Cartesian Product of a finite Sets with them Selfs

Lets assume S is a set of Cardinality 2. Further label the two Elements of the Set (a) and (b). Multiply that Set n-times with it self (Cartesian Product). Let's say that is equal to raise that Set S by a Power of n. We get Set T where each Member of T is made of a Tuples of length n and each Tuples consists only of 'a' and/or 'b' Entries. T has 2^n Tuples. All Variations possible are in that Set.

$$\overbrace{(a\,;a\,;b\,;a\ldots)}^{Tupel\,with\,n\,Entries}\in\{a,b\}^{n}=T_{n} \qquad |T_{n}|=|\{a,b\}^{n}|=|S|$$

It gets interesting when u replace a and b with ciphers (0 and 1). If so each Tuple can be interpreted as a (binary) Number. For ease of imagination let's say the Tuple (1;0;0;1….) corresponds with the Number 1001…. So we can pair every n-digit(or less) binary and natural Number with one Tuple in T(n). When we make a shift Operation to every and each Tuple by shifting (n minus m) digits - coming from the left – behind the hole Number demarcation sign (the point). If m is equal to 1 all digits are behind the Point. Except the first. This way we can interpret each Tuple as a Number between 0 and 2. If we make n bigger the Interval where the Numbers lay don't change. Because the Tuples grow from the Right. Instead we capture more Numbers between 0 and 2. Of course m is still equal with 1 and operating. Then we consider n equal to $|\mathbb{N}|$ (=$\aleph$). Now we have **all** Numbers between 0 and 2. That Means $|\mathbb{R}| = |T| = 2^{\wedge}|\aleph|$. As we know the 2 is there because our Set S has two Elements. But of course that is not a must. We got no obligation to bind this to binary number encoding. As u may see this means $|\mathbb{R}| = b^{\wedge}|\aleph|$ where b is an arbitrary Natural Number larger then 1.