We have then:

A rational map $f: M \longrightarrow \mathbb{P}^n$ is given by an irreducible k-dimensional subvariety of $M \times \mathbb{P}^n$ having intersection number 1 with the fibers $\{p\} \times \mathbb{P}^n$ of $M \times \mathbb{P}^n$ over M.

One point that emerges readily from this description is that for M compact, the image of M under a rational map $f: M \longrightarrow \mathbb{P}^n$ — that is, the closure of the image of f where defined — is an algebraic subvariety of $\mathbb{P}^n$.

⌈ $\Gamma \subset M \times \mathbb{P}^n$

$$\begin{array}{c} \Gamma \subset M \times \mathbb{P}^n \\ \downarrow \pi' \\ \mathbb{P}^n \end{array}$$

$\Rightarrow$ Since M is compact, π' is proper.

$\Rightarrow$ By the proper mapping theorem, $\pi'(\Gamma)$ is an algebraic subvariety of $\mathbb{P}^n$.

We can see easily $\pi'(\Gamma) = \overline{f(M)}$ since on open dense subset $f(M) = \pi'(\Gamma)$. See below. ⌋

This follows from the proper mapping theorem, once we observe that the image of the closure of the graph Γ_f of f in $M \times \mathbb{P}^n$ is indeed just the closure of the image of f.

⌈ Note that π is a closed mapping. for any closed set C in $M \times \mathbb{P}^n$, C is compact, and $\pi(C)$ is closed.
$\Rightarrow \pi(C)$ is compact in $\mathbb{P}^n$, and $\pi(C)$ is compact in $\mathbb{P}^n$. ⌋