



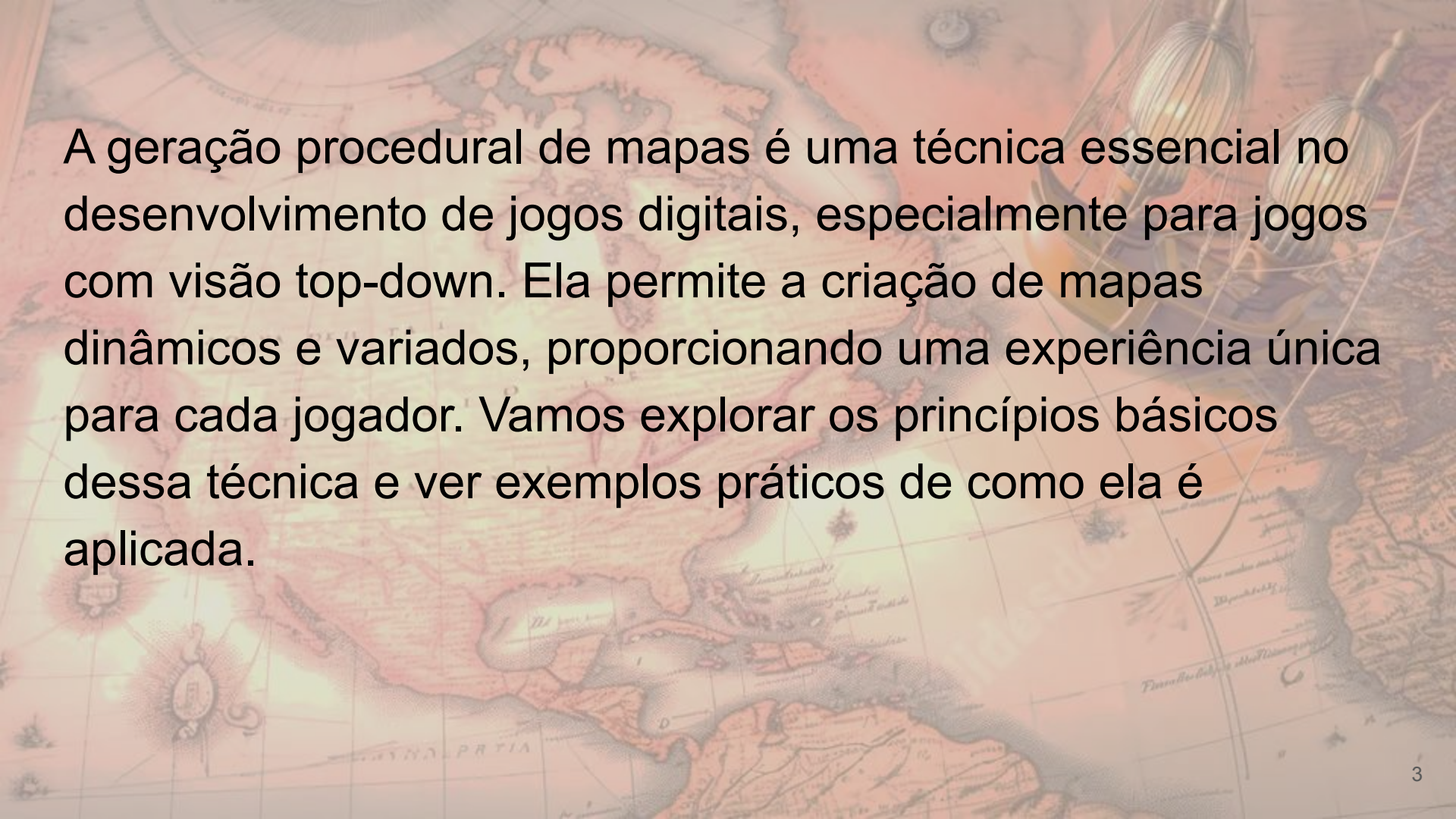
Reinos Gerados:

Explorando Mapas Top-Down

The background of the slide is a composite image. It features a vintage-style map of the world, with landmasses in shades of brown and tan and oceans in light blue. Overlaid on the map are several objects: a stack of gold coins in the upper right corner, a small red compass with a green face in the middle right, and some gold jewelry, including a ring and a bracelet, scattered around the compass.

01

Introdução à Geração **Procedural**

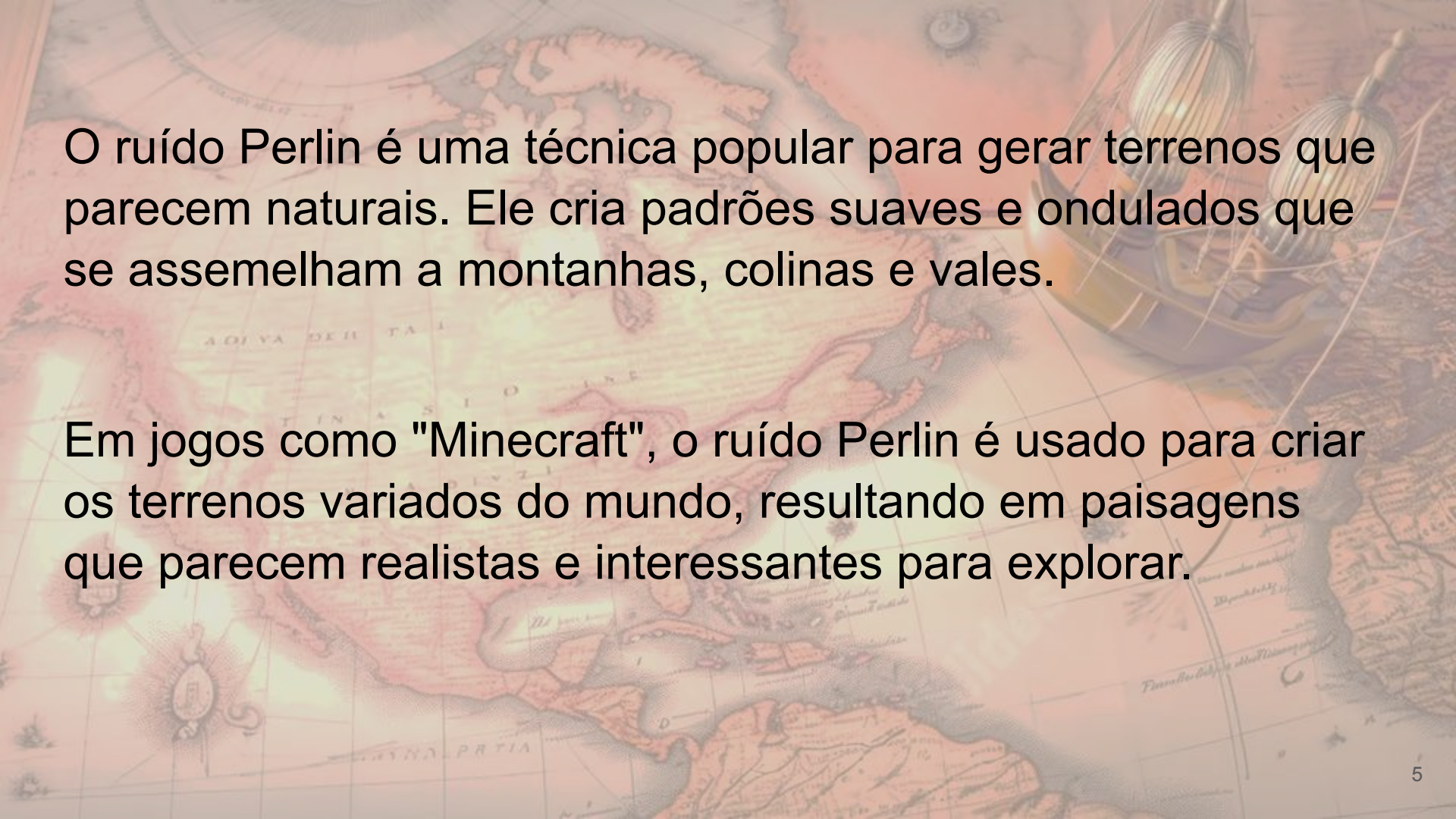
The background of the slide is a faded, historical map. It features a compass rose in the upper left corner and two sailing ships in the upper right corner. The map shows various landmasses and bodies of water, with some text labels in Latin or old European script. The overall color palette is muted, with shades of brown, beige, and light blue.

A geração procedural de mapas é uma técnica essencial no desenvolvimento de jogos digitais, especialmente para jogos com visão top-down. Ela permite a criação de mapas dinâmicos e variados, proporcionando uma experiência única para cada jogador. Vamos explorar os princípios básicos dessa técnica e ver exemplos práticos de como ela é aplicada.

The background of the slide is a composite image. It features a vintage-style map with a warm, aged color palette of browns, tans, and muted blues. Overlaid on the map in the upper right corner is a stack of several dark, metallic coins. Below the coins, there is a small, round, red-rimmed object that looks like a compass or a small clock face with a green and yellow pattern. The overall aesthetic is historical and exploratory.

02

Ruído Perlin: Criação de Terrenos Naturais

The background of the slide is a composite image. On the left, there is a historical map of Africa, showing the continent's outline and some internal details like rivers and coastlines. The map is in a sepia or aged tone. On the right, there is a detailed illustration of a sailing ship, possibly a galleon, with multiple masts and sails. The ship is depicted in a more vibrant, slightly stylized manner, with a mix of blue, yellow, and brown tones. The overall background has a textured, parchment-like appearance.

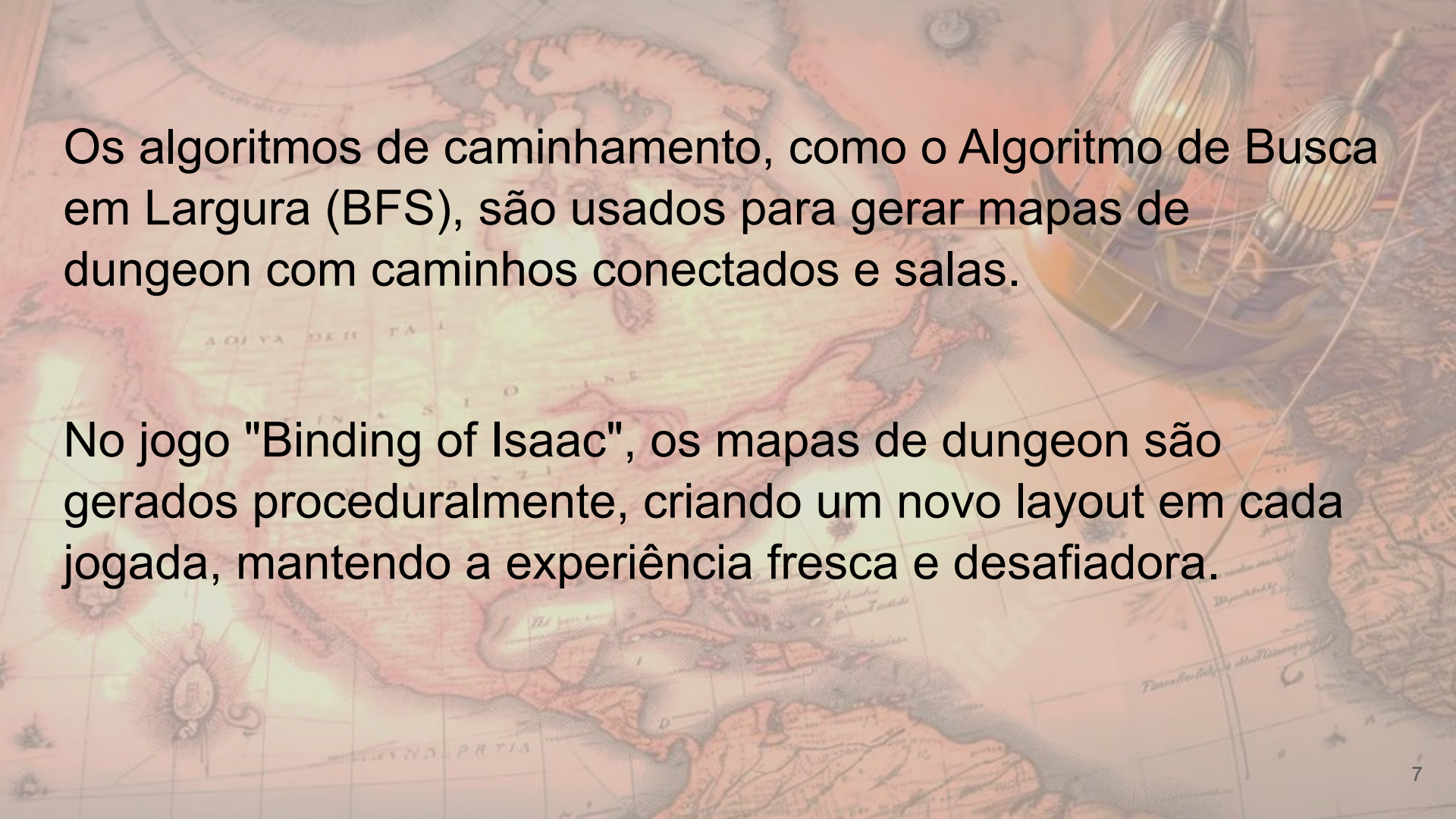
O ruído Perlin é uma técnica popular para gerar terrenos que parecem naturais. Ele cria padrões suaves e ondulados que se assemelham a montanhas, colinas e vales.

Em jogos como "Minecraft", o ruído Perlin é usado para criar os terrenos variados do mundo, resultando em paisagens que parecem realistas e interessantes para explorar.

The background of the slide is a composite image. On the left, there is a portion of an old, weathered map with various geographical features and text. On the right, there is a stack of several old, leather-bound books. In front of the books, there is a small, round, red compass with a green face and a gold-colored rim. The overall theme is exploration and discovery.

03

Algoritmos de Caminhamento: Estruturas de Dungeon

The background of the slide is a faded, historical-style map. It features a compass rose in the upper right corner with two large, ornate spherical ornaments. The map shows various landmasses and bodies of water, with some text labels like "ADIVA DEH TA I" and "PRYIA" visible. A ship is partially visible on the right side of the map.

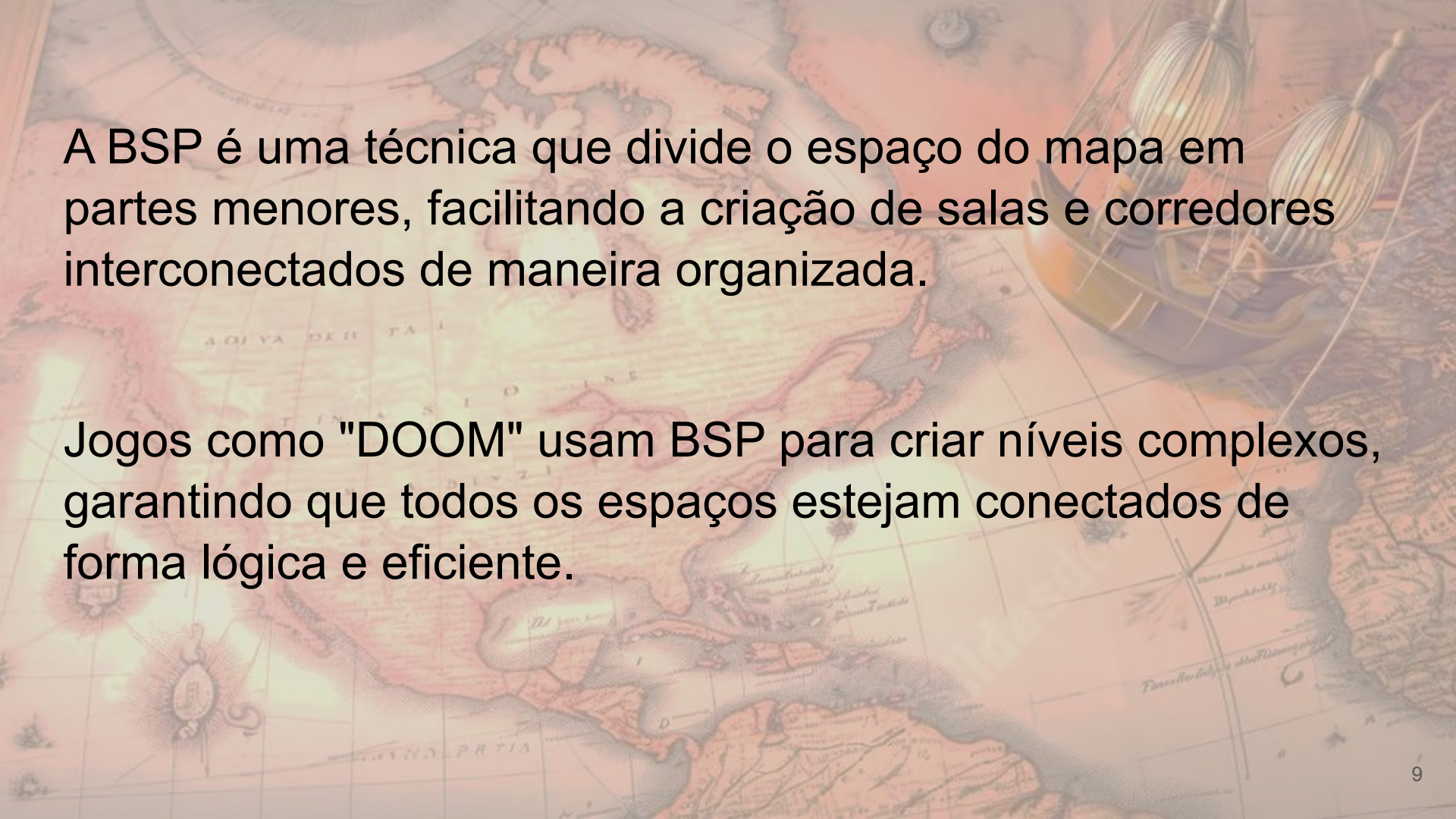
Os algoritmos de caminhamento, como o Algoritmo de Busca em Largura (BFS), são usados para gerar mapas de dungeon com caminhos conectados e salas.

No jogo "Binding of Isaac", os mapas de dungeon são gerados proceduralmente, criando um novo layout em cada jogada, mantendo a experiência fresca e desafiadora.

The background of the slide features a vintage-style map with muted colors. In the upper right corner, there is a stack of old, leather-bound books. A small, round, red compass with a green face is placed on the map near the books. The overall aesthetic is that of a historical or exploratory theme.

04

Divisão de Espaços Binários (BSP): Mapas Organizados



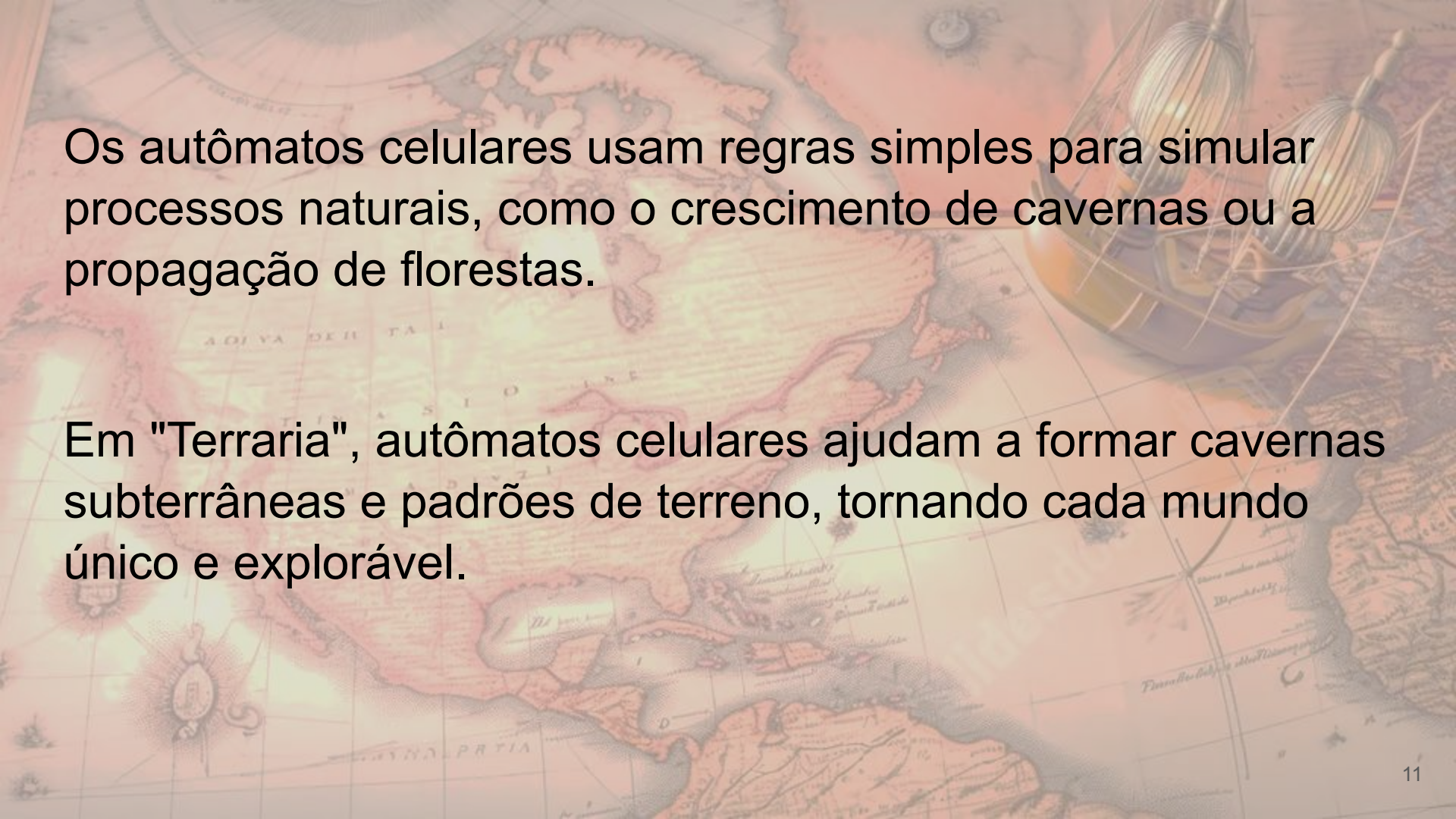
A BSP é uma técnica que divide o espaço do mapa em partes menores, facilitando a criação de salas e corredores interconectados de maneira organizada.

Jogos como "DOOM" usam BSP para criar níveis complexos, garantindo que todos os espaços estejam conectados de forma lógica e eficiente.

The background of the slide is a composite image. On the left, there is a portion of an old, sepia-toned map showing landmasses and water bodies. On the right, there is a stack of several gold coins, and below them, a small, round, red compass with a green face and a needle. The overall aesthetic is historical and exploratory.

05

Autômatos Celulares:
Evolução de Ambientes



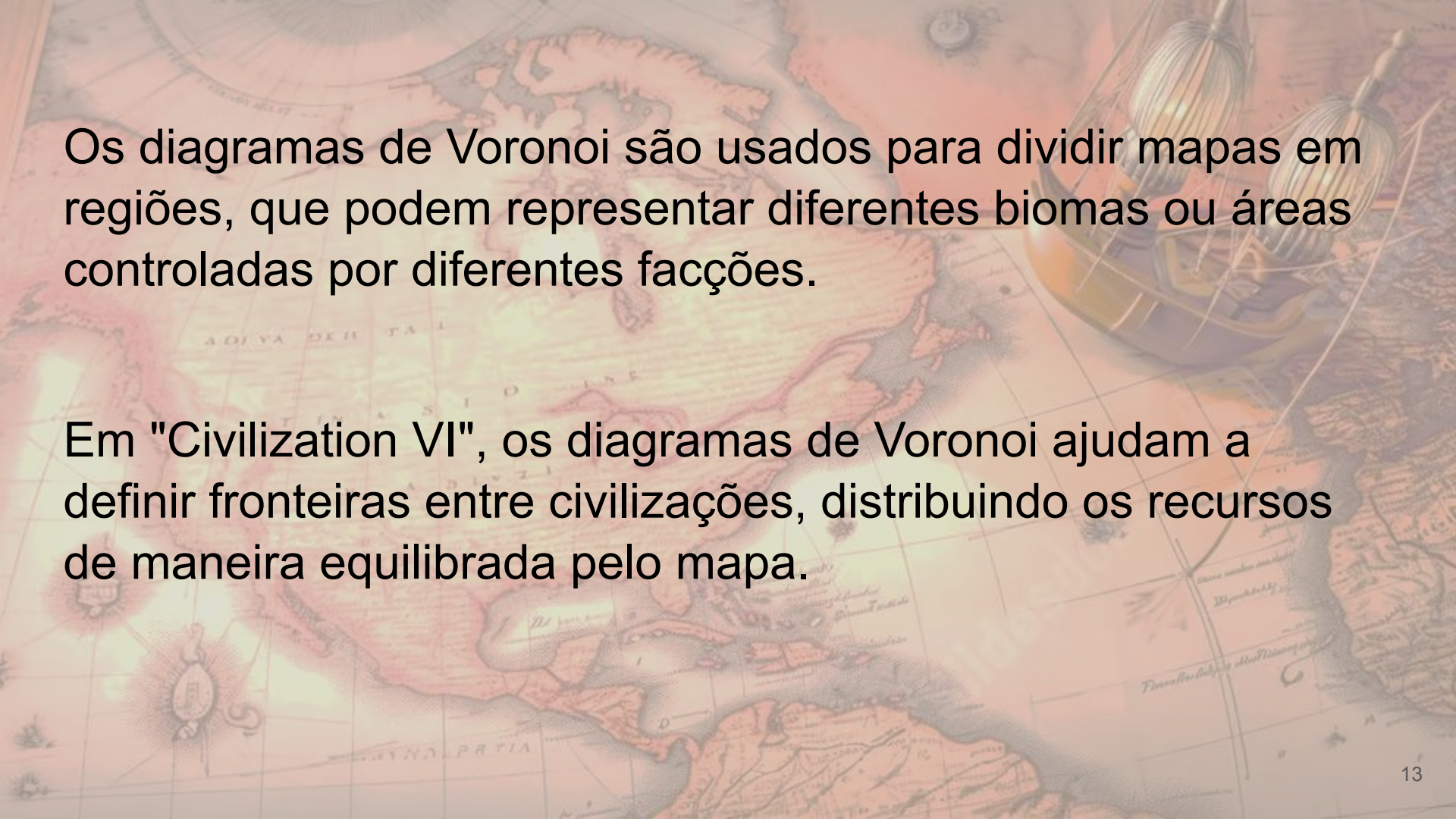
Os autômatos celulares usam regras simples para simular processos naturais, como o crescimento de cavernas ou a propagação de florestas.

Em "Terraria", autômatos celulares ajudam a formar cavernas subterrâneas e padrões de terreno, tornando cada mundo único e explorável.

The background of the slide is a composite image. On the left, there is a portion of an old, sepia-toned map showing landmasses and water bodies. On the right, there is a stack of several gold coins, and below them, a small, round, red compass with a green face and a black needle. The overall aesthetic is historical and exploratory.

06

Voronoi Diagrams:
Regiões e Biomas

The background of the slide is a faded, historical-style map. It features a large sailing ship in the upper right corner, a compass rose in the lower left, and various geographical labels in Latin, such as 'ADIVA DEH TA I' and 'PRITIA'. The map is overlaid with a grid of lines.

Os diagramas de Voronoi são usados para dividir mapas em regiões, que podem representar diferentes biomas ou áreas controladas por diferentes facções.

Em "Civilization VI", os diagramas de Voronoi ajudam a definir fronteiras entre civilizações, distribuindo os recursos de maneira equilibrada pelo mapa.

The background of the slide features a detailed, aged map of the world, likely from the 17th or 18th century, showing continents in various shades of brown and green. In the upper right corner, there is a stack of several gold coins. Below the coins, a small, round, red compass with a green face is visible. The overall aesthetic is historical and navigational.

07

Simulação de Ruído
Simplex: Terrenos Suaves

The background of the slide is a faded, artistic illustration. It features a historical map with various landmasses and bodies of water. In the upper right corner, there is a detailed drawing of a sailing ship with two large, striped sails. A compass rose is visible in the upper left. The overall color palette is warm, with shades of orange, yellow, and brown.

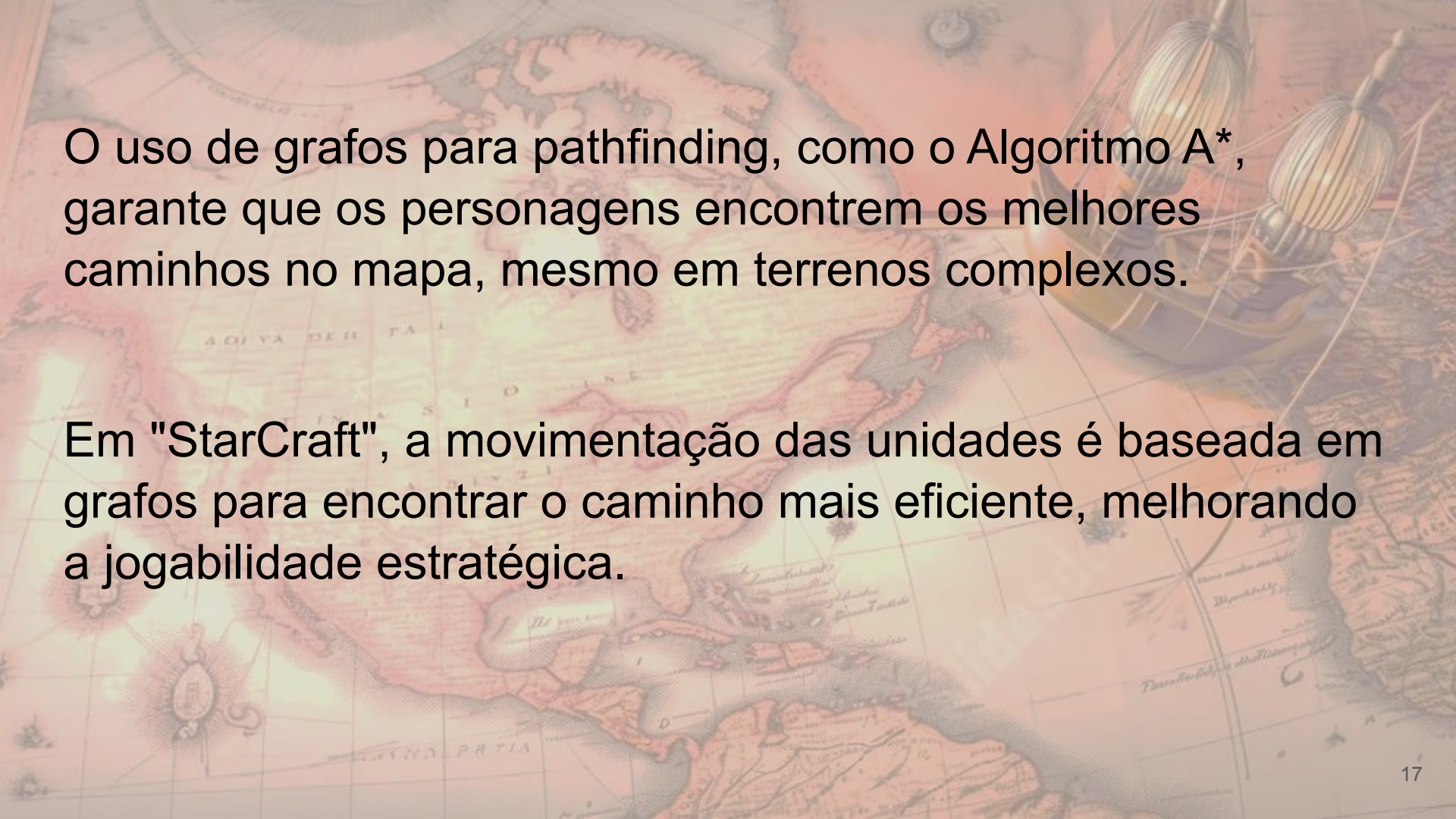
O ruído simplex é uma alternativa ao ruído Perlin, gerando terrenos com transições ainda mais suaves e menos repetitivas.

Jogos como "Don't Starve" usam ruído simplex para criar mundos com uma aparência única e artística, onde o terreno e a vegetação se misturam de maneira natural.

The background of the slide features a detailed, aged map of the world, showing continents and oceans in various shades of brown and tan. In the upper right corner, there is a stack of several gold coins. Below the coins, a small, round, red compass with a green face is visible. The overall aesthetic is that of a treasure map or a historical document.

08

Graph-based Pathfinding:
Caminhos Ótimos



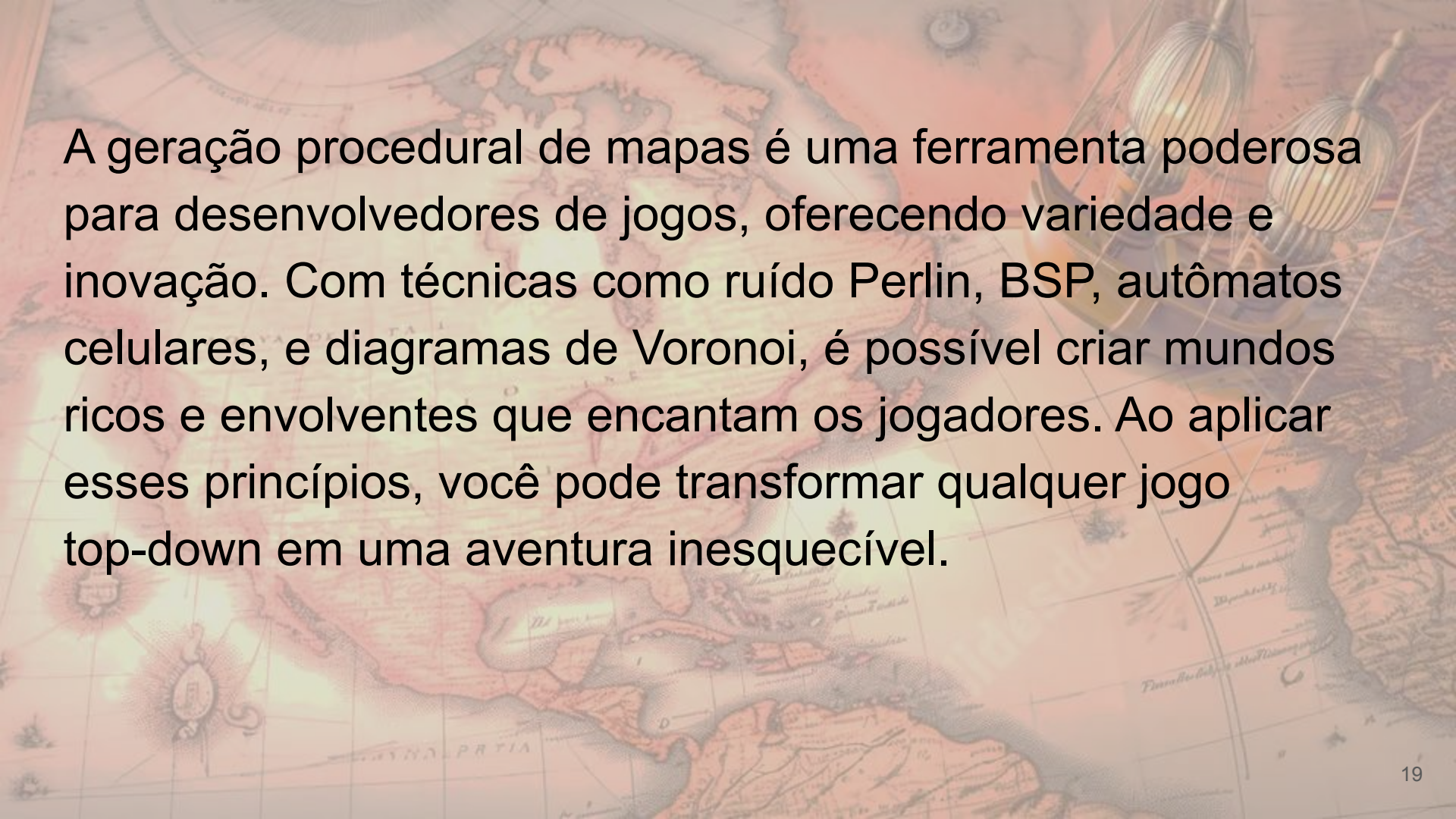
O uso de grafos para pathfinding, como o Algoritmo A*, garante que os personagens encontrem os melhores caminhos no mapa, mesmo em terrenos complexos.

Em "StarCraft", a movimentação das unidades é baseada em grafos para encontrar o caminho mais eficiente, melhorando a jogabilidade estratégica.



09

Conclusão



A geração procedural de mapas é uma ferramenta poderosa para desenvolvedores de jogos, oferecendo variedade e inovação. Com técnicas como ruído Perlin, BSP, autômatos celulares, e diagramas de Voronoi, é possível criar mundos ricos e envolventes que encantam os jogadores. Ao aplicar esses princípios, você pode transformar qualquer jogo top-down em uma aventura inesquecível.