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Thinking in Pictures: John Wheeler, Richard Feynman and the Diagrammatic Approach to Problem Solving.

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While classical mechanics readily lends itself to sketches, many fields of modern physics, particularly quantum mechanics, quantum field theory, and general relativity, are notoriously hard to envision. Nevertheless, John Wheeler and Richard Feynman, who obtained his PhD under Wheeler, each insisted that diagrams were the most effective way to tackle modern physics questions as well. Beginning with Wheeler and Feynman's work together at Princeton, I'll show how the two influenced each other and encouraged each other's diagrammatic methods. I'll explore the influence on Feynman of not just Wheeler, but also of his first wife Arline, an aspiring artist. I'll describe how Feynman diagrams, introduced in the late 1940s, while first seen as 'heretical' in the face of Bohr's complementarity, became standard, essential methods. I'll detail Wheeler's encouragement of his colleague Martin Kruskal's use of special diagrams to elucidate the properties of black holes. Finally, I'll show how each physicist supported art later in life: Wheeler helping to arrange the Putnam Collection of 20th century sculpture at Princeton and Feynman, in a kind of 'second career,' becoming an artist himself.