More information about this function can be fount at :
http://googology.wikia.com/wiki/Veblen_function

Every non-zero ordinal $\alpha < \Gamma_0$, where Γ_0 is the smallest ordinal α such that $\varphi_\alpha(0) = \alpha$, can be uniquely written in normal form for the Veblen hierarchy:
$\alpha = \varphi_{\beta_1}(\gamma_1) + \varphi_{\beta_2}(\gamma_2) + \cdots + \varphi_{\beta_k}(\gamma_k)$,
where
$\varphi_{\beta_1}(\gamma_1) \geq \varphi_{\beta_2}(\gamma_2) \geq \cdots \geq \varphi_{\beta_k}(\gamma_k)$ $\gamma_m < \varphi_{\beta_m}(\gamma_m)$ for $m \in \{1, ..., k\}$

Now we will see how we can find the fundamental sequence of an ordinal written in this notmal form.
From the rule defining addition of a limit ordinal :
$\alpha + lim(f) = lim(n \mapsto \alpha + f(n))$
we deduce the fundamental sequence :
$(\alpha + \beta)[n] = \alpha + \beta[n]$
if β is a limit ordinal.
In particular, we have :
$(\varphi_{\beta_1}(\gamma_1) + \varphi_{\beta_2}(\gamma_2) + \cdots + \varphi_{\beta_k}(\gamma_k))[n] = \varphi_{\beta_1}(\gamma_1) + \cdots + \varphi_{\beta_{k-1}}(\gamma_{k-1}) + (\varphi_{\beta_k}(\gamma_k)[n])$, where $\varphi_{\beta_1}(\gamma_1) \geq \varphi_{\beta_2}(\gamma_2) \geq \cdots \geq \varphi_{\beta_k}(\gamma_k)$ and $\gamma_m < \varphi_{\beta_m}(\gamma_m)$ for $m \in \{1, 2, ..., k\}$,
Then, $\varphi_0(\gamma)$ is ω^γ.
For $\gamma = 0$ it is 1.
From the rule of multiplication by a limit ordinal :
$\alpha \cdot lim(f) = lim(n \mapsto \alpha \cdot f(n))$
we deduce the fundamental sequence :
$(\alpha \cdot \beta)[n] = \alpha \cdot \beta[n]$ if β is a limit ordinal.
In particular, for ω :
$(\alpha \cdot \omega)[n] = \alpha \cdot \omega[n] = \alpha \cdot n$
Then we have :
$\varphi_0(\gamma + 1) = \omega^{\gamma+1} = \omega^\gamma \cdot \omega = \varphi_0(\gamma) \cdot \omega$
So the corresponding fundamental sequence is :
$\varphi_0(\gamma + 1)[n] = (\varphi_0(\gamma) \cdot \omega)[n] = \varphi_0(\gamma) \cdot n$
If γ is a limit ordinal, the fundamental sequence can be defined canonically:
$\varphi_0(\gamma)[n] = \varphi_0(\gamma[n])$
Then, $\varphi_{\beta+1}(\gamma)$ is the $1+\gamma$-th fixed point of the function $\xi \mapsto \varphi_\beta(\xi)$, or more simply the function φ_β.
In particular, $\varphi_{\beta+1}(0)$ is the least fixed point of this function, which is ${\varphi_\beta}^\omega(0)$. A fundamental sequence of this ordinal is $\varphi_{\beta+1}(0)[n] = {\varphi_\beta}^n(0)$, which can also be written $\varphi_{\beta+1}(0)[0] = 0$ and $\varphi_{beta+1}(0)[n+1] = \varphi_\beta(\varphi_{\beta+1}(0)[n])$.
$\varphi_{\beta+1}(\gamma+1)$ is the fixed point of φ_β that follows $\varphi_{\beta+1}(\gamma)$. It is ${\varphi_\beta}^\omega(\varphi_{\beta+1}(\gamma)+1)$. This can also be written $\varphi_{\beta+1}(\gamma+1)[0] = \varphi_{\beta+1}(\gamma)+1$ and $\varphi_{\beta+1}(\gamma+1)[n+1] = \varphi_\beta(\varphi_{\beta+1}(\gamma+1)[n])$.
If γ is a limit ordinal, the fundamental sequence can be defined canonically:
$\varphi_{\beta+1}(\gamma)[n] = \varphi_{\beta+1}(\gamma[n])$.
Finally, if β is a limit ordinal, we can define canonically:
$\varphi_\beta(0)[n] = \varphi_{\beta[n]}(0)$ if $\beta < \varphi_\beta(0)$

and
$\varphi_\beta(\gamma+1)[n] = \varphi_{\beta[n]}(\varphi_\beta(\gamma)+1)$

Let us recap now the results we obtained.
The fundamental sequences for the Veblen functions $\varphi_\beta(\gamma) = \varphi(\beta,\gamma)$ are :

(1) $(\varphi_{\beta_1}(\gamma_1) + \varphi_{\beta_2}(\gamma_2) + \cdots + \varphi_{\beta_k}(\gamma_k))[n] = \varphi_{\beta_1}(\gamma_1) + \cdots + \varphi_{\beta_{k-1}}(\gamma_{k-1}) + (\varphi_{\beta_k}(\gamma_k)[n])$, where $\varphi_{\beta_1}(\gamma_1) \geq \varphi_{\beta_2}(\gamma_2) \geq \cdots \geq \varphi_{\beta_k}(\gamma_k)$ and $\gamma_m < \varphi_{\beta_m}(\gamma_m)$ for $m \in \{1, 2, ..., k\}$,
(2) $\varphi_0(0) = 1$,
(3) $\varphi_0(\gamma+1)[n] = \varphi_0(\gamma)n$
(4) $\varphi_{\beta+1}(0)[0] = 0$ and $\varphi_{\beta+1}(0)[n+1] = \varphi_\beta(\varphi_{\beta+1}(0)[n])$,
(5) $\varphi_{\beta+1}(\gamma+1)[0] = \varphi_{\beta+1}(\gamma)+1$ and $\varphi_{\beta+1}(\gamma+1)[n+1] = \varphi_\beta(\varphi_{\beta+1}(\gamma+1)[n])$,
(6) $\varphi_\beta(\gamma)[n] = \varphi_\beta(\gamma[n])$ for a limit ordinal $\gamma < \varphi_\beta(\gamma)$,
(7) $\varphi_\beta(0)[n] = \varphi_{\beta[n]}(0)$ for a limit ordinal $\beta < \varphi_\beta(0)$,
(8) $\varphi_\beta(\gamma+1)[n] = \varphi_{\beta[n]}(\varphi_\beta(\gamma)+1)$ for a limit ordinal β.

From these fundamental sequences, we can retrieve the initial definition of the function φ.

(1) This does not concern the definition of the φ function but the definition of addition
(2) and (3) and (6) for $\beta = 0$ are equivalent to $\varphi_0(\gamma) = \omega^\gamma$.
(4) $\varphi_{\beta+1}(0) = lim(n \mapsto {\varphi_\beta}^n(0)) = {\varphi_\beta}^\omega(0)$ which is the least fixed point of φ_β.
(5) $\varphi_{\beta+1}(\gamma+1) = lim(n \mapsto {\varphi_\beta}^n(\varphi_{\beta+1}(\gamma)+1))$, which is the least fixed point of φ_β strictly greater than $\varphi_{\beta+1}(\gamma)$, so with (6) it gives $\varphi_{\beta+1}(\gamma)$ is the $1+\gamma$-th fixed point of φ_β.
(7), (8) and (6) for β limit ordinal complete the definition of $\varphi_\beta(\gamma)$ for β limit ordinal.