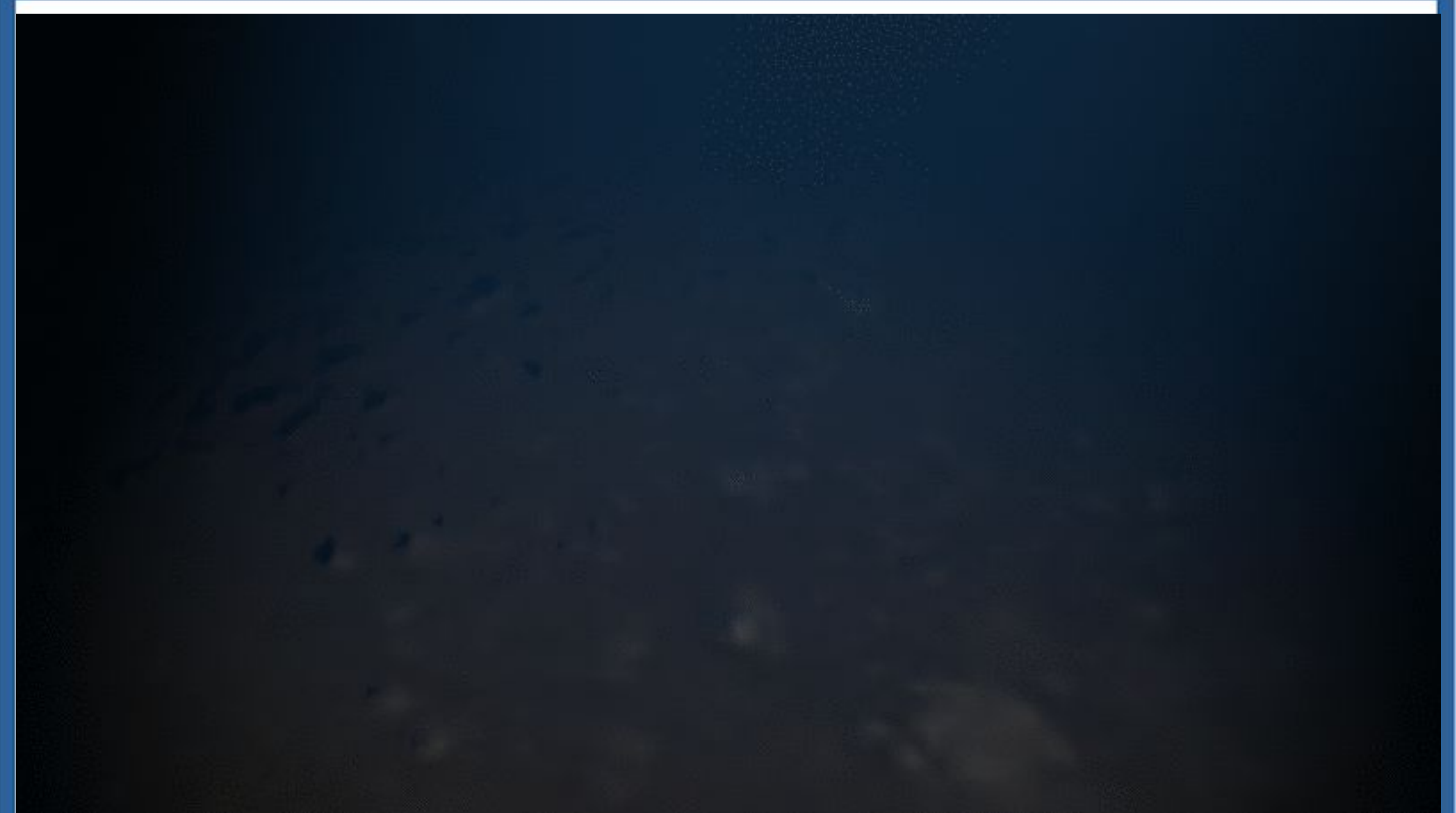
Export to ZBrush for fine detail sculpting and texturing

Export of sculpted model, textures, and normal maps from ZBrush to Blender

Rig and animate 3D model

Set up lighting and camera movement and render result.

Results



Discussion

- The dorsal morphology of the model is likely the most accurate part of the restoration, as it is directly referencing the fossil itself.
- The structure of the legs is based on a restoration of Isotelus gigas by Raymond (1920). While it is from the same genus as Isotelus rex, this still means that the accuracy of the legs is ambiguous at best. As for the exopodites, they are entirely unknown for the genus as a whole and therefore are an educated guess.

Acknowledgements

Rudkin, David M., et al. "The World's Biggest Trilobite—ISOTELUS Rex New Species from the Upper Ordovician of Northern Manitoba, Canada." *Journal of Paleontology*, vol. 77, no. 1, 1 Jan. 2003, pp. 99–112., <https://doi.org/10.1017/s0022336000043456>.

"Restoration of Isotelus Gigas, Fig. 9 in Raymond (1920), Based on Walcott's Thin Sections and a Specimen from Ohio. by Hajar." PBase, <https://pbase.com/hajar/image/153185293>.

Owen, Alan W. "The Uppermost Ordovician (Hirnantian) Trilobites of Girvan, SW Scotland with a Review of Coeval Trilobite Faunas." *Transactions of the Royal Society of Edinburgh: Earth Sciences*, vol. 77, no. 3, 3 Nov. 2011, pp. 231–239., <https://doi.org/10.1017/s0263593300010865>.